Energy Efficiency and Nature-based Solutions: Unlocking greener cities via targeted policy and regulation.

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Impact Assessment and Adaptation Analysis
UNEP Copenhagen Climate Centre

E-Training Program on Energy Efficiency in Buildings in Zambia & Mauritius - June 2025

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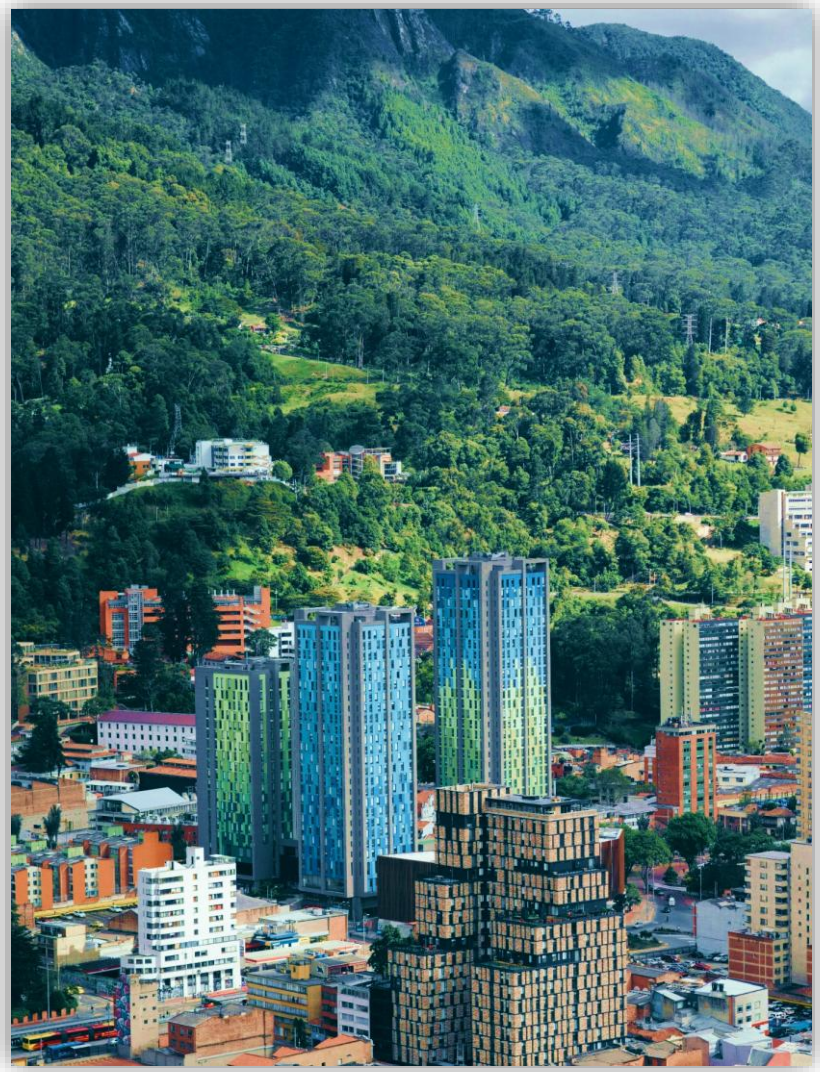
Why Urban Nature-based Solutions?

"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.**"

UNITED NATIONS ENVIRONMENT ASSEMBLY 5.2, 2022

NbS can deliver a range of benefits when implemented in buildings and planned at scale:

- **Thermal comfort**
- **Energy saving**
- **Decreased UHI**
- **Decrease in GHG emissions**
- **Biodiversity gains (pollinators)**
- **Increase in human well-being**
- +++ it can be connected with rainwater harvesting infrastructure and be used to produce food inside cities.

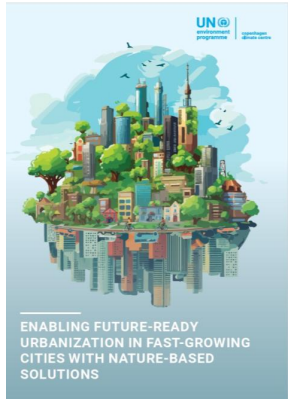


Heat Islands

Port Louis

Landsat 8 thermal band-derived mean land surface temperature map during Dec 2024 – Mar 2025

(Produced by IMPACT Initiatives, 2025)



Main Barriers Faced by Urban NbS

CAPACITY BARRIERS

- Fragmented institutional arrangements at the local level
- Lack of capacity and awareness, understanding
- Lack of translatable examples

REGULATORY & POLICY BARRIERS

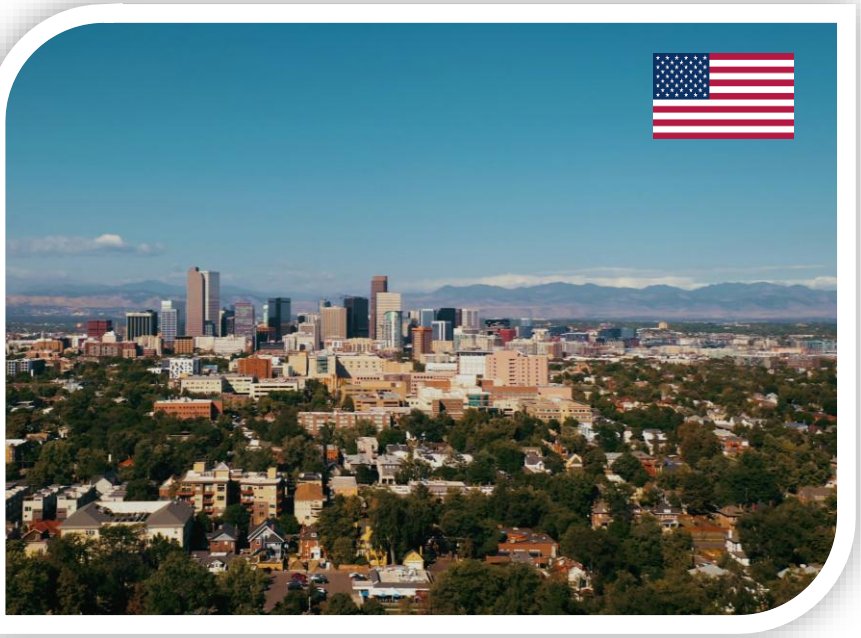
- Difficulties in exploiting the NbS synergies between policy domains
- Lack of coordination between national and local level policies on NbS.

FINANCIAL BARRIERS

- Lack of NbS attractiveness for private sector finance
- Poor economic valuation and monetization of NbS
- Uncertainties and risks related to financing NbS and expected returns over time

Policy work is often not a straightforward process . . .

Denver, Colorado. USA



Green Buildings Ordinance of 2018:

The Law requires that all new buildings of 2,322.58 square meters or larger have reflective, light-colored covering on the roof or portions of the roof, and must also do one of the following:

- ✓ install a green roof or solar panels;
- ✓ achieve LEED gold standard;
- ✓ purchase renewable energy; or
- ✓ pay a per-square-foot fee.

A green roof ordinance was initially passed in 2017 but was altered in 2018 due to difficulties with the green roof mandate.

What makes the perfect enabling environment for EE and NbS?

APPROPRIATE URBAN PLANNING STRATEGIES

Example: Singapore's Green Building Masterplan encourages the integration of greenery into urban developments, including green roofs and vertical gardens, or China's Sponge Cities.

+ Bonus points: Alignment with local climate plans, local adaptation plans, and others, or nationally appropriate mitigation actions (NAMAs), NDCs, or via National Decarbonization Plans (Costa Rica makes provision for reducing energy consumption in new buildings (including commercial, residential, and public) to use energy created from renewable sources.

LEGISLATIVE SUPPORT

See examples from Denver, Basel, and Córdoba.

+ Bons points: Alignment with national laws and regulations

ROBUST CONSTRUCTION STANDARDS AND BUILDING CODES THAT ARE STRENGTHENED OVER TIME

See an example from South Africa.

+ Bonus points: Mandatory and not simply voluntary

AVAILABILITY OF DIVERSE FINANCING MECHANISMS

Example: Financial incentives from the private sector that offset the costs of green roof installation

Example: Financial burden sharing strategies via PPPs.

Place-specific NbS, **such as green roofs and vertical facades**, offer several co-benefits, making them an attractive add-on to **energy efficiency infrastructures in buildings**.

EXAMPLE: Basel's Building and Construction Law

Mandates green roofs on all new flat-roof buildings.

- Reduce energy consumption, lower urban heat, cut runoff by 20%, and support over 175 plant and 120 insect species.
- Supported by national subsidies and biodiversity guidelines
- Roofs use local soil and native plants, attracting and protecting local biodiversity (currently: 175 plant and 120 insect species).

+ As of 2002, Green roofs are required on all new and renovated flat roofs.

How can it be done? *More Practical examples*

South Africa
Johannesburg has set requirements for energy efficiency and building decarbonization that are stricter than national requirements or set the cities on an accelerated pathway to net-zero carbon buildings

Brazil
The city of Recife (PE) signed a law (2015) making green roofs mandatory for residential buildings with more than 4 floors. It also provides for the construction of rainwater harvesting tanks in new residential and commercial properties with a floor area of more than 500 m^2 and 25% of the land waterproofed.

Argentina
The city of Cordoba, passed a bylaw requiring all buildings – new or existing – with rooftop space of 400 square metres or more to be turned into green roofs.

Senegal
Senegal's Climate Action Roadmap for Buildings and Construction (Oct 2024) links nature-based solutions with energy efficiency, promoting passive cooling, bio-sourced materials, and solar integration for low-carbon buildings by 2050.

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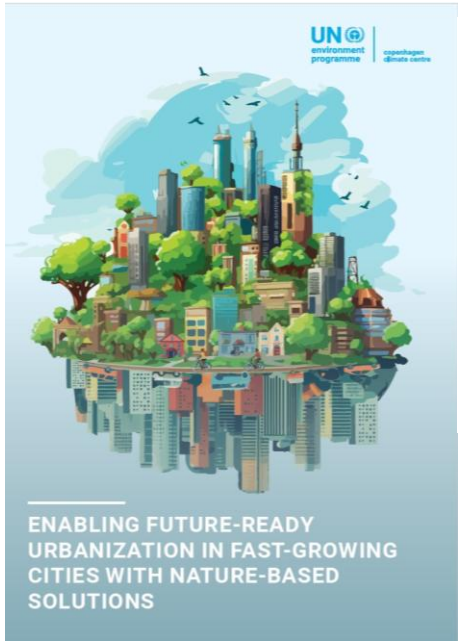
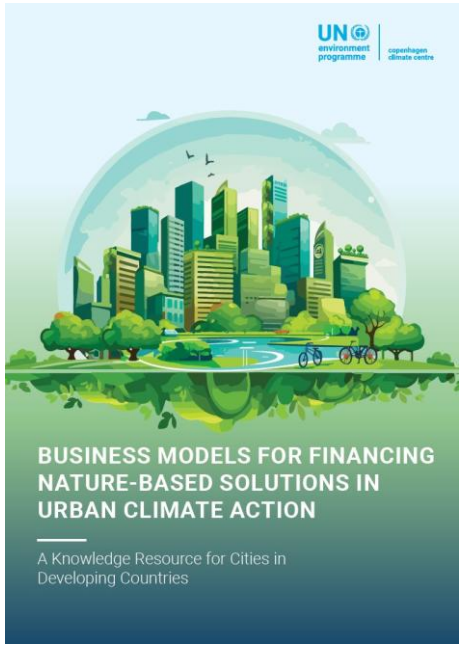
Interested in learning more about Nature-based Solutions?





. . . And UNEP-CCC's **incoming "Towards implementing urban Nature-based Solutions in Zambia and Mauritius",** launching on the 9th of June 2025.

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Thank you!

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