GPSC Second Deep-Dive
Greening Cities: Urban Nature and Biodiversity for Integrated Solutions to Climate Change and Biodiversity Loss

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An Overview of Urban Biodiversity Planning Worldwide:
Status, Challenges, and Responses

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Global impact through local action.

An Overview of Urban Biodiversity Planning Worldwide:
Status, Challenges, and Responses

Agenda

**General overview and status
of Urban Biodiversity Planning**

3 Challenges

Responses

Overview of Urban Biodiversity Planning

What we know in 2022

1. **Consideration of biodiversity in local planning is atypical**, though cities of all sizes and all around the world have initiated strategies and/or reporting for biodiversity. Ongoing commitment is challenging.

2. **Despite availability of resources, no common standard** framework, program, definition, or measurement system for urban biodiversity has taken hold even though this is needed to ensure efficacy and for aggregation and assessment at larger scales.

3. **Local governments need support, legislation, and guidance** from governments at larger scales to multiply and deepen their actions.

Status of Urban Biodiversity Planning

Urban Biodiversity Plans, Policies, Institutions, and Other Initiatives

Urban biodiversity initiatives are happening world-round, under many differing governance approaches, and in cities of all sizes.
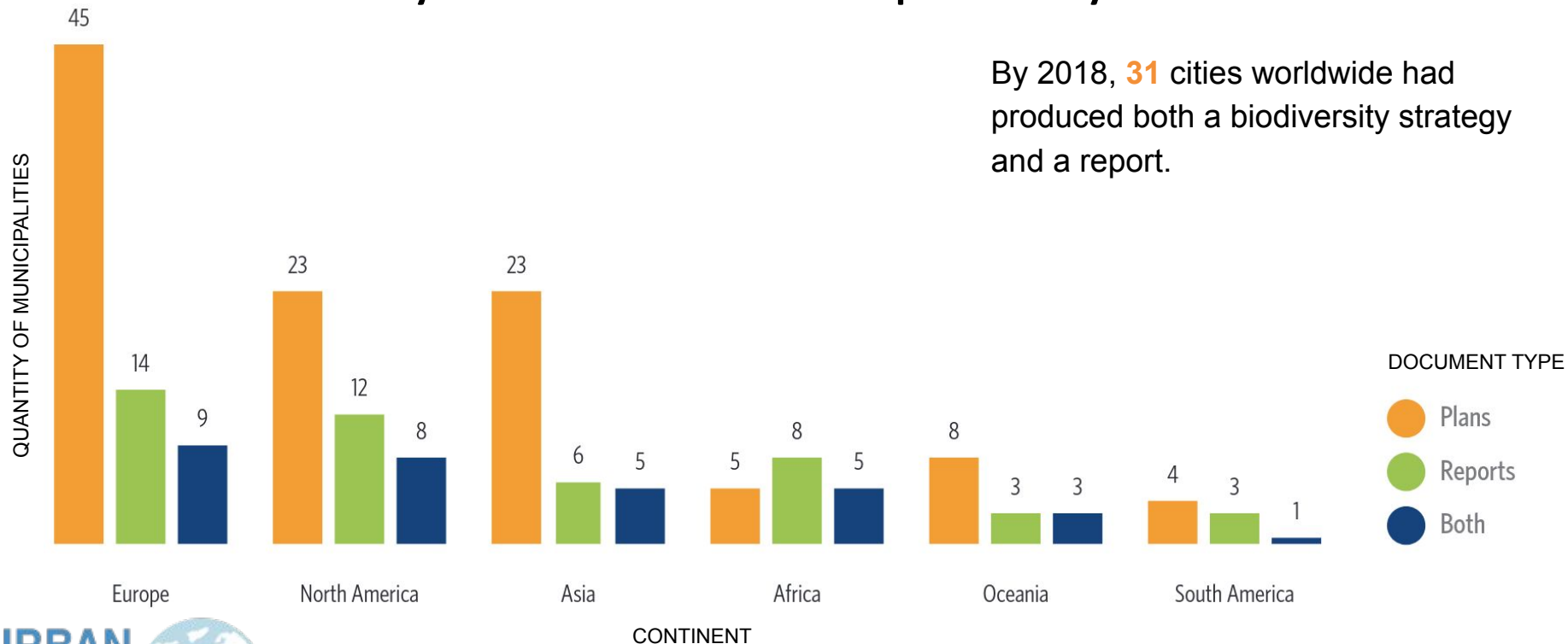

At least **922** cities worldwide have initiatives for biodiversity,
Many subnational and national programs for urban biodiversity also exist.

Status of Urban Biodiversity Planning

Biodiversity Documents at the Municipal Level by Continent

By 2018, **31** cities worldwide had produced both a biodiversity strategy and a report.

DOCUMENT TYPE
- Plans
- Reports
- Both

QUANTITY OF MUNICIPALITIES

Europe: 45, 14, 9
North America: 23, 12, 8
Asia: 23, 6, 5
Africa: 5, 8, 5
Oceania: 8, 3, 3
South America: 4, 3, 1

CONTINENT

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McDonald et al., 2018, "Nature in the Urban Century: a global assessment of where and how to conserve nature for biodiversity and human wellbeing." p. 55

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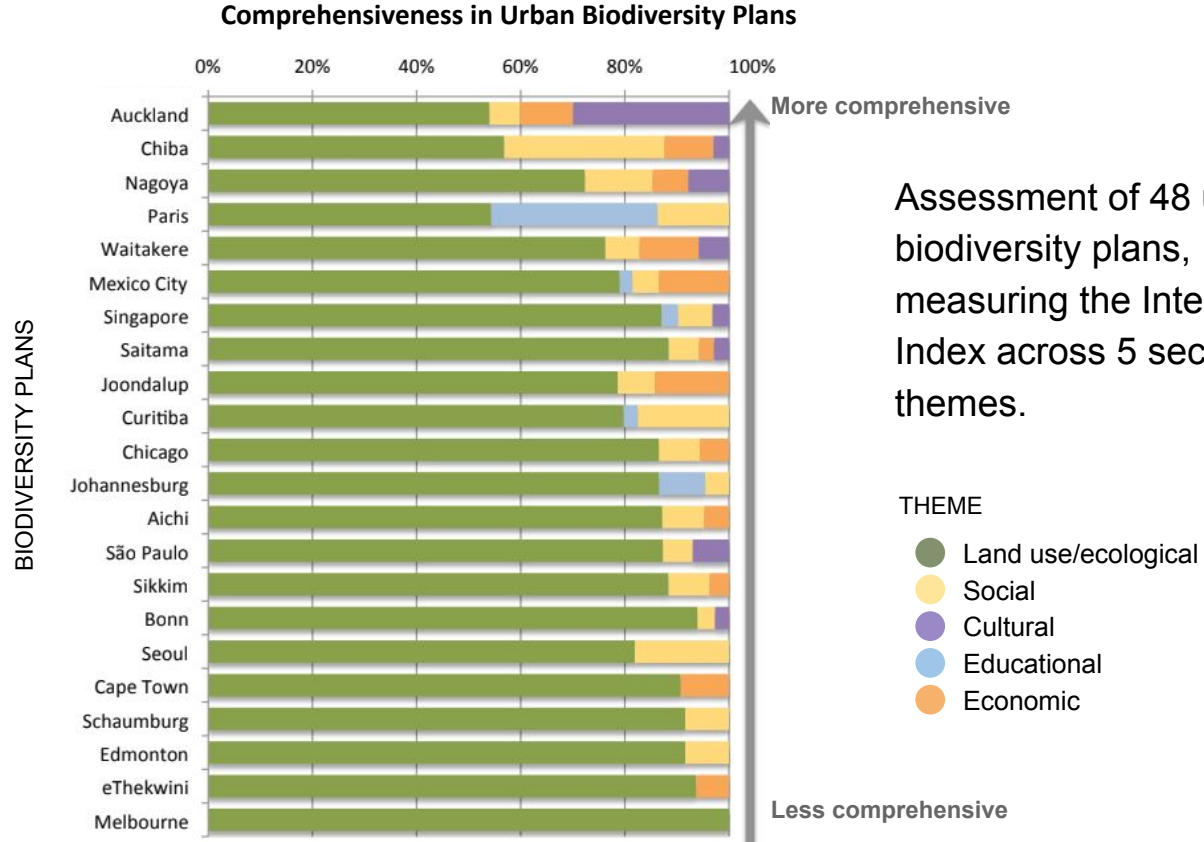General overview and status
of Urban Biodiversity Planning

3 Challenges

Responses

Lack of a comprehensive approach

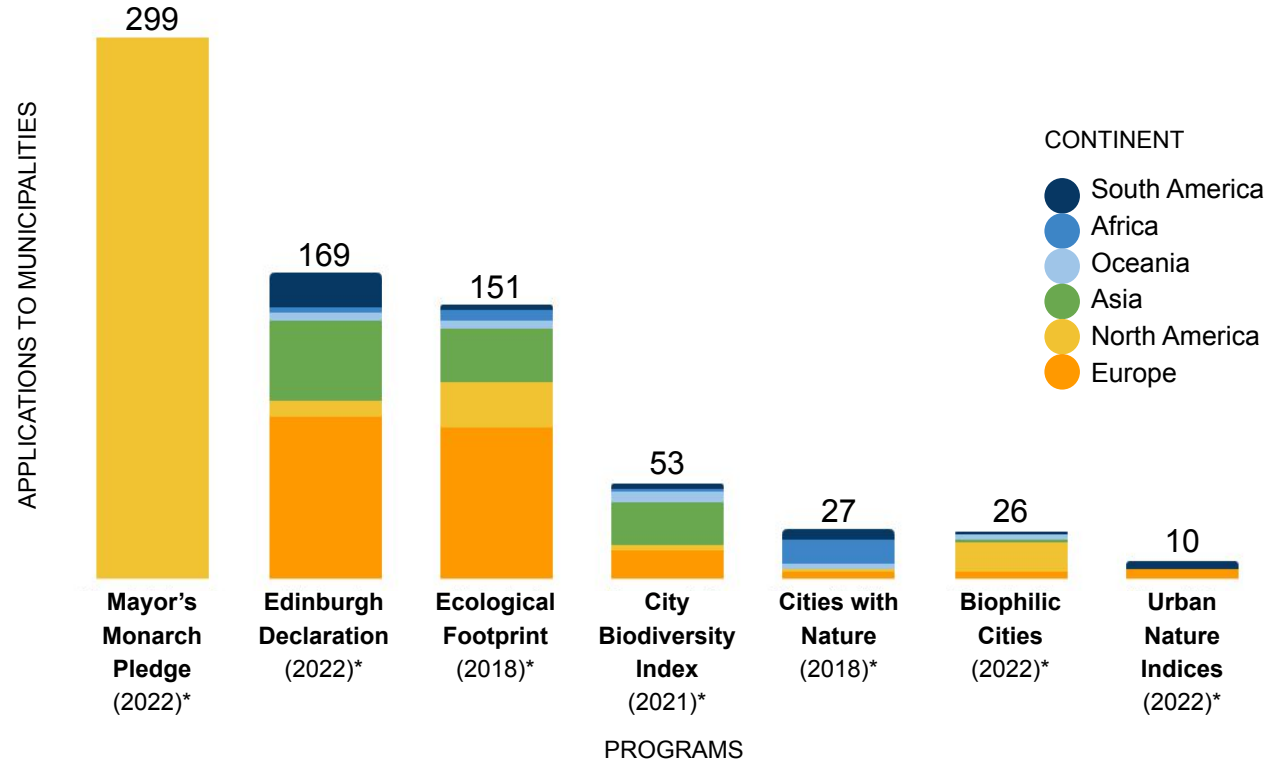Biodiversities plans often **lack a comprehensive approach** that incorporates themes across sectors.

Comprehensiveness in Urban Biodiversity Plans

Assessment of 48 urban biodiversity plans, measuring the Integration Index across 5 sectoral themes.

THEME
- Land use/ecological
- Social
- Cultural
- Educational
- Economic

Pierce 2014. "Planning for Biodiversity in a Divided World." Thesis. Cornell University.

Lack of standards and guidance

No program has achieved status as global standard. Comparisons between systems are needed.

Municipal Application of Multi-national Biodiversity Programs

APPLICATIONS TO MUNICIPALITIES

- 299 — Mayor's Monarch Pledge (2022)*
- 169 — Edinburgh Declaration (2022)*
- 151 — Ecological Footprint (2018)*
- 53 — City Biodiversity Index (2021)*
- 27 — Cities with Nature (2018)*
- 26 — Biophilic Cities (2022)*
- 10 — Urban Nature Indices (2022)*

PROGRAMS

CONTINENT
- South America
- Africa
- Oceania
- Asia
- North America
- Europe

This graph compares application numbers by continent of active and well subscribed biodiversity programs that span more than one country. * year indicates when this information was last updated.

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Lack of measurement and consistency

In urban biodiversity plans, **action statements often lack accountability** such as measurement or stated outputs in biodiversity plans.
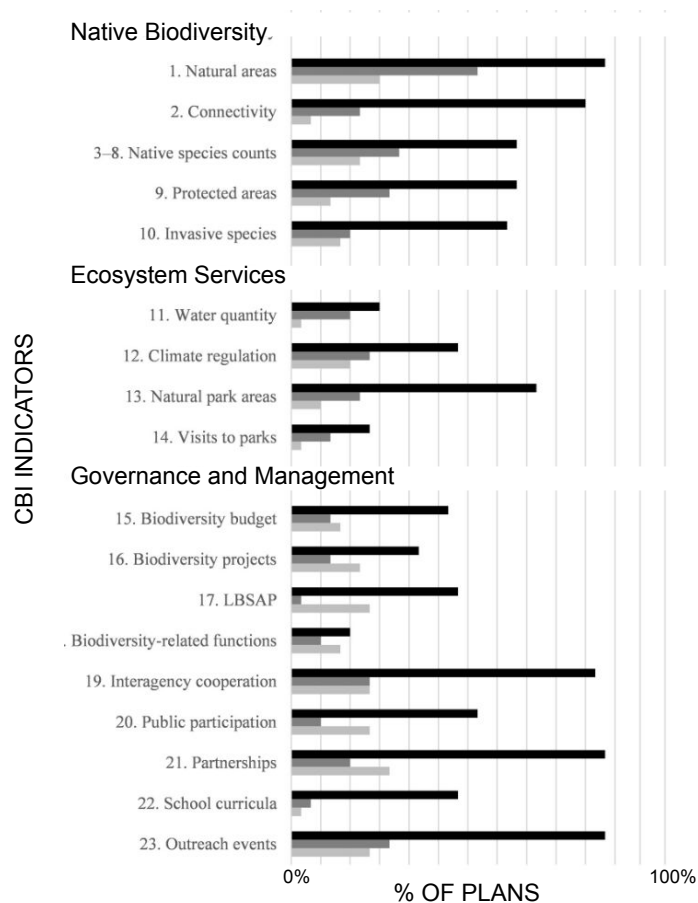
Assessment of 39 urban biodiversity plans according to the CBI indicator categories.

67% of plans specified any indicators

72% of plans specified any outputs

PLAN CONTENTS
- ● Action (intended action)
- ● Indicator (specific measurement)
- ○ Output (verifiable document or event)

Pierce et al., 2020 "Actions, indicators, and outputs in urban biodiversity plans: A multinational analysis of city practice." *PLOS One.*

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Working Definitions of Urban Biodiversity

Definitions specific to urban conditions such as these can be adopted and applied by local governments.

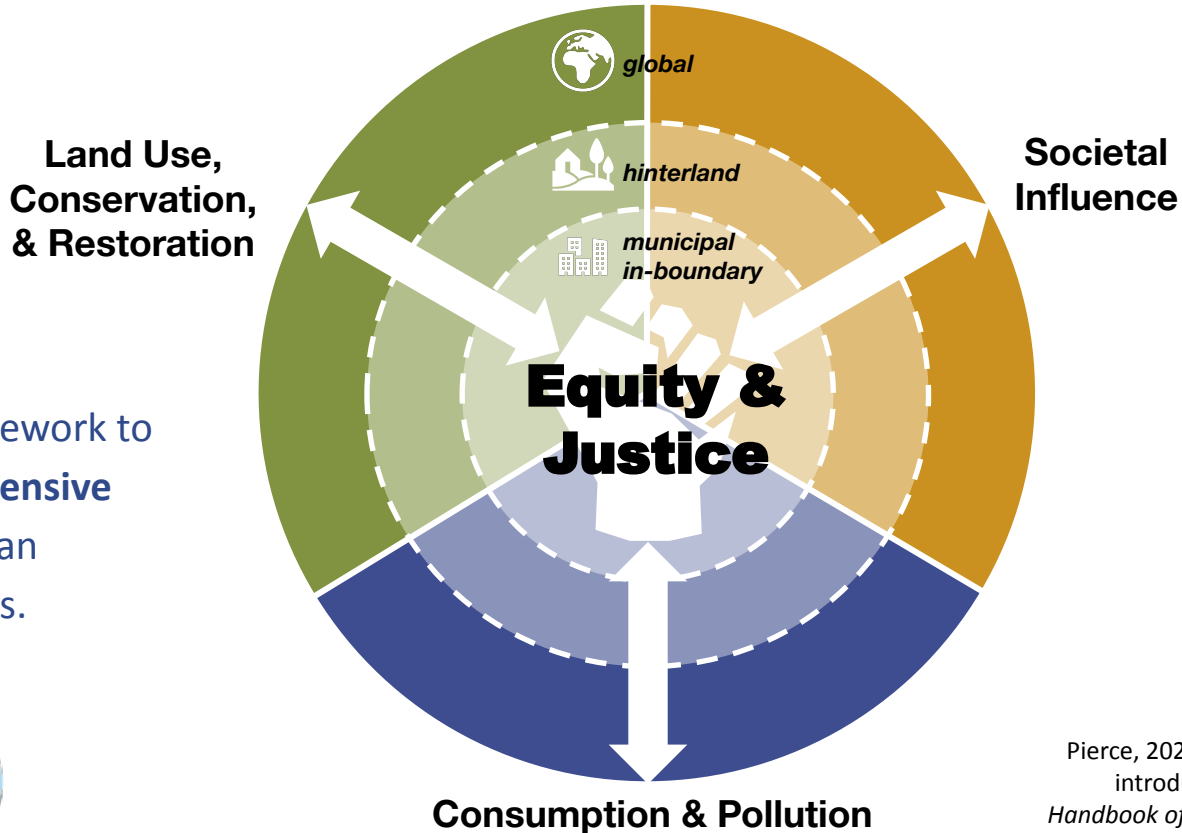|	
Definition of urban biodiversity	The variety and richness of organisms and the structures and functions of their ecosystems as they relate to one another under the unique influences of human settlements.
Operational standard for biodiversity management	Prioritized urban biodiversity comprises the organisms and their supporting ecosystem features that enrich and sustain cities and their associated landscapes.

Pierce et al., 2021, "Operationalizing Urban Biodiversity: A Guide for Integrated Action" chapter 18 in *The Routledge Handbook of Sustainable Cities and Landscapes* eds. Yang, Y., and Wessells, A.T.

Comprehensive Approach

Urban Bioshed Impact Areas

Land Use, Conservation, & Restoration

Societal Influence

global

hinterland

municipal in-boundary

Equity & Justice

Consumption & Pollution

Theoretical framework to ensure **comprehensive approach** to urban biodiversity plans.

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Tips for practitioners

When developing an urban biodiversity strategy:

1. Demonstrate how biodiversity is an urban issue.

2. Identify metrics for biodiversity that can stand alongside potentially competing socio-economic measures.

3. Ensure that actions for biodiversity also contribute to social and economic goals.

4. Connect biodiversity loss drivers and impacts across spatial boundaries.

Link biodiversity with benefits in other sectors, such as:

1. Human health

2. Economic development

3. Landscape maintenance

4. Climate change adaptation

5. Water quality and flood mitigation

Pierce et al., 2021, "Operationalizing Urban Biodiversity: A Guide for Integrated Action" chapter 18 in *The Routledge Handbook of Sustainable Cities and Landscapes* eds. Yang, Y., and Wessells, A.T.

Standardized Measurement

IUCN Urban Nature Indices

✊ **equity integrated into 6 topics**

Characteristics

- **Comprehensively** captures urban impact on biodiversity
- **Flexible** so any city can apply it
- **Supported** by IUCN platform

Theme	ID	Indicator Topics
1 Consumption Drivers	1.1	Material Consumption
	1.2	Harmful Harvest & Trade
	1.3	GHG Emissions from Energy
	1.4	Unsustainable Diets ✊
	1.5	Water Withdrawal
2 Human Pressures	2.1	Sprawl
	2.2	Water Pollution
	2.3	Noise Pollution
	2.4	Light Pollution
	2.5	Invasive Species
3 Habitat Status	3.1	Land Use/Protection
	3.2	Ecosystem Restoration
	3.3	Shorelines & River Banks
	3.4	Vegetation
	3.5	Connectivity

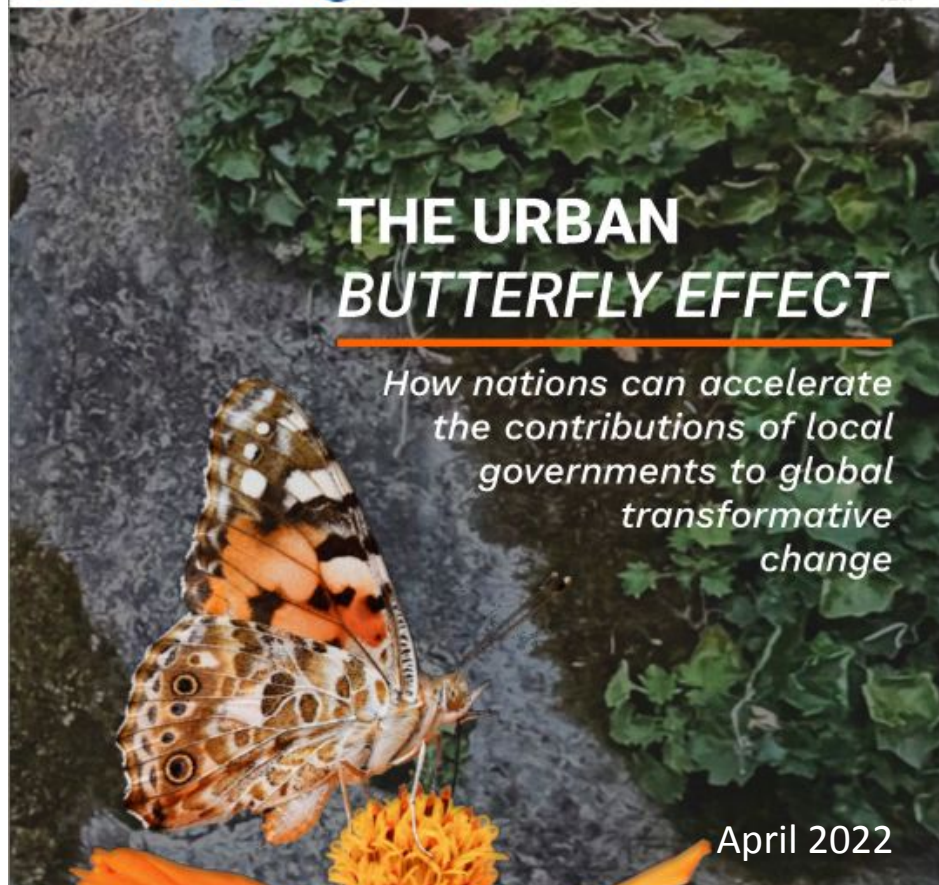| Theme	ID	Indicator Topics
4 Species Status	4.1	Animal Species
	4.2	Plant Species
	4.3	Functional Diversity
	4.4	Microbiota
	4.5	Endemic Species
5 Nature's Contributions to People	5.1	Exposure to nature
	5.2	Access to Nature ✊
	5.3	Human Health ✊
	5.4	Livelihoods ✊
	5.5	Sacred Natural Sites ✊
6 Governance Responses	6.1	Planning
	6.2	Law & policy
	6.3	Education
	6.4	Management ✊
	6.5	Incentives & Participation

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How to support biodiversity action by cities

Resource: Policy brief

Target: National and subnational governments

Aim: Guidance to accelerate local actions that contribute to the Global Biodiversity Framework 2030 Action Targets

April 2022

How to support biodiversity action by cities

THE URBAN BUTTERFLY EFFECT

How nations can accelerate the contributions of local governments to global transformative change
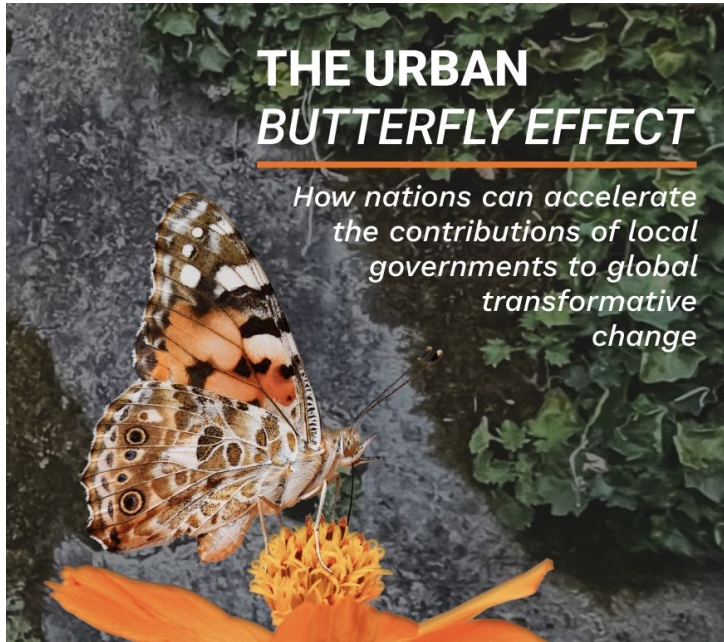
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Recommendations for national governments

1. **Incentivize landscape-scale coordination** through regional partnerships between governments and businesses.

2. Provide access to locally-relevant information and **mainstream local efforts** through sector-specific training

3. **Guide local governments on interlinkages** between biodiversity, social wellbeing and green and blue economics.

4. **Adopt standards** for planning, implementing, and monitoring biodiversity strategies and projects that allow local governments to report progress, engage with the public and private enterprise, and coordinate across scales.

5. **Advocate for funding** for local governments to have direct access to national and global funding mechanisms as well as private and philanthropic finance.

6. **Enable regulatory freedom** that allows piloting of biodiversity-enhancing projects and impact-reduction initiatives in agriculture, ranching, mining, trade, and consumption.

How to support biodiversity action by cities

THE URBAN *BUTTERFLY EFFECT*

How nations can accelerate the contributions of local governments to global transformative change

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11. Maintain and enhance nature's contributions

Status quo of LBSAPs
Almost all (90%) of plans include actions for ecosystem services, such as increasing canopy coverage, promoting permeability, and restoring ecosystems.

National/State Accelerators
- Fund widespread application of pilot projects
- Standardize and compile measures for comparison
- Incentivize monitoring and verification systems to ensure effectiveness

Accelerator Example
China's Sponge cities program provided guidelines for cities to absorb rainwater and funded 30 cities to apply the guidelines, evaluating the results over three years.[16]

Example Global Contribution
Based on rates of urban flood damage measured in the US and the impacts of green infrastructure solutions in Wuhan, China, total flood damage may be reduced by up to 73% through the implementation of urban green infrastructure.[17]

12. Benefits from Green and Blue Spaces

Status quo of LBSAPs
The majority (80%) of plans increase access to nature, in particular, boosting benefits to human well-being and increasing natural elements in parks and along shorelines.

National/State Accelerators
- Set guidelines for equitable access to nature
- Facilitate preventative health insurance financing of nature
- Coordinate green and blue space planning and monitoring across scales

Accelerator Example
Canada's National Urban Parks Program invests in parks in cities across the nation with a goal of biodiversity conservation.[18] The program includes indigenous engagement.

Example Global Contribution
Only 13% of urbanites live in neighbourhoods with 20% tree canopy coverage, one threshold for realizing mental health benefits from nature.[19] Doubling this number by 2050 is estimated to reduce depression by 50% and stress by 43% for 312 million people.[19]

16. Responsible choices

Status quo of LBSAPs
A minority (32%) of plans link consumption choices or waste reduction with biodiversity. Twenty cities (total pop. 248M) have had their ecological footprints assessed.

National/State Accelerators
- Break down consumption and LCA data for local use
- Encourage municipal fees based on waste production
- Provide a platform for subnational ecological footprint reporting

Accelerator Example
Japan has provided guiding documents and consumption data for subnational and local measurement and management of ecological footprints since 2000.[20]

Example Global Contribution
Reductions in urban consumption (within categories of buildings and infrastructure; food; private transport; clothing and textiles; aviation; and electronics and household appliances) account for up to 70% of required urban emissions reductions to reach 1.5ºC climate targets by 2050.[21]

21. Equitable and effective participation in decision-making related to biodiversity

Status quo of LBSAPs
A minority (34%) of plans contain actions that encourage participatory planning. These actions include cooperation with the local community on planning, management, or evaluation practices.

National/State Accelerators
- Develop local-level facilitation skills
- Mandate transparency in local decision-making
- Encourage biodiversity plans to address diverse values held by the community

Accelerator Example
The UK's community-led spaces program encourages and enables local governments to transfer land management of green spaces to community groups.[22]

Example Global Contribution
Global population is projected to be 68% urban by 2050, thus, involving just 10% of the urban public in biodiversity decisions would result in 660 million people taking some degree of ownership over biodiversity decisions.[23]

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