



BERGEN SUMMER RESEARCH SCHOOL POLICY BRIEF | JUNE 2025

Nature-based Solutions to mitigate climate change in rapidly urbanising cities in Africa

This policy brief proposes the implementation of Nature-based Solutions to mitigate climate change and enhance the well-being of people in rapidly urbanising cities.

Recommendations

- Nature-based Solutions have been proven to work efficiently in several urban contexts, mitigating climate change and providing diverse co-benefits.
- Policymakers should prioritise these kinds of measures on the basis of political commitment and positive investment opportunities.
- Co-design with local communities and city officials is key to achieve innovative and successful solutions.

Key points

- Cities produce over 70% of global greenhouse gas emissions, and rapid urbanisation is leading to extreme heat, poor air quality, and rising social inequality.
- Without more green infrastructure, urban populations face increasing climate, social and health threats.
- The widespread adoption of Nature-based Solutions is a mitigation approach and practical way to improve climate resilience and urban well-being.

Introduction

Rapid population growth is reshaping cities worldwide, expanding built environments, and increasing pressure on land, resources, and public infrastructure. Over 70% of greenhouse gas (GHG) emissions are attributed to urban areas, and their contribution is expected to rise in the near future (IPCC, 2023). At the same time, urban populations face degraded air quality, heat stress, and declining green space, all of which exacerbate climate vulnerability and social inequality. Conventional infrastructure and planning approaches have proven inadequate to address these interlinked challenges, leaving cities increasingly exposed to climate change risks.

Nature-based Solutions (NbS) offer a transformative response by using natural proce-

sses to address climate and environmental challenges more effectively than conventional gray infrastructure. Urban forests, green roofs, vertical gardens, and climate-smart housing represent some examples of these climate mitigation tools, which also provide key co-benefits such as enhanced carbon sequestration, decreased urban temperatures, improvement of public health, biodiversity upgrading, and strengthened community resilience (FAO, 2022). However, despite their proven effectiveness, NbS remain underutilised in some urban contexts. Using an evidence-based approach, this policy brief argues that scaling up NbS in rapidly urbanising areas is both urgent and achievable. By doing so, cities can not only meet national climate targets but also create healthier and more appropriate environments for all.



Picture credits: Ethiopian Broadcasting Corporation

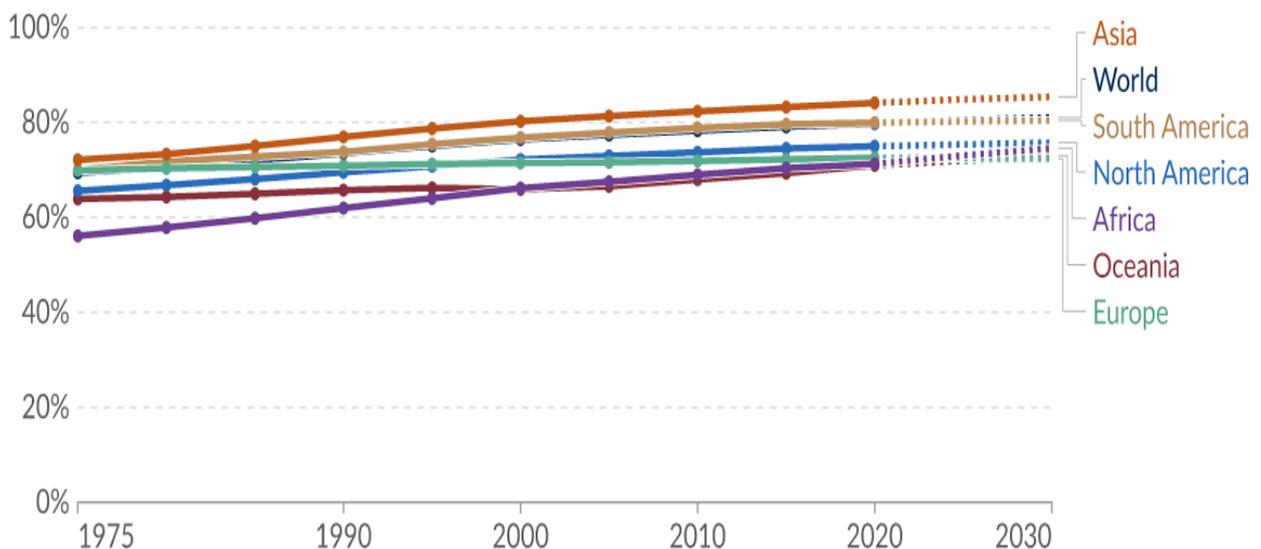


Figure 1. Evolution of the share of people living in urban areas. Source: <https://ourworldindata.org/grapher/urban-share-european-commission>

Analysis

As shown in Figure 1, Africa has experienced a steady increase in urbanisation, from 56% in 1975 to 70% in 2020, with potential growth towards 71% by 2030, reflecting rapid urban development.

In Ethiopia, Addis Ababa's urban forest has significantly deteriorated due to rapid urbanisation and population growth. Ranging from an estimated population of 2.6 million in 2000, the city currently has more than 5.7 million inhabitants, with more than a 4% population increase over the past three years (Macrotrends, 2025). This rapid urbanisation has led to a significant decrease in the forested land of the country, which merely accounts for 10% of the national land nowadays (UNA, 2021). Within this context, considering that urban forestation, such as the tree planting campaign, is broadly considered as one of the most effective strategies for climate change mitigation, the Ethiopian Government launched an historic tree planting campaign. This project, conducted in 2019, resulted in 350 million new trees planted in the country, representing an ambitious move to mitigate the effects of deforestation and climate change. After this successful initiative, the Ethiopian government aims to pursue further NbS by following its own path for development, which is significantly different from those followed by developed nations.

In a similar context, the rapidly urbanised city of Kigali (capital of Rwanda) also faces various urban development challenges. Approximately 27.9% of the population in Rwanda is currently living in urban areas, and these numbers are projected to increase to 70% by 2050 (Ministry of Environment, 2020). To address this growth, Kigali is constantly expanding at the expense of higher negative externalities related to environmental degradation, climate change, degraded ecosystem services, and increased urban heat islands. However, the city of Kigali has also shown a true commitment regarding the environment and ecological wetlands, promoting the restoration and expansion of urban forests within the city (Ministry of Environment, 2020). For example, the city's ecological wetlands are restored and conserved in places such as the Nyandungu Urban Eco-park. It must be noted that wetlands play a vital role in water filtration, flood mitigation, and supporting diverse plant and animal species, serving as a vehicle to promote sustainable development. In fact, this measure is justified to the extent that restoration of urban wetlands is considered as one of the most relevant NbS when contributing to global climate change mitigation and promoting carbon sequestration (UNA, 2024).



Picture credits: Rwanda Green Fund

Policy approach

After these successes in Ethiopia and Rwanda, evidence calls for more policy approaches based on NbS to mitigate climate change. However, these efficient processes and outcomes achieved in the Addis Ababa and Kigali cases also highlights the need for contextual, strategic, and tailored approaches for prioritising further opportunities in the Ethiopian context.

Firstly, there is a need to select suitable contexts for proposed solutions. Successful implementation is more likely to occur where there is political commitment as a government-owned initiative, and the ability to identify and engage stakeholders in support of the proposed NbS. Additionally, the ability to identify potential sources of funding, considering the cost of implementation and potential value creation, could help prioritise cities for implementation.

Secondly and following selection, there is a need to partner with city officials to secure funding for implementation of the solution. The Kigali experience recognises the important role of the community, employing a co-production approach for the redesign of public spaces. At the same time, city officials need to collaborate with urban designers and contractors to create, select, and approve urban designs that can overcome challenging systemic issues that could hinder progress as well as make recommendations to achieve the community visions.

Conclusions

Conventional urban growth is among the key drivers exacerbating climate change. Scaling up urban forestry through NbS is a critical and achievable strategy for mitigating climate change and enhancing urban well-being in rapidly urbanising cities like Addis Ababa and Kigali. By restoring and expanding urban forests, wetlands, and green infrastructure, these cities reduced GHG emissions while combating urban heat islands, improving air quality, and fostering biodiversity together with social equity and resilience.

The success of Ethiopia's historic tree-planting campaign and Rwanda's wetland restoration efforts evidence the transformative potential of these initiatives based in nature. Accordingly, policymakers must prioritise investment in urban forestry, drawing on local knowledge and regional experiences, to create sustainable, climate-resilient urban environments that align with national development goals and global climate commitments.

In any case, scaling up Ethiopia's and Rwanda's successful urban forestry and NbS practices to other urban areas requires a strategic and tailored context-sensitive approach that balances local needs with replicable frameworks. By combining strong policies, community engagement, diverse sources of funding, knowledge sharing, local adaptation, and rigorous monitoring, other urban areas can replicate and scale Addis Ababa's and Kigali's effective applications of NbS to mitigate the effects of climate change.

Further relevant SDGs



Relevant targets



Relevance to the 2030 Agenda

The brief supports the 2030 Agenda by promoting greener, more resilient cities that advance sustainable urban development, climate action, and public health. Nature-based solutions help cut emissions, lower heat, improve energy efficiency, and improve well-being in line with sustainable development global goals.

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