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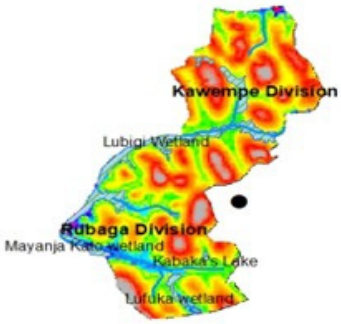
POLICY BRIEF

Lubigi water treatment plant - Credit for all images: Author

NATURE-BASED SOLUTIONS FOR FLOOD MANAGEMENT IN KAMPALA CITY: THE CASE OF LUBIGI WETLAND RESTORATION

Flash floods in urban centers including Kampala City have increased in magnitude and frequency, particularly during or after extreme rainfall events. The trend is happening alongside the rising urbanization and population growth that are threatening wetland cover. Uganda is dedicated to strengthening its ability to mitigate and adapt to the effects of climate change, including reducing financial and human losses as a result of climatic hazards and disasters. To this end, Nature-based Solutions promise to enhance flood control, sequester carbon, and strengthen community resilience to climatic hazards.



Study area. Map generated with ArcGIS

OVERVIEW

The study assessed flood risks and wetland restoration as a Nature-based Solution (NbS) to flood management in Kampala City. It specifically determined the impact of rainfall variability on flood trends over various time scales, analyzed the community's perception of the impact of Lubigi wetland restoration on flood management, and assessed the barriers hindering effective adoption of the various NbS practices on the wetland.

Disserted house due to frequent floods

POLICY RECOMMENDATIONS

1. **Integrate climate projections into policy decisions:** Climate models and rainfall projections guide policy planning, ensuring that flood management strategies are adaptive and evidence-based. This can help policymakers design adaptive, forward-looking flood management and land-use strategies.
2. **Integrate NbS into urban planning:** Incorporating wetland restoration, green spaces, and vegetation buffers into Kampala's urban development and flood management plans will enhance climate resilience to floods in the city.
3. **Strengthen institutional coordination:** Transparency, accountability, and monitoring mechanisms in environmental programs should be improved to minimize corruption and misuse of restoration funds.

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KEY FINDINGS

Rainfall variability on flood trends

The study showed that the number of wet days varies from the historical rainfall for both March-April-May (MAM) and September-October-November (SON) seasons, with the highest being two and three respectively. The historical Standard Precipitation Index showed years with extreme dryness (2017, 2018, & 2025) and severe wetness (2018 & 2020). The study projections shows that, in the near future, Kampala is likely to experience more rainy days in both seasons. This means the city will face a mix of very wet and very dry years, which could lead to flooding in some seasons and water shortages in others. The study found that there will be a significant difference in the wet days in SON in both SSP245 (low emission scenario where adaptation and emission reduction Is carried out) and SSP585 (high emission scenario which is business as usual).

The community's perception of Lubigi wetland restoration to flood management

The strengthening of wetland protection policies and the enforcement of pollution control wastewater management, combined with reforestation and vegetation regeneration, were regarded as effective flood management practices.

Barriers hindering effective adoption of NbS.

Corruption, socio-economic factors, and high restoration costs were the major barriers. Other key barriers to Lubigi wetland restoration included low levels of awareness, environmental and ecological barriers.

RESEARCH APPROACH

The study findings underscore the need for stronger policy enforcement, sustainable financing, and community engagement to enhance urban flood resilience through NbS. The study used rainfall data, a household survey (sample size: 204), two focus group discussions, and five key informant interviews.

CONCLUSION

The climate data analysis showed there will likely be an increase in floods in Kampala in the near future (2025-2035). The findings indicate that rainfall patterns in Kampala are becoming increasingly variable, with alternating periods of excessive and reduced rainfall. The projected rise in the number of wet days in the social shared economic pathways suggest greater rainfall intensity and frequency, which may heighten risks of flooding and drainage stress in urban areas. This emphasizes the need for enhanced urban climate adaptation strategies, particularly those focusing on improved water management, resilient infrastructure, and NbS to mitigate the impacts of extreme rainfall variability. Challenges such as corruption, socioeconomic constraints, and high restoration costs hinder the effective implementation of NbS. It is therefore essential to strengthen policy enforcement, community participation, and financial support mechanisms in order to enhance the success of wetland restoration and improve urban flood resilience.

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