



Urban Biodiversity

UN-Habitat's

Expertise and Work on Urban Biodiversity

KEY MESSAGES

1. Biodiversity extends from the microscopic scale of genes to the macroscopic scale of ecosystems. As similarly complex systems cities have the most interaction with ecosystemic scale, and can bridge anthropological and biological knowledge.
2. Land use change is the main driver of biodiversity loss. Even where its initial purpose is the creation of agricultural land, its frequent devaluation often paves the way for a secondary conversion to human settlements, which are far more difficult and expensive to retrofit.
3. Cities must protect their natural surroundings to avoid further loss and ensure ecosystem services (e.g. water provision) and quality of life for the future. Urban and territorial planning are critical tools for achieving this.
4. Sprawl and segregation are highly detrimental to humans and non-humans. It is critical to anticipate and avoid land use change that fragments the landscape. Projection, scenario modeling, and prioritization tools can be very useful.
5. As cities preserve and conserve ecosystems, especially at their periurban interface, they must also restore already- degraded green and blue spaces and create new ones within their existing built footprint.
6. Ecosystems, particularly watersheds, often span many political jurisdictions. Rivers often constitute administrative boundaries between territories. Effective landscape management therefore requires political will and careful coordination between two or more jurisdictions.
7. Where biodiversity may not constitute a political or thematic entry point per se, cities can still link to and approach it through related issues of the 2030 agenda, e.g. climate change, public health, food security, green jobs, and disaster risk reduction.
8. As sites of co-habitation, cities should promote empathy for the wellbeing of others; people in other places and times (i.e. future generations) and other species. Greater empathy can be the foundation for solidarity around averting a sixth extinction event.

RATIONALE

Ecosystem restoration cannot keep up with the pace of destruction. While cities continue to green existing spaces they must proactively avoid further ecosystem loss wherever they are expanding.

Natural and built environments have always been inextricably interlinked. They are neither binary nor static, frontier between the two shifting due to rapid land use conversion; the biggest driver of biodiversity loss. Green and blue spaces in cities may

be more or less, and the material flows moving through cities may come from and go near or far. Promoting and achieving a healthier interface between them means not just focusing on quick, visible wins such as street trees and public parks, but also longer term, hidden risks, including preventative measures to avoid loss and accounting for impacts on other spaces and times. Urban biodiversity both affects and is affected by climate change and pollution; the

other two prongs of the triple planetary crisis. Responding effectively to its degradation and loss requires both planning and management along the full spectrum of creation, restoration, conservation, and preservation. Equally important is the management of blue and green spaces, whether through urban forestry, community gardens, commercial agriculture, or park maintenance; the requisite stewardship for which can also support sustainable livelihoods.

MANDATE & KEY GLOBAL FRAMEWORKS



UN Habitat Assembly Resolution HSP/HA.2/Res.4

Biodiverse and Resilient Cities: Mainstreaming Biodiversity and Ecosystem Services into Urban and Territorial Planning



UN Common Approach to Biodiversity

Action #10: improve the quality of urbanization and limit encroachment



Kunming-Montréal Global Biodiversity Framework

Targets 1, 2, 10, and 12



New Urban Agenda

¶69 'promoting sustainable land use, combining urban extensions with adequate densities and compactness to prevent and contain urban sprawl, as well as preventing unnecessary land-use change and the loss of productive land and fragile and important ecosystems)



2030 Agenda for Sustainable Development and Decade of Action

Targets 11.3 reducing urban sprawl; 11.7 increasing urban green space; 11.a integrated urban, peri-urban and rural planning for sustainable development, 15.1 increasing protected areas; 15.3 decreasing degraded land; and 15.9 biodiversity strategies and action plans



The UN Decade on Ecosystem Restoration (2021-2030)

Calls for the protection and regeneration of ecosystems, led by the UNEP and FAO, and was proclaimed by UNGA following a proposal for action by over 70 countries

WORKSTREAMS

Far

Human settlements produce and consume via supply chains that have substantial effects on territories far beyond their administrative boundaries. This phenomenon is increasingly referred to as 'telecoupling'. Subnational governments (including cities) can be key catalysts in protecting and enhancing biodiversity even in faraway places. By addressing the linkages between urban and rural areas, UN-Habitat is helping ensure that food, water, and energy passing through cities does not degrade ecosystems elsewhere. This includes policy advice on the management of long-distance flows of goods and services as well as territorial governance of urban-rural linkages.

Near

The edges of metropolitan areas – particularly in fast-growing places – are sites of dramatic land use change; the most significant driver of biodiversity loss. UN-Habitat is increasingly working with periurban municipalities to proactively guide expansion at the shifting frontier of the built and natural environments, in ways that minimizes the loss of intact natural habitat. Projecting and overlaying land use change and biodiversity loss, and climate change risk, is helping subnational authorities make informed decisions on how and where to develop with minimal risk. The identification of areas of the highest and lowest risks to non-human species is accelerating periurban preservation and conservation efforts.

Local

Green and blue spaces within existing built-up areas also need concerted attention. UN-Habitat's site-based work with cities has expanded to a city-wide approach that inventories a city's spatial assets, assesses their accessibility and connectivity, and strategizes how to improve both individual and networked public spaces. Cities can understand the state of their public spaces, specifically the network, distribution, accessibility, quantity and quality to support comprehensive evidence-based public space strategy-development or policymaking. The process has four parts that are progressive with outputs to ensure recommendations are implementable: regulatory framework, urban planning instruments, financing structure and institutional set-up.

KNOWLEDGE PRODUCTS

Cities and Nature: Planning for the Future

White Paper Cities and Nature: Planning for the Future

Published in December 2022, as an information document for the 15th Conference of Parties of the Convention on Biological Diversity (CBD COP15).

Keywords: biodiversity, city, climate change, conservation, density, ecosystem services, expansion, mapping, municipalities, nature-based solutions, planning, prediction, preservation, prevention, projection, spatial planning, urban, vulnerability.

Executive Summary

The 2022 Global Biodiversity Framework shows the importance of the area, quality, and connectivity of green and blue spaces within urban areas but does not recognize the **role of urban land expansion as a driver of habitat loss**.

Over 60% of the cities in the world's 36 biodiversity hotspots are expanding in direct conflict with biodiversity and climate risk. The conversion of natural habitat for human habitation is accelerating, with **290,000 sq km of natural habitat likely to be lost to urban growth between 2000 and 2050**.

These trends are further compounded by the **land greedy nature of contemporary urban expansion patterns**, yielding a land consumption growth rate (6.6% per year) double that of urban population growth (2.8% per year). Land continues to be converted even in countries where the urban population is not increasing at all.

Yet action to prevent or even mitigate this loss remains elusive. **Restoration cannot keep up with the pace of land degradation**, so we need more preservation and conservation at the interface between cities and nature, particularly in biodiversity hotspots (Figure 1).

Cities are recognizing the need to protect landscapes in their vicinity, with approaches such as **expanding ecological corridors and connecting green patches** for biodiversity, protection and climate resilience, and the knock-on benefits of ecotourism, air purification, etc.

However, we need to shift to systematic, effective and properly **targeted interventions of biodiversity preservation and conservation** in the face of urban expansion, both present and future.

Coordinated by Andrew Ridd and drafted by Srikanth, Meera, Gintika, Pratik, and Aranya, Subramanian, with contributions from Oliver Atwood, Matthias Bock, Katelyn Brown, Leahy, Robert Holmes, G. M. Rufael Tulu, and Richard Weller. Edited by David Maddox. Reviewed by Bernhard Barth, Diana Garrido-Silva, Jack Chang, Filip Deconck, Thomas Forster, Soemba Gopalkrishnan, Julie Greenwell, Naorin Hoogenhorst, Joy Mukul, and Blake Robinson.

Most existing spatial planning processes **treat built and natural habitats as binary and static, while they are both in constant flux**. The two also have complex interactions, exacerbated by climate change, with either negative or positive feedback loops that affect cities.

The United Nations system has adopted a common approach to biodiversity that includes a joint commitment to **improve the quality of urbanization and limit encroachment**, recognizing the importance of nature in cities and the protective role of spatial planning.

Pro-biodiversity interventions within and beyond cities include **not only direct nature-based solutions but also indirect land-sparing measures that prevent the destruction of natural habitat** in the first place (Figure 1).

Many high-profile nature-based solutions have been applied at limited sites but scales are restricted to relatively wealthy, mature urban environments. This leaves a **gap in preservation-related efforts, particularly in fast-growing, resource-constrained contexts**.

Several critical challenges remain:

- A dichotomous conception of the natural and built
- Lack of clarity on where degradation is occurring
- Inability to predict future conversion

Managing Urban-Rural Linkages for Biodiversity: an Integrated Territorial Approach



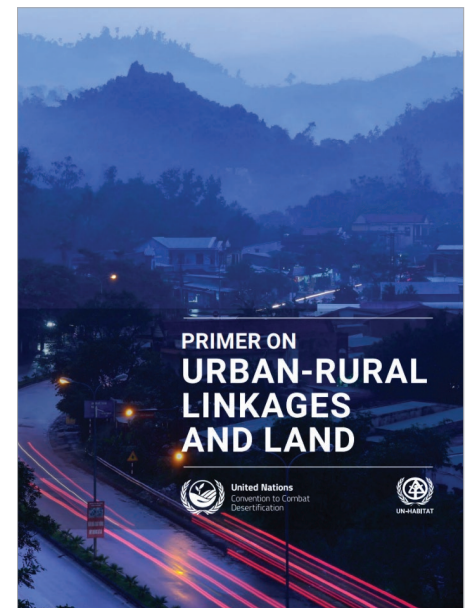
MANAGING URBAN-RURAL LINKAGES FOR BIODIVERSITY

An integrated territorial approach

Position Paper for CBD COP 15 to be completed with final language for Global Framework for Biodiversity (GBF) targets

Primer on Urban-Rural Linkages and Land

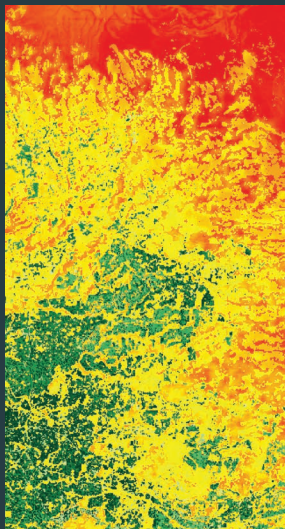
to be published in UNCCD COP16



PRIMER ON URBAN-RURAL LINKAGES AND LAND

KEY TOOL ON URBAN BIODIVERSITY

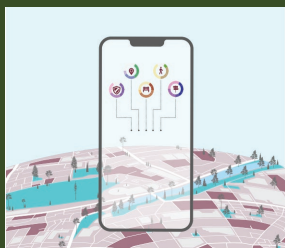
Hotspot Stoplight



Co-created with the University of Pennsylvania, the Hotspot Stoplight geospatially projects the risk of land use change, biodiversity loss, and climate change to 2050 and provides a robust evidence base for decision making about where and how to develop with least harm to planet and people. The tool is based on open-source data and uses a unique workflow based on artificial intelligence (AI) and deep learning algorithms to estimate the probabilities of these three parameters for any metropolitan area at a resolution of 30m², while offering a graduated 'stoplight' map that indicates combined risks of development in a particular area. The red end of the gradient indicates land likely to develop that also faces high risk of biodiversity loss and/or the effects of climate change. At the other end, the 'green light' indicates areas within the existing built footprint that are well-suited for infill or densification. In the middle, the 'yellow light' promotes caution in extending the city into greenfield areas of lower biodiversity intactness and higher accessibility. Modular in nature, the Stoplight will soon be adapted as a biodiversity layer of UN-Habitat's comprehensive planning tool Our City Plans.

COMPLEMENTARY TOOLS

City-Wide Public Space Assessment



This tool helps local governments evaluate the network, distribution, accessibility, quantity and quality of their public spaces. It takes a participatory approach, engaging communities and stakeholders in mapping and analyzing public spaces, including a locally customizable, digital questionnaire. Through pre-fieldwork, data collection, reporting, and post-assessment, it supports evidence-based public space strategies and policies and the prioritization of interventions.

Building urban climate resilience through EbA



Co-developed by UN-Habitat and UNEP, this toolkit provides a structured, step-by-step approach for cities implementing ecosystem-based adaptation. It focuses on context analysis, stakeholder mapping, vulnerability assessments, and financing strategies. Structured as a three-tier, nine-module training programme, it is available in online, hybrid, and in-person formats, offering interactive tools, training, and case studies for policymakers and practitioners.

NbS into Urban and Regional Planning

NATURE-BASED SOLUTIONS IN URBAN AND TERRITORIAL PLANNING

TOOLKIT

To be published in late 2024, this toolkit provides a comprehensive methodology for integrating Nature-based Solutions (NbS) into urban and regional planning. Aligned with Our City Tools, the process begins with goal and context identification, followed by planning and execution phases for both policy/planning and project/program setup. The methodology emphasizes flexibility, adaptability to local contexts, and integration with existing planning processes. It provides guidance on tools, resources, and outputs for each activity to effectively implement NbS for climate adaptation, mitigation, and biodiversity conservation.



UNITED NATIONS HUMAN SETTLEMENTS PROGRAMME

P.O. Box 30030, Nairobi 00100, Kenya
Focal Point: Andrew Rudd, rudd@un.org
www.unhabitat.org

