



Cities and Biodiversity Outlook

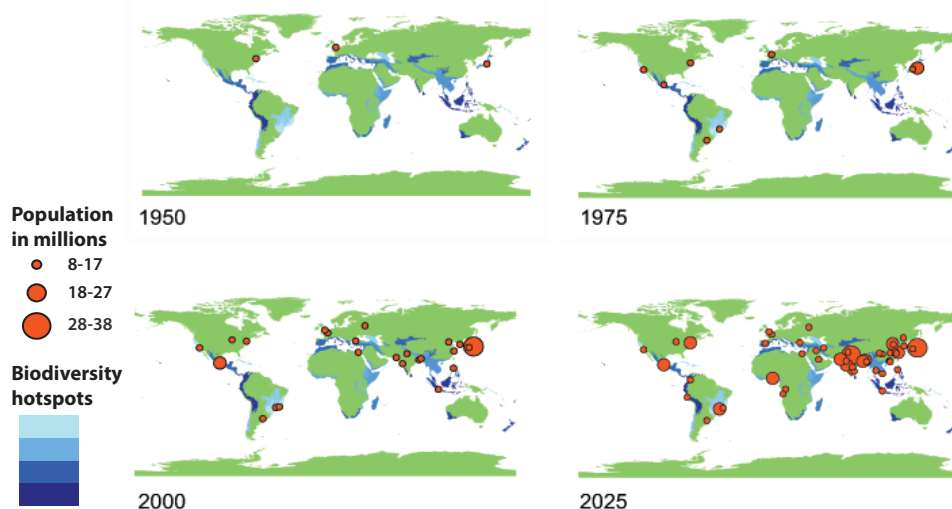
The world's first assessment on urbanization and the links to ecosystems and biodiversity

Our planet is rapidly urbanizing. More than half of the world's population already lives in urban areas and the number is expected to only increase. Between 2010 and 2030, the urban population is expected to nearly double, growing by an additional 1.5 billion people. During the same period, cities are expected to triple in size. The urban land cover in biodiversity hotspots around the world is expected to increase by more than 200% between 2000 and 2030.

By 2030, urban areas will determine the quality of life for five billion people, the vast majority living in cities in Africa, Asia and Latin America.

By 2050, 70% of the world's population is expected to become urban. The growth is expected to take place mainly in areas with limited financial, knowledge and infrastructural resources. It will pose significant challenges to meet several basic needs such as food and fresh water provisioning, and to support a development built on equity, sustainable resource consumption, and rich biodiversity.

However, the growth also presents unprecedented opportunities to vastly improve global sustainability. This requires an acknowledgment of the dependence by individual cities on ecosystems, resources and populations from other regions around the world.



The Cities and Biodiversity Outlook (CBO) project, running 2010-2013, was a joint project by the Convention on Biological Diversity (CBD) and Stockholm Resilience Centre (SRC). The project stemmed from the 11th meeting of the parties to the Convention on Biological Diversity, where decision X/22 in the Plan of Action on Subnational Governments, Cities and Other Local Authorities for Biodiversity requested "an assessment of the links and opportunities between urbanization and biodiversity".

The CBO demonstrates how urban areas can play a central role in achieving key biodiversity goals. It also provides policy-makers and city planners with specific guidelines on the conservation and sustainable use of natural resources in an urban context. The project has produced the report *Action and Policy*, the book *Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities*, and the video *An Urbanizing Planet*. All the material is freely downloadable from www.cbobook.org.

Summary

- The CBO is the world's first assessment of global urbanization trends and the role of biodiversity and ecosystem-based management for human well-being, providing practical guidelines to decision-makers.
- The expected urban growth over the coming decades, unprecedented in rate and extent, presents not only challenges but also opportunities globally to support sustainable development trajectories.
- Cities can be rich in biodiversity, and investments in multiple ecosystem services can support local livelihoods, provide food, and enhance equity and human well-being.
- Steering the global development towards sustainability will require the participation of cities and sub-national governments.
- Tools and guidelines, such as the City Biodiversity Index, Aichi Targets, and LBSAPS and NBSAPS have been developed to guide and support governments and decision-makers.
- All the written CBO material and the video can be found at the project's website: www.cbobook.org

Regional perspectives on urbanization

Africa, Asia and Latin America are the world's fastest urbanizing and developing regions. They are also home to several of the world's biodiversity hotspots, areas that contain a high percentage of the plant life found on earth and thus are irreplaceable, but have lost at least 70% of their natural habitat and subsequently are threatened.

Increasing encroachment on several of the world's biodiversity hotspots is expected in all three regions as a result of high rates of urban population growth, urban land expansion, and densification of the built-up land.

Despite inter- and cross regional differences in urbanization trends, sometimes vast, some general trends in the regions can be crystallized: the growth of the urban population is increasing at an unprecedented rate, often resulting in urban sprawl and a growing population of slum dwellers. Currently around 1 billion people live in slumlike conditions. The urban poor often live in areas with limited access to ecosystems and their services, and with heightened vulnerability to natural hazards. Formal governance structures are often weak, and urbanization trends and their links to ecosystems are severely underrepresented in scientific literature.

Africa

At an *average* growth rate of 3.5% per annum, Africa is the most rapidly urbanizing continent. The urban population is expected to more than double between 2010 and 2014, going from 395 million to more than 1 billion people. Population expansion and a tradition of low-density settlement mean that the rate of increase in urban land cover in Africa is predicted to be the highest in any region in the world. Current predictions pin this at a dramatic 700% increase over the period 2000–2030; the majority taking place in very sensitive ecological zones. One significant pattern is the anticipated rapid growth in smaller towns.

"Cities -their inhabitants and governments- must take the lead in fostering a more sustainable stewardship of our planet's living resources"

**- Braulio Dias, Executive Secretary, CBD,
Foreword to CBO - Action and Policy**

Based on current projections for 2010–2020, 74.2% of Africa's total population growth will occur in cities of less than one million. More than 43% of Africa's urban population lives below the poverty line, higher than in any other continent, making socioeconomic development a priority. This situation is particularly acute in Sub-Saharan Africa where slum dwellers account for 65% of the urban population.

Source: *Urbanization, Biodiversity and Ecosystem Services, Chapter 23: Regional Assessment of Africa*



Women from Soweto Forum showing their urban garden. Photo by Christy Gillmore, The Advocacy Project. Published under the Creative Commons License: <https://creativecommons.org/licenses/by-nc-sa/2.0/>

Asia

Asia is home to 60 % of the world's population, but while some countries have populations that are predominantly urban (Singapore, 100%; Malaysia, 72%; Japan, 67%), others have populations that are predominantly rural (Bangladesh, 28% urban; Vietnam, 29%; India, 30%).

Many countries that are largely rural are undergoing massive *demographic and economic transitions*, resulting in a growing percentage of their populations living in urban areas. For example, the combined populations of Kolkata and Dhaka in the Ganges – Brahmaputra Delta increased from 4.9 million in 1950 to more than 30 million in 2010. *Half the increase* in urban land across the world over the next 20 years will occur in Asia, with the most extensive patterns of change expected to take place in India and China. The influx of large-scale capital to many Asian deltas has transformed the local economic base to a manufacturing and processing economy,

bringing about *fundamental changes in landscapes and their ecologies*. For example, the Irrawaddy Delta economy in Myanmar was traditionally intensive rice cultivation, fishing, and forestry, supported by mangrove swamps. However, as Yangon, the largest city in Myanmar and the economic, financial, and trading hub of the country, increases in size on the periphery of the delta, it is affecting the coastal mangrove ecosystems.

Source: *Urbanization, Biodiversity and Ecosystem Services, Chapter 4: Regional Assessment of Asia*

Latin America

Latin America is the region with the highest proportion of urban inhabitants in the world, with more than 80% of the population currently living in cities. Urban expansion increases the risk of encroachment on the region's six biodiversity hotspots. The Cerrado Region, for example, is the most extensive woodland savanna in South America, covering 21% of Brazil. The Mesoamerican Forest, stretching across most of Central America, is the world's third largest biodiversity hotspot and a corridor for many Neotropical migrant bird species. The Tropical Andes, running through Venezuela, Chile, Argentina, Colombia, Ecuador, Peru, and Bolivia, is described as the richest and most diverse region on Earth.

One of the most conspicuous characteristics of Latin America is that urban populations exhibit extreme social and economic differences. More than 25% of the urban inhabitants live in very poor settlements, while the richest 20% earn almost 20 times more than the poorest 20%.

Many financially poor communities establish informal settlements, often densely built, in vulnerable areas such as riparian corridors, coastal ecosystems, and steep hills. When services such as flood regulation and storm water retention decrease due to, for example, deforestation the effects of natural events can be hazardous. The effects include for example frequent land and mud slides, as has been seen in Chilean and Colombian cities.

Source: *Urbanization, Biodiversity and Ecosystem Services, Chapter 28: Regional Assessment of Latin America*

Towards equitable and healthy cities

Cities can and do harbor great biodiversity, often managed and maintained by citizens of different levels in society ranging from the wealthy to the underprivileged, providing critical ecosystem services.

The *Biodiversity Synthesis of the Millennium Ecosystem Assessment* establishes that: "stability of ecosystems underpins most components of human well-being, including health, security, satisfactory social relations, and freedom of choice and action" (p.25). For example, urban agriculture can be an important source of food

and nutrition, and a way of securing an income, particularly for people in low-income groups. Plants can be used as medicine and be part of people's spiritual beliefs and identities. Wetlands in and around cities can protect against floodings. The spread of for example diseases can decrease by maintaining natural ecosystems.

Equity

Urban poor as well as fishers and livestock grazers in peri-urban areas are simultaneously the most directly dependent on natural resources and the most vulnerable to changes in the environment, such as changing infrastructure or climate changes. Increasing the understanding of ecosystem service issues related to equity, environmental justice, and urban land ethics will thus play a major role in impacting outcomes of equity in urban development contexts.

Biodiversity, culture and identity

Cultural ecosystem services can be essential for engaging people in ecosystem management and stewardship. Keystone species, crucial for the ecosystems of which they are part, are often central to people's cultural traditions. The canopy trees *Ficus religiosa* (pictured) and *Ficus benghalensis* (Banyan tree), for example, are devoted throughout Buddhist and Hindu cultures. Urban parks can provide arenas for physical exercise, and allotment gardens can inspire management, support biodiversity, and help to maintain social-ecological memories.

Concluding remarks

Acknowledging the mutual, interlinked effects between society and ecosystems will be increasingly necessary to succeed in enhancing human well-being, particularly in the face of complex challenges such as climate change. Five examples on interlinkages that planning and initiatives can consider are:

1. Land-use change, urban and peri-urban food production, food security, nutrition, and dietary diversity.
2. Water quality, wastewater management, sanitation, and disease.
3. Physical activity, preventative actions to address non-communicable diseases, and environmental benefits from lifestyle choices.
4. Local knowledge, traditional knowledge and medicines poverty reduction, and development.
5. Energy consumption, public transportation, and climate-change adaptation, including the urban heat island effect.

Tools and guidelines useful for local and national governments are presented below.



Slum dwellers seeking protection by the shadow provided by sacred trees in Bangalore. Photo: Divya Gopal. All rights reserved.

City Biodiversity Index

The City Biodiversity Index (CBI) is a tool designed to allow cities to monitor and evaluate their progress and performance related to conserving and enhancing biodiversity and ecosystem services. The CBI can be used by local and sub-national authorities to support the local implementation of the Aichi targets.

The development of CBI has been led by the Secretariat of the CBD. The tool can bring managers, scientists and other stakeholders together to think about the role of biodiversity in a city. Impacts of different policies and land-planning options on biodiversity can also be assessed.

Key considerations in developing the index were its ease of use by cities, scientific credibility, and objectivity. The draft CBI comprised 25 indicators divided into three components: (1) native biodiversity in the city, (2) ecosystem services provided by biodiversity in the city, and (3) governance and management of biodiversity in the city.

Read more on the CBI here:
<http://www.cbd.int/en/subnational>

Aichi Targets

The CBD Strategic Plan 2011-2020 includes twenty Aichi Biodiversity Targets for 2015 and 2020, organized under five strategic goals. The strategic goals include: *mainstreaming biodiversity across government and society (A)*, and *Enhancing implementation through participatory planning, knowledge management and capacity building (E)*.



Aichi Target 18: traditional knowledge and the importance it bestows to biodiversity need to be integrated into urban planning. Photo from El Alto, Bolivia. Photo by Pedro Szekeley. Edited by Maria Schewenius. Published under the Creative Commons License: <https://creativecommons.org/licenses/by/2.0/>

The Plan provides a ten-year framework for action to save biodiversity and enhance its benefits for people. The vision for the Plan is that "by 2050, biodiversity is (...) sustaining a healthy planet and delivering benefits essential for all people." Achieving this, and the Aichi Biodiversity Targets, is only possible with the participation of local and national governments.

Read more on the Aichi Biodiversity Targets here: <http://www.cbd.int/sp/targets/>

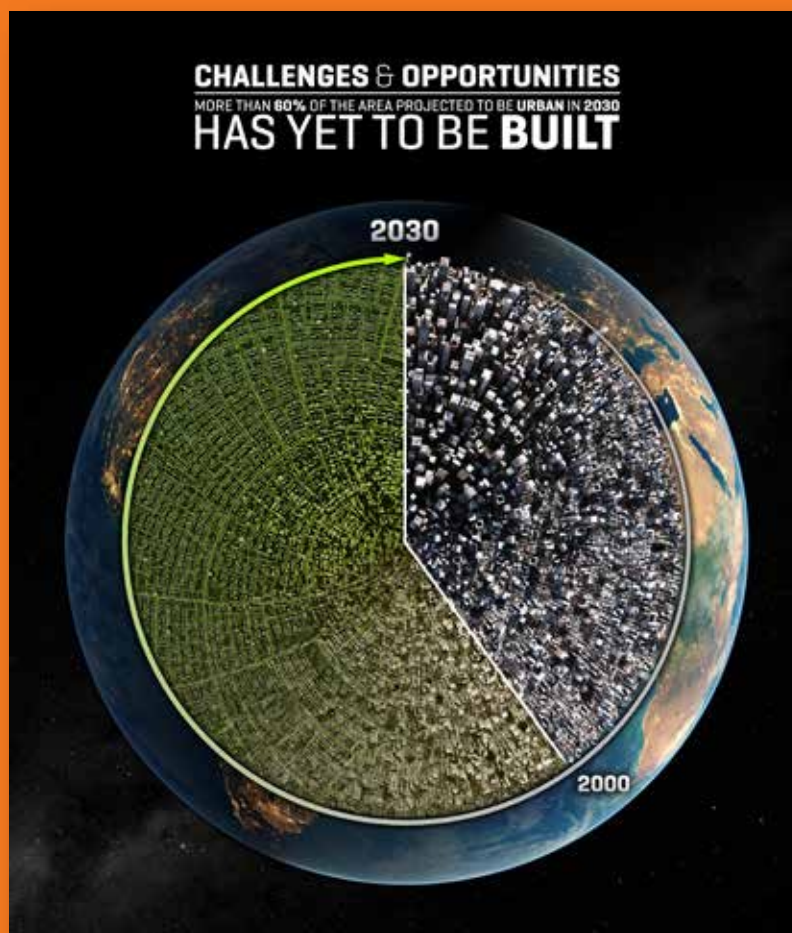
LBSAPs and NBSAPs

The Local Biodiversity Strategies and Action Plan (LBSAP) Guidelines, co-authored by ICLEI Cities Biodiversity Center, the United Nations University – Institute for Advanced Studies, and the CBD Secretariat, is a document that guides local governments in detailing a broad strategy as well as specific actions to implement in order to protect and enhance local biodiversity.

An LBSAP can be a stand-alone document but its core principles should be integrated into broader city plans. LBSAPs are the local-level version of National Biodiversity Strategy and Action Plans (NBSAPs), the principle instrument used by national governments for implementing the CBD.

An NBSAP include a roadmap of how a country intends to fulfill the objectives of the CBD in light of its specific national circumstances. To date, 178 (92%) Parties to the CBD have developed NBSAPs.

Read more about LBSAPs and NBSAPs here:
http://www.ias.unu.edu/resource_centre/LBSAP_Guidelines.pdf
NBSAPs: <https://www.cbd.int/nbsap/>



Summary

- The world is rapidly becoming urban, which poses opportunities as well as challenges to support sustainable development locally and globally.
- By 2030, cities are expected to triple in size compared to the year 2000, often expanding over biodiversity rich areas. By 2050, 70% of the world's population is expected to live in cities.
- Much of the growth will take place in places with limited economical, and infrastructural resources, and where the official governance systems are weak.
- Marginalized groups are often the most dependent upon and directly manages ecosystems in and around cities. Inclusion of the impoverished, women, and indigenous communities in urban governance and planning is thus crucial for an equitable development.
- Ecosystems provide not only services crucial for survival, such as food and fresh water, but also through cultural ecosystem services support learning, expressions of cultural belonging, and physical exercise.
- Global sustainability depends on the acknowledgment of individual cities on distant ecosystems, resources, and populations.
- Cities and local governments play a crucial role for fostering stewardship of resource use and development.
- Examples on tools and guidelines for sub-national governments to guide cities towards sustainability include the Cities' Biodiversity Index, the Aichi Targets, and LBSAPS and NBSAPS.

The ten CBO Key Messages

1. Urbanization is both a challenge and an opportunity to manage ecosystem services.
2. Rich biodiversity can exist in cities.
3. Biodiversity and ecosystem services are critical natural capital.
4. Maintaining functioning urban ecosystems can significantly increase human health and well-being.
5. Urban ecosystem services and biodiversity can help contribute to urban climate change and mitigation.
6. Increasing the biodiversity of urban food systems can enhance food and nutrition security.
7. Ecosystem services must be integrated in urban policy and planning.
8. Successful management of biodiversity and ecosystem services must be based on multi-scale, multi-sectoral and multi-stakeholder involvement.
9. Cities offer unique opportunities for learning and education about a resilient and sustainable future.
10. Cities have a large potential to generate innovation and governance tools and therefore can -and must- take the lead in a sustainable development.

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Find more information and all the source material at: www.cbobook.org

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