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ENABLING FUTURE-READY URBANIZATION IN FAST-GROWING CITIES WITH NATURE-BASED SOLUTIONS

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The United Nations Environmental Programme (UNEP) Copenhagen Climate Centre, a partner of the Danish Nature-based Solutions Knowledge Platform, hosted a one-day seminar [1,2]a and workshop addressing the role of Nature-based Solutions (NbS) for climate change mitigation and adaptation in rapidly urbanising cities. The seminar and workshop included examples from Europe, North America, Africa, and South America. They focused on the possible ways urban NbS can be a sustainable urban development and climate action tool and a propeller for inclusive and just urban design.

This policy brief builds on the technical discussions and inputs collected from experts during the seminar. It explores the topic of urban NbS by presenting complementary literature findings and insights from consulted stakeholders on strategies to overcome Nature-based Solutions' most predominant barriers in rapidly urbanising cities. The policy brief presents and discusses examples from Africa, Asia, and South America, as well as NbS value-added contribution to climate change mitigation and adaptation.

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a The event, "Building Resilient Cities: The role of urban nature-based solutions for climate change mitigation and adaptation," was hosted on June 26, 2024, by UNEP-CCC (Visit: https://unepccc.org/events/building-resilient-cities-the-role-of-urban-nature-based-solutions-for-climate-change-mitigation-and-adaptation. The outcome of the event can be accessed here: https://unepccc.org/unep-copenhagen-climate-centre-hosts-event-on-urban-nature-based-solutions/.)

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List of Abbreviations

COP	Conference of the Parties
GHG	Greenhouse gas emissions
IPCC	Intergovernmental Panel on Climate Change
LMIC	Low- and Middle-Income Country
M&E	Monitoring and Evaluation
NAP	National Adaptation Plan
NbS	Nature-based Solutions
NBSAP	National Biodiversity Strategy and Action Plans
NDC	Nationally Determined Contribution
SIDS	Small Island Developing States
UCAP	Urban Action Cooling Plan
UHI	Urban Heat Island
UN	United Nations
UNEP	United Nations Environmental Programme
UNEP-CCC	UNEP Copenhagen Climate Centre

Executive Summary

Climate change and rapid urbanisation challenge sustainable development and human well-being in the growing cities of low- and middle-income countries (LMICs).

Asia, Africa, and Latin America, in particular, are at the forefront of the world's urbanisation today, with several low- and middle-income cities in these regions poised to become the most populous in the following decades. However, the rapid pace of urbanisation and the compounding impacts of climate change can severely disrupt cities' abilities to address growing urban challenges.

Urban Nature-based Solutions (NbS) support sustainable development and climate resilience inside cities by leveraging nature to preserve and enhance ecosystem services to create natural buffers, protect urban infrastructures, and increase urban resilience against extreme weather events. Nevertheless, barriers to implementation persist and currently hinder the uptake and upscaling of urban NbS, particularly inside fast-growing cities in low- and middle-income countries.

Against this backdrop, this policy brief addresses (1) capacity, (2) policy and regulatory, and (3) financial barriers hindering municipal governments' abilities to plan and implement NbS at scale inside cities.

Based on stakeholder consultations and examples from rapidly growing cities, this publication makes the following recommendations for local government policymakers and urban stakeholders to overcome such barriers:

Recommendation 1: Close the NbS capacity gap.

To strengthen the NbS capacity in rapidly urbanising areas, municipal governments can:

- Establish cross-organisational structures to overcome the often-fragmented institutional arrangements related to NbS, such as an NbS officer in the municipal administration.
- Emphasise building a solid evidence base for NbS, including local knowledge, tools, and methods for climate data collection and Monitoring and Evaluation (M&E) systems, such as urban heat mapping.
- Engage in NbS knowledge and experience exchanges to ensure knowledge transfer and peer-to-peer learning on NbS, such as city-to-city exchanges (bilaterally or supported by city networks and alliances).

Recommendation 2: Enhance the NbS policy mix and establish regulatory clarity.

To enhance the NbS policy and regulations planning and implementation, municipal governments can:

- Mainstream NbS into key sector policies, such as building codes, land use plans, coastal management regulations, disaster risk management, and planning, such as cities' climate action plans.
- Downscale and translate the implications for NbS from national-level policies to the local level, for example, National Adaptation Plans (NAP) or National Biodiversity Strategy and Action Plans (NBSAPs).

Recommendation 3: Address the finance gap

To attract the much-needed funds for upscaling NbS, municipal governments can:

- Learn from, leverage, and pilot available revenue-generation NbS models, and when possible, test such models with value-capture arrangements that increase the attractiveness of NbS for private investors (e.g., pension funds, banks, private citizens, etc.) via, for example, ecotourism user fees or betterment levies.
- Employ innovative financial instruments that can improve the risk-return profiles of NbS by strategically using public funds to address financial barriers, such as blended finance approaches.

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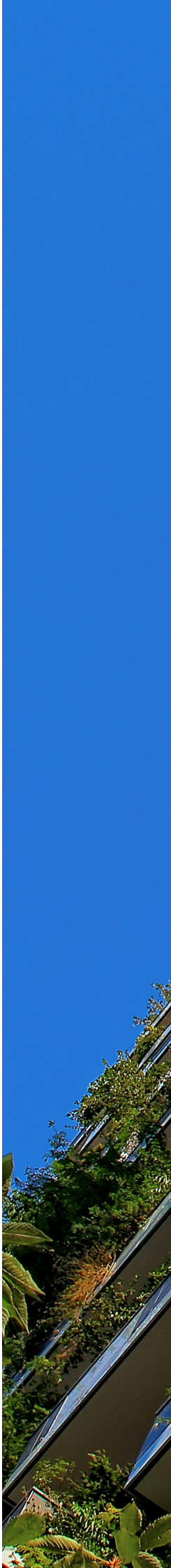

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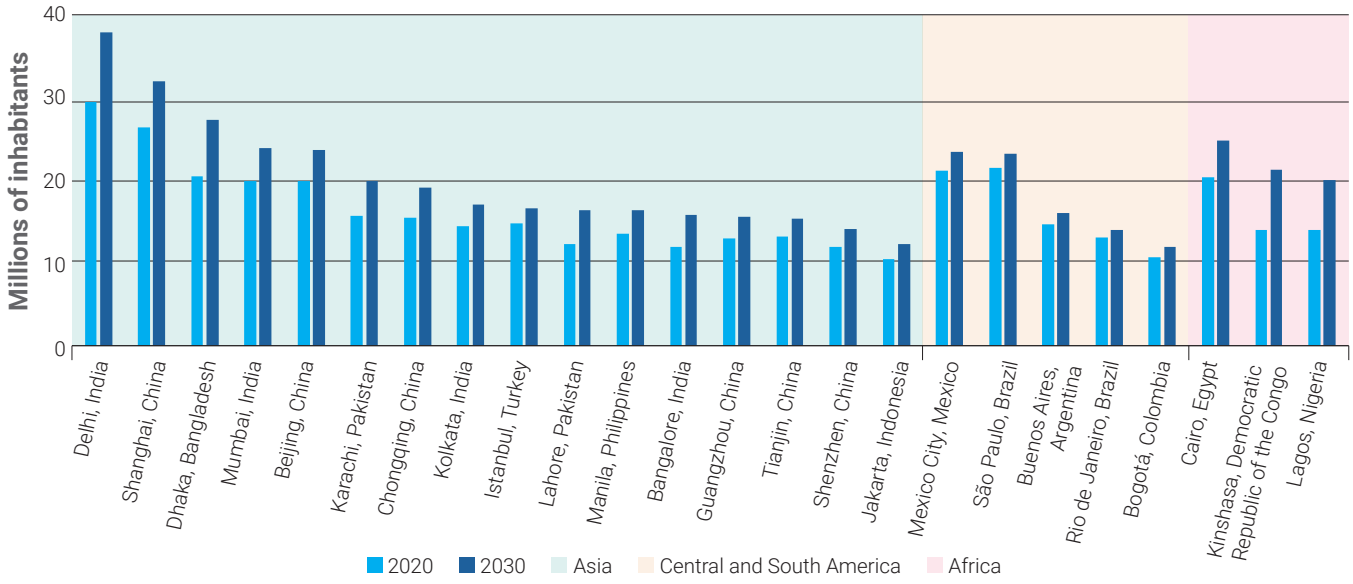
1 Introduction

Climate change and rapid urbanisation challenge sustainable development in fast-growing cities in low- and middle-income countries [3].

As cities in LMICs grow, food systems, the transport sector, energy, and healthcare systems are under increasing pressure to deliver their services to the population [4], potentially increasing social inequalities and leading to growing informal settlements, environmental degradation, and reduced human well-being [4,5].

Globally, the urban population grew by more than 397 million inhabitants between 2015 and 2020, with over 90 per cent of this growth occurring in LMICs, a trend projected to continue in the following decades [5] (see Figure 1).

Figure 1: Projected Population Growth in LMIC Cities from 2020 to 2030 per region.



Urbanisation trends

The African and Asian continents are leading the urbanisation frontier at a rapid pace [6]. The proportion of urban inhabitants in both regions increased by 1.3 (Africa) and 1.1 (Asia) per cent, respectively, between 2015 and 2020 [6]. Latin America is not lagging too far behind. Approximately 80 per cent of the region's inhabitants reside in urban areas [7], with São Paulo, Mexico City, Buenos Aires, Rio de Janeiro, Bogotá, Lima, Santiago, Belo Horizonte, Guadalajara, and Monterrey leading as the ten most populous cities in the region [8].

What is observed in Latin America, but is not unique to the region, is that rapid populational increase continues to impact socio-economic dynamics between rural and urban areas, specifically in terms of migration, supply and availability of goods and services, and access to opportunities (e.g., higher education, employment, etc.). Another critical factor observed in Brazil and Peru, but that applies to other countries experiencing a steep rise in urbanisation, is that the pattern of real estate development adds pressure to the natural environment in and around urban areas, which enhances the dispute over the occupation of green areas [9].

Compounding climate impacts in rapidly urbanising regions

In many rapidly growing cities of LMICs, mounting climate hazards and extreme weather events paired with the increasing exposure of urban populations contribute to a high climate-risk environment [5].

Many of the world's growing cities are coastal, and the climate crisis will particularly affect urban communities living in low-lying coastal zones. Indeed, hundreds of the world's most populated cities are projected to face increased coastal flooding and its associated impacts by the middle of this century [10]. Coastal flooding could mean that as many as 73 million people living in coastal areas will be impacted by the expanding floodplains by 2100, representing roughly 5 per cent of the population of the world's coastal cities, such as Santos, Brazil, Cotonou, Benin, and Kolkata, India [10]. As floodplains expand and forcibly alter the urban landscape, Latin America and the Caribbean, East Asia and the Pacific, and Small Island Developing States (SIDS) are at the forefront of land erosion and loss of critical infrastructure [10].

As the climate crisis evolves, extreme weather events will increasingly place substantial financial burdens on urban services and infrastructure. Extreme weather events are also projected to exacerbate the climate-induced losses and damage experienced by various key sectors in the urban economy [11,12].

Another critical factor to consider is that the rise in global temperatures and the effect inside cities mean that greenhouse gas (GHG) emissions from increased energy consumption for cooling technologies are also projected to increase [13, 14]. Growing surface and air temperatures inside cities in LMICs continue to break records, and urban heat islands (UHI) are projected to become a more frequent aspect of city life [15], particularly in a scenario where current policies put the world on a trajectory for 3.1°C of warming over this century [16].

Nature-based Solutions as part of the remedy

The Intergovernmental Panel on Climate Change (IPCC) notes that approximately 3.3 to 3.6 billion people are highly vulnerable to climate change, underscoring the dire need for mitigation and adaptation planning and implementation at the local level. Urban NbS [17][b] can offer cities cost-effective measures that combine climate change adaptation and mitigation and can simultaneously provide social, economic, and environmental co-benefits [18]. They can support climate-ready urban planning and be combined it with traditional grey urban infrastructure [19][c]. Figure 2 presents some options for Urban NbS that cities can implement.

São Paulo, Brazil
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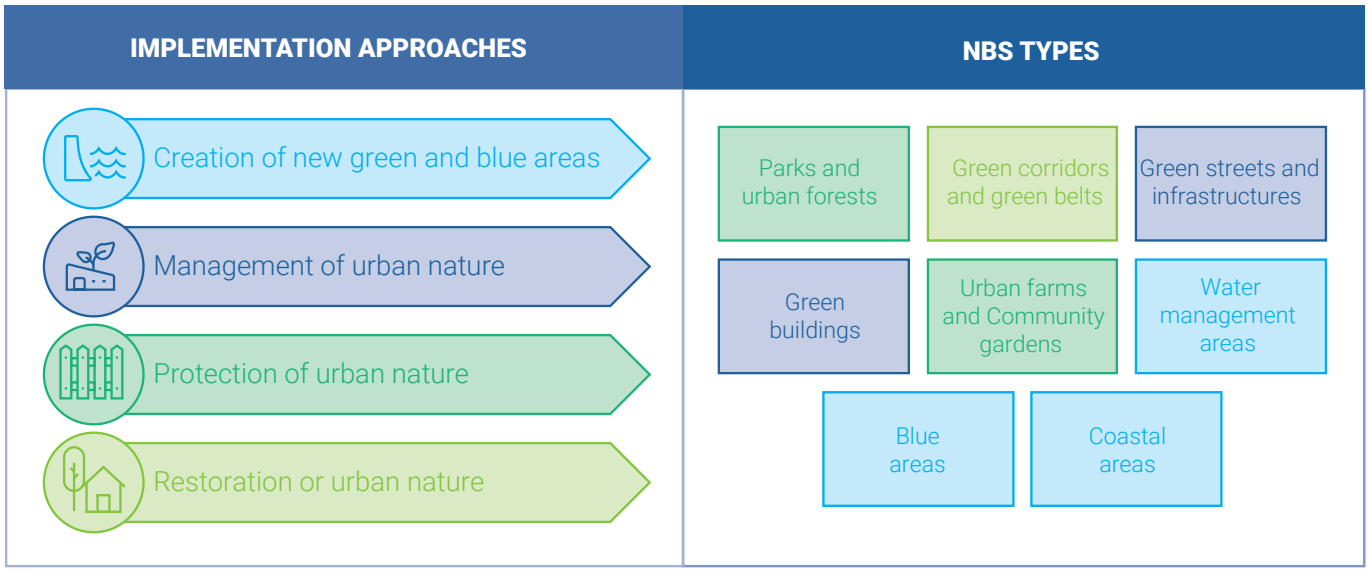
b In referring to NbS, we follow the following terminology adopted by the United Nations Environment Assembly of the United Nations Environment Programme (UNEA) Resolution on Nature-based Solutions: "*Nature-based Solutions are actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human wellbeing, ecosystem services and resilience and biodiversity benefits*" (see here)

c According to the IPCC's definition, grey infrastructure is "engineered physical components and networks of pipes, wires, tracks, and roads that underpin energy, transport, communications (including digital), built form, water and sanitation and solid waste management systems" (see IPCC Glossary).

Figure 2: Implementation approaches for urban Nature-based Solutions and types of NbS infrastructures available for cities



Source: Author's own design

NbS can support sustainable development in LMIC cities by working with nature to preserve and enhance ecosystem services to create natural buffers and protect urban infrastructure. Moreover, implementing NbS can enhance cities' overall resilience to the impacts of climate change in the long run and be a key element in cities' disaster risk reduction strategies [20]. NbS can also complement adaptation efforts by leveraging ecosystem services, for example, for flood risk mitigation, temperature regulation, or coastal protection. Urban NbS can contribute to reducing GHG emissions through energy savings and carbon sequestration [21].

Barriers persist and hinder Nature-based Solutions' uptake

Despite their benefits, NbS implementation has yet to reach its potential in LMIC cities, and various barriers must be overcome.

The reasons for the slow uptake of NbS are complex and multi-faceted. Cities frequently report on several **capacity, regulatory, policy, and finance barriers** that hinder the upscaling and uptake of NbS, often complicated by cities' rapid growth[d].

Against this background, this policy brief first identifies three major NbS barriers and then recommends concrete actions to overcome them and help upscale NbS in rapidly growing cities in LMICs. The recommendations are based on literature analyses, stakeholder consultations, expert inputs, and examples from rapidly growing cities, tailored to inform policymakers and urban stakeholders.

d This was discussed with consulted stakeholders during the author's research.

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2 Overcoming barriers to Nature-based Solutions in fast-growing cities

This section presents three predominant barriers NbS face inside cities, particularly in LMICs, and offers recommendations for local government stakeholders on possible ways to overcome them.

2.1 Address knowledge and capacity gaps

In the LMICs, rapidly growing cities face widening capacity gaps[e] related to using NbS for climate adaptation and mitigation. In many ways, the sheer pace of urbanisation and the compounding impacts of climate change can outpace cities' current policies, resources, and capabilities to address growing urban challenges, complicating effective environmental management and hindering the uptake of NbS.

Given this capacity barrier, it is particularly challenging for smaller, fast-growing cities in LMICs [22] to plan and implement NbS. In general terms, urban planners and municipal stakeholders willing to promote and implement NbS face a plethora of growing challenges, including climate data limitations [23] and difficulties in coordinating across different policy domains and local actors[f].

Knowledge and Capacity Barrier 1: Lack of municipal coordination on NbS. In many places, local-level institutional arrangements for climate change are generally scattered across several public offices, making transparent and efficient collaboration challenging, particularly for NbS, which cuts across policy domains[g]. As such, strengthening institutional arrangements for climate change inside local government offices is a key first step that can support and enable a consolidated effort regarding nature's role in supporting climate efforts. By establishing cross-organisational structures to overcome the fragmentation of institutional arrangements related to NbS, knowledge and capacity barriers can be better identified and overcome.

Knowledge and Capacity Barrier 2: Lack of awareness and capacity on planning and implementing urban NbS. Persisting capacity barriers are deeply related to a lack of awareness and understanding from local stakeholders on how to plan and implement urban NbS. Moreover, LMIC cities gain a great deal from developing pilot projects and learning from tried and tested tools and methodologies for NbS projects. These pilot projects allow cities to build expertise and know-how, particularly when mapping urban vulnerabilities and using NbS as a complementary tool to mitigate climate impact and obtain co-benefits[h]. For example, in the case of Brazil and

e By capacity gap, we refer to data, policy design, implementation strategy, technology, information access, governance, and knowledge limitations experienced by cities concerning mainstreaming climate change into more comprehensive urban policy, particularly in relation to planning for and implementing NbS.

f This point was discussed during the Urban NbS Workshop hosted at the UNEP Copenhagen Climate Centre and reiterated in the stakeholder consultations.

g ICLEI's South Asia Biodiversity Lead, Monalisa Sen, offered this point during consultations with the authors.

h This point was shared by Luiza Azeredo, an urban development analyst at WRI Brazil, who works in the Rio Grande do Sul office and was engaged in WRI's NbS Accelerator program, which ended in 2023 and supported ten cities in the country with capacity-building development on NbS.

India[i], municipalities have a growing interest in developing and enhancing expertise in planning and implementing urban NbS. Often, what drives the interest of municipalities in these two countries to build on capacity around urban NbS is related to the climate adaptation benefits and societal gains (e.g., human health and well-being), as well as other co-benefits that can be achieved (e.g., decrease in air pollution)[j,k].

Knowledge and Capacity Barrier 3: Lack of translatable examples of successful NbS in LMIC cities experiencing both climate stressors and urbanisation challenges. The NbS capacity gap can be further narrowed by knowledge and experience exchanges between cities. City-to-city exchanges are powerful tools for knowledge transfer and peer-to-peer learning on NbS across South-to-South, South-to-North, and vice-versa. For example, capacity building on urban NbS and climate-sensitive urban planning is one of the components of the ongoing collaboration between the city of São Paulo and the City of Copenhagen [24][l].

Table 1 condenses the underlying capacity barriers and lists recommendations based on discussions with consulted stakeholders.

Table 1: NbS knowledge and capacity barriers and recommendations to overcome them

NbS Knowledge and Capacity Barriers	Recommendations
Fragmented local-level institutional arrangements for climate change make transparent and efficient collaboration challenging, particularly for NbS, which cut across policy domains[12].	Establish cross-organisational structures to overcome the fragmentation of institutional arrangements related to NbS, such as an NbS officer in the municipal administration.
Lack of awareness and understanding from local government stakeholders on how to plan and implement urban NbS[13].	Emphasise building a solid evidence base for NbS, including local knowledge, tools, and methods for climate data collection and M&E systems, such as urban heat mapping.
Lack of translatable examples of successful NbS implementation in LMIC cities experiencing climate stressors and urbanisation challenges.	Engage in NbS knowledge and experience exchanges to ensure knowledge transfer and peer-to-peer learning on NbS, such as city-to-city exchanges (e.g., South to South/Noth-to South/ South-to-North, etc.).

i These insights were shared with the author during consultations with Monalisa Sen from ICLEI's South Asia Office.

j This point was shared by Luiza Azeredo, an urban development analyst at WRI Brazil, who works in the Rio Grande do Sul office and was engaged in WRI's NbS Accelerator program, which ended in 2023 and supported ten cities in the country with capacity-building development on NbS.

k Marina Marçal, C40's Head of City Diplomacy and Advocacy offered this perspective during consultations with the authors.

l The ongoing collaboration has four axes: climate adaptation and urban nature, waste and resource management, energy efficiency in municipal buildings, and green jobs and skills. More details regarding the partnership between the two cities can be accessed here (In Danish): https://via.ritzau.dk/pressemeddelelse/13975530/kobenhavn-indgar-samarbejde-med-en-af-verdens-storste-byer?publisherId=13559194&lang=da for more information.

m This was shared by ICLEI's South Asia Biodiversity Lead, Monalisa Sen, during consultations.

n This point was shared by Luiza Azeredo, an urban development analyst at WRI Brazil, who works in the Rio Grande do Sul office and was engaged in WRI's NbS Accelerator program, which ended in 2023 and supported ten cities in the country with capacity-building development on NbS.

2.2 Focus on enhancing policy and regulation

A lack of policy integration and NbS-specific regulations are other significant barriers hindering urban NbS uptake in LMIC cities [25]. Policy and regulatory frameworks that fail to define how NbS can support climate efforts in cities can create an unstable and fragmented setting where municipal strategies and mandates are subject to political agendas and shifting priorities.

Policy and Regulation Barrier 1: Difficulty for policymakers to exploit the NbS synergies between policy domains with complementary objectives. It can be challenging for local governments to exploit the synergies between policy domains with complementary objectives, mainly due to potential trade-offs and compromises [26,27]. This difficulty is a severe barrier to NbS inside LMIC cities and beyond, especially as NbS offer various benefits (e.g., disaster risk reduction, human health gains, urban heat mitigation, etc.) that are often niched under different policy domains inside local governments. Mainstreaming NbS into key sector policies, such as building codes, land use plans, coastal management regulations, disaster risk management, and planning, such as cities' climate action plans, can help overcome policy and regulatory barriers. Moreover, such mainstreaming can enhance the chances that urban NbS are applied consistently, monitored, measured, and reported inside cities. Having quantitative and measurable data on urban NbS inside LMIC cities is paramount for policymakers to pursue funding, strategise NbS scalability, assess impacts, and review strategies [28].

For example, some Brazilian cities such as Goiânia (Goiás), Canoas (Rio Grande do Sul), Recife (Pernambuco), Salvador (Bahia), and Guarulhos (São Paulo) have established laws on urban greening, especially green roofs, permeable areas, water harvesting, and tree planting [29]. The existence of such laws makes the interweaving of NbS and the standardisation of its practices and methodologies consistently applied at the city level.

Policy and Regulation Barrier 2: Lack of coordination between national and local policies on NbS. Downscaling and translating implications for NbS from national-level policies to the local level, such as the National Adaptation Plan (NAP) or National Biodiversity Strategy and Action Plans (NBSAPs), can be a powerful tool to overcome policy barriers. An alignment of national and local strategies regarding climate change can support mainstreaming NbS into city-level governance, thus facilitating the removal of predominant policy and regulatory barriers NbS face.

In South Asia, specifically India, Bangladesh, and Nepal, what can be observed is that although specific frameworks for planning and implementing NbS have not yet been developed, the growing set of national policies, guidelines, and laws that are "NbS-friendly" is tangible – meaning that the mainstreaming of NbS is into these frameworks is eased and, in some cases, already underway in several strategies [28][o]. For example, Kochi, India, has developed a municipal board with green and blue infrastructure. This effort is aligned with the Ministry of Urban Development's revised 2015 guidelines, which makes it obligatory for cities to factor green and blue infrastructure, ecosystem-based approaches, and integration of resilience measures within urban land use and planning [30].

Viet Nam has committed to the Global Cooling Pledge launched by the Conference of the Parties (COP) 28 Presidency in 2023 with the United Nations Environmental Programme (UNEP) Cool Coalition [31]. Under the momentum built at the country's national level, for example, sustainable cooling as part of the updated nationally determined contributions (NDC) in 2022 [32], the city of Can Tho was selected as one of the pilot cities for deploying an urban cooling action plan (UCAP). Can Tho integrated NbS into its implementation, particularly to address the UHI effect. The city is taking steps intentionally to mainstream NbS into the UCAP via the expansion of green roofs, green corridors, urban parks, rain gardens, and urban wetland restoration.

o This was discussed with Monalisa Sen, Associate Director and Biodiversity lead of ICLEI South Asia's Office and more information can be accessed here: https://cdkn.org/sites/default/files/2022-11/NbS%20Compendium_Nov%202022_final_web.pdf

Table 2 condenses the underlying capacity barriers and lists recommendations based on discussions with consulted stakeholders.

Table 2: NbS policy and regulatory barriers and recommendations to overcome them

NbS Policy and Regulatory Barriers	Recommendations
Difficulties for policymakers is exploiting the NbS synergies between policy domains with complementary objectives.	Mainstream NbS into key sector policies, such as building codes, land use plans, coastal management regulations, disaster risk management, and planning, for example, cities' climate action plans.
Lack of coordination between national and local level policies on NbS.	When feasible, downscale and translate implications for NbS from national-level policies to the local level, for example, from NAPs or NBSAPs.

2.3 Tackle financial barriers

Financial barriers are a leading cause of limited NbS uptake and upscaling, especially in cities where NbS remain drastically underfinanced [23]. The current finance flow to NbS, dominated by the public sector, is approximately US$200 billion [33]. This amount is only a third of the levels needed to reach climate, biodiversity, and land degradation targets by 2030, with a lack of private finance accounting for a significant share [33]. While the importance of mobilising this private finance for NbS has been long recognised, progress has been slow as the market for NbS remains underdeveloped despite evidence that NbS are typically cost-effective [24]. The situation is particularly problematic for cities where the scale of NbS projects is often too small to attract significant private investments [34].

Financial Barrier 1: Fragmented indirect benefits. The social, environmental, and economic benefits of NbS are distributed across several actors and groups, making it difficult for investors to gain sufficient direct benefits from NbS [35]. The barrier can be addressed by developing and adopting revenue-generating NbS business models with value-capture arrangements, which requires structuring and presenting NbS regarding value proposition, delivery, and capture. For example, leveraging entrance fees and proceeds from ecotourism in Kalibo, Philippines, have helped to realise the Bakhawan Eco-Park, which afforested mangroves on an area of 220 hectares [36].

Financial Barrier 2: Complex valuation and monetisation around NbS. Despite recent advances in valuation methodologies, many valuation strategies still do not fully integrate NbS benefits (e.g., public health, biodiversity, or nutrient regulation, which negatively affects investment decisions) [35]. This barrier can be addressed by conducting ecosystem evaluations that elicit the value of ecosystem services from those who benefit from it. For example, a study finds that Zambian farmers are willing to accept 40 US$ per year per acre as an ecosystem service payment that would compensate for the opportunity costs of alternative land uses like deforestation [37].

Financial Barrier 3: Uncertain nature returns under climate change. NbS depend on the provision of ecosystem services, which can be rendered ineffective under high-end climate change scenarios. In other words, long-term investments in NbS are challenging due to uncertainties related to future climate impacts on natural systems [38]. For example, coral restoration can serve as an effective coastal protection measure while enhancing marine biodiversity. However, increasing ocean temperature and acidification put the long-term survival of corals at risk and, hence, question their effectiveness [39]. This barrier can be addressed by leveraging guarantees to design NbS business models.

Financial Barrier 4: Long lead-up periods. Ecosystem provisions tend to develop over a long time, for example, latent sequestration of GHG in an urban forest or robust coastal resilience via mangrove afforestation and reforestation. As a result, NbS yields operate on a medium to long-term timeframe, providing a few private investment-friendly short-term returns [40]. This barrier can be addressed by applying innovative financial instruments (see Barrier 5).

Financial Barrier 5: Small-scale NbS projects. When NbS are small-scale, investment decisions are further complicated by high transaction costs, such as high due diligence costs, which can render NbS an unattractive investment option [23]. Bundling projects can also be complicated, increasing institutional funders' transaction costs. This barrier and Barrier 4 can be addressed by applying innovative financial instruments that can improve the risk-return profiles of NbS by strategically deploying public funds and, thus, supporting the upscaling of NbS. For example, blended finance approaches have proven effective in selected cases like the debt-for-nature swaps in the Seychelles.

Table 3: NbS financial barriers and recommendations to overcome them

Financial Barriers	Recommendations
Lack of NbS attractiveness for private sector finance (Barrier 1) Poor economic valuation and monetisation of NbS (Barrier 2)	Learn from, leverage, and pilot available revenue-generation NbS models, and when possible, test such models with value-capture arrangements that increase the attractiveness of NbS for private investors (e.g., pension funds, banks, private citizens, etc.) via ecotourism user fees or betterment levies.
Uncertainties and risks related to financing NbS and expected returns over time (Barriers 3, 4, and 5)	Employ innovative financial instruments that can improve the risk-return profiles of NbS by strategically using public funds to address financial barriers, such as blended finance approaches.

Mangrove forest, Indonesia
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3 Conclusion

This brief addressed the most predominant barriers impeding the uptake and upscale of NbS at the city level in LMICs, providing three key recommendations for how local stakeholders in growing cities of the Global South can address them, namely:

Recommendation 1: Close the NbS capacity gap faced by municipalities

To strengthen NbS capacity in rapidly urbanising areas, municipal local governments can:

i. Establish cross-organisational structures to overcome the often-fragmented institutional arrangements related to NbS, such as an NbS officer in the municipal administration.

ii. Emphasise building a solid evidence base for NbS, including local knowledge, tools, and methods for climate data collection and M&E systems, such as urban heat mapping.

iii. Engage in NbS knowledge and experience exchanges to ensure knowledge transfer and peer-to-peer learning on NbS, such as city-to-city exchanges (bilaterally or supported by city networks and alliances).

Recommendation 2: Enhance the NbS policy mix and establish regulatory clarity.

To enhance NbS policy and regulations planning and implementation, municipal local governments can:

i. Mainstream NbS into key sector policies, such as building codes, land use plans, coastal management regulations, disaster risk management, and planning, such as cities' climate action plans.

ii. Downscale and translate implications for NbS from national-level policies to the local level, such as from NAP or NBSAPs.

Recommendation 3: Address the Finance Gap

To attract the much-needed funds for upscaling NbS, municipal local governments can:

i. Learn from, leverage, and pilot available revenue-generation NbS models, and when possible, test such models with value-capture arrangements that increase the attractiveness of NbS for private investors (e.g., pension funds, banks, private citizens, etc.) via, for example, ecotourism user fees or betterment levies.

ii. Employ innovative financial instruments that can improve the risk-return profiles of NbS by strategically using public funds to address financial barriers, such as blended finance approaches.

UNEP and UNEP-Copenhagen Climate Centre's current initiatives seek to support local governments and stakeholders in overcoming the predominant barriers hindering NbS listed in this publication. The recommendations proposed in this brief are aligned with the work done by UNEP [23][p], particularly because their work supports cities in planning and implementing urban NbS.

UNEP-CCC is working particularly on leveraging finance mechanisms for NbS and supporting attractive and bankable NbS business models in growing cities [42]. An example is UNEP-CCC's work in Mauritius, Zambia, and India, which targets capacity-building components to support local governments in addressing existing capacity barriers that hinder much of the decision-making regarding adopting and scaling NbS inside urban areas [42].

Moreover, UNEP's ongoing Generation Restoration Cities [43][q] and Urban Shift efforts address cities' political, technical, and financial barriers. They are part of the United Nations (UN) Decade on Ecosystem Restoration [43] and the Global Biodiversity Framework [44].

p See UNEP's From Grey to Green: The publication provided baseline data produced under the Urban NbS Expenditure Framework that is key to supporting cities as they seek to overcome financial barriers in scaling NbS.

q Visit https://www.decadeonrestoration.org/generation-restoration-cities to read more about the ongoing progress of this initiative.

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