Briefing Paper

Committee: CEP

Topic: The Question of Maintaining Biodiversity in the face of Urban Expansion

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Summary

Urban expansion poses a significant threat to the natural world. As populations grow, cities expand both horizontally into surrounding land and vertically within existing urban areas, fragmenting, degrading, or destroying natural ecosystems. According to the United Nations, over 68% of the global population is projected to live in urban areas by 2050, increasing pressure on surrounding environments. Biodiversity loss is not merely an environmental concern; it also affects economies, human health, and social stability. Ecosystems provide essential services such as clean air and water, climate regulation, pollination, food security, and protection from natural disasters.

Urban areas are hubs of economic activity and innovation, but rapid growth often comes at the expense of natural habitats. Forests are cleared for housing, wetlands drained for industry, and rivers diverted for urban infrastructure. These alterations harm both wildlife and humans, as environmental degradation undermines the resources and protections that support urban life. Urban expansion, therefore, is a complex issue requiring strategies that integrate economic development with environmental stewardship.

The Commission on Environmental Policy faces the challenge of identifying strategies to conserve biodiversity amid rapid urbanisation. This includes understanding the drivers of biodiversity loss, its consequences, the stakeholders involved, and the frameworks in place to address it. Delegates will consider best practices, case studies, and innovative solutions to support policy decisions that balance urban growth with ecological preservation.

Definition of Key Terms

Biodiversity – The variety of life on Earth, including genetic diversity within species, diversity between species, and ecosystem diversity. High biodiversity enhances ecosystem resilience and enables ecosystems to provide essential services.

Urban Expansion (Urbanisation) – The growth of cities due to population increases and physical development, either by spreading into surrounding rural areas or building vertically within city limits.

Ecosystem Services – Benefits provided by natural ecosystems, including:

Provisioning – Food, water, timber, and raw materials.

Regulating – Climate regulation, flood control, and disease mitigation.

Supporting – Nutrient cycling, soil formation, and habitat provision.

Cultural – Recreation, aesthetic value, and educational opportunities.

Habitat Fragmentation – The division of continuous habitats into smaller, isolated patches, often caused by infrastructure development. Fragmentation reduces species populations, impedes gene flow, and increases extinction risk.

Sustainable Development – Development that meets present needs without compromising the ability of future generations to meet their own needs. In urban contexts, this requires balancing environmental, social, and economic considerations.

Background Information

Urbanisation has accelerated over the past century due to industrialisation, economic growth, and global population increase. While urban areas occupy less than 3% of the Earth's land, they exert a disproportionately large ecological footprint. Conversion of forests, wetlands, grasslands, and coastal areas into residential, industrial, and transport infrastructure results in extensive habitat loss and degradation.

Biodiversity is crucial for maintaining ecological balance and supporting human livelihoods. Diverse ecosystems regulate the climate, purify air and water, maintain soil fertility, and sustain pollinators critical for food production. Loss of biodiversity in urbanising areas reduces ecosystem resilience, increasing vulnerability to climate change, extreme weather events, and disease outbreaks. Urban environments introduce additional stressors including pollution, light and noise disturbance, invasive species introduced by international trade and movement, and disproportionate resource consumption.

The challenge of conserving biodiversity amidst rapid urbanisation is compounded by deep structural tensions between economic development and ecological preservation - what is known as the land use conflict. Governments must accommodate growth to support the economy and provide housing and services, while also safeguarding natural habitats. These competing claims on land sit at the heart of the debate and are explored in greater detail below.

Land Use Conflicts

Land use conflict is not merely a technical planning challenge; it is a fundamental political and economic struggle over who gets to use land, for what purpose, and who bears the cost of conservation. Urban land is simultaneously required for housing (addressing housing crises in many nations), economic infrastructure (transport, industry, logistics), food production (peri-urban agriculture), and ecological preservation. No policy framework can satisfy all of these demands simultaneously, making trade-offs inevitable.

In developed countries, the conflict is often expressed through disputes between development interests – housebuilders, industrial developers, transport agencies – and conservation advocates. Political pressure to solve housing shortages regularly overrides environmental obligations. In England, for example, the government has repeatedly relaxed planning restrictions in response to housebuilding targets, despite existing statutory duties to protect habitats. Enforcement of environmental conditions on planning permissions is chronically under-resourced, meaning that even legally required mitigation measures often go unverified.

In developing countries, the conflict is sharper and more immediate. Rapid, often informal urbanisation in cities across sub-Saharan Africa, South and Southeast Asia, and Latin America occurs with limited regulatory capacity. Governments facing poverty alleviation, industrialisation imperatives, and popular pressure for affordable housing are structurally unable to prioritise biodiversity. International expectations that these countries should limit their development footprint - when wealthy nations historically urbanised with no such constraints – are a source of significant diplomatic tension. This asymmetry between developed and developing country interests is one of the most persistent obstacles to effective international biodiversity governance.

Major Countries and Organizations Involved

United Nations Environment Programme (UNEP) – UNEP coordinates global environmental efforts, providing scientific assessments, policy guidance, and technical assistance. UNEP reports on urban biodiversity highlight the importance of integrating ecosystem considerations into city planning.

Convention on Biological Diversity (CBD) – The CBD is the principal international treaty governing biodiversity conservation. It has 196 Parties and operates through COP decisions, national reporting, and the Kunming-Montreal GBF. The CBD guides national strategies for urban ecosystem management and protected areas, emphasising the role of cities in global biodiversity goals.

United Kingdom – Has enacted mandatory Biodiversity Net Gain under the Environment Act 2021 and committed to 30x30 under the GBF, with specific targets to protect 30% of UK land by 2030. Current protected area coverage is approximately 26%. BNG regime under active implementation from 2024.

Germany – Federal Biodiversity Strategy (2020) sets a target of 30% of land under nature protection by 2030. Germany's Biotopverbund (habitat connectivity network) system requires the establishment of ecological corridors across at least 10% of the national territory. Germany is a major funder of international biodiversity finance.

United States – The Biden administration committed to 30x30 ('America the Beautiful' initiative), aiming to conserve 30% of US lands and waters by 2030. Current protection covers approximately 13% of land. The Endangered Species Act remains the principal federal biodiversity instrument but faces ongoing political and legal challenge.

China – Hosted COP15 and is formally committed to the Kunming-Montreal GBF, including 30x30. China has expanded its protected area network significantly since 2015, establishing a National Park system covering key biodiversity zones. However, rapid domestic urbanisation and infrastructure investment abroad (Belt and Road Initiative) create significant tensions with biodiversity commitments.

Brazil – Custodian of the Amazon, the world's largest tropical forest and a global biodiversity hotspot. Brazil's Forest Code requires rural landowners in the Amazon to maintain 80% of their land as forest. Under President Lula (from 2023), deforestation rates have declined significantly from the highs of the Bolsonaro era. Brazil seeks substantial international finance as a condition of maintaining and expanding Amazon protection.

Indonesia – Home to some of the world's most biodiverse tropical forests in Kalimantan and Sumatra. Indonesia's palm oil moratorium (renewed 2021) restricts new plantation development on primary forests and peatlands. However, enforcement is inconsistent and deforestation continues in areas outside the moratorium.

India – Experiencing rapid urban growth, particularly in biodiversity-rich regions such as the Western Ghats and the Indo-Gangetic Plain. India's National Biodiversity Action Plan commits to expanding the protected area network and integrating biodiversity into urban master plans, though implementation capacity varies significantly across states.

The European Union – The EU Biodiversity Strategy for 2030 sets binding targets to legally protect 30% of EU land and sea and to restore degraded ecosystems. The EU Nature Restoration Law (2024) requires member states to restore at least 20% of degraded land and sea ecosystems by 2030, rising to 90% by 2050 - the most legally ambitious restoration obligation enacted by any jurisdiction to date.

Non-Governmental Organisations (NGOs) – Organisations such as the World Wide Fund for Nature (WWF), International Union for Conservation of Nature (IUCN), and The Nature Conservancy provide research, advocacy, technical expertise, and community engagement to protect biodiversity in urbanising landscapes.

Timeline of Events (Relevant UN Treaties)

1971 – Ramsar Convention on Wetlands: the first modern treaty focused on habitat-specific conservation, protecting internationally significant wetlands from urban and agricultural conversion.

1972 – United Nations Conference on the Human Environment (Stockholm Conference) establishes international environmental governance and the principle of state responsibility for environmental harm.

1987 – Brundtland Report ("Our Common Future") introduces the concept of sustainable development, explicitly linking environmental, social, and economic goals for the first time in an internationally authoritative context.

1992 – Rio Earth Summit: Adoption of the Convention on Biological Diversity (CBD), a legally binding treaty establishing conservation, sustainable use, and equitable sharing of benefits as core obligations. Also adopts Agenda 21, a comprehensive action plan for sustainable development.

2000 – Cartagena Protocol on Biosafety adopted under the CBD, regulating transboundary movement of genetically modified organisms that may affect biodiversity.

2002 – World Summit on Sustainable Development (Johannesburg): World leaders commit to reducing the rate of biodiversity loss by 2010 – a target that was subsequently missed.

2010 – Nagoya Protocol on access and benefit sharing adopted under the CBD. Aichi Biodiversity Targets set 20 strategic goals for 2020, including significantly expanding protected areas. Most Aichi Targets were also subsequently missed, illustrating the chronic implementation gap in international biodiversity governance.

2015 – Paris Agreement on climate change and adoption of the Sustainable Development Goals (SDGs). SDG 11 (Sustainable Cities and Communities) and SDG 15 (Life on Land) directly address urban biodiversity. The Paris Agreement's 1.5°C temperature target has significant implications for biodiversity, as climate and habitat loss interact.

2021 – United Kingdom Environment Act introduces mandatory Biodiversity Net Gain for major planning applications in England – a significant but contested legislative development.

2022 – Kunming-Montreal Global Biodiversity Framework (GBF) adopted at COP15. Sets the '30x30' target: protecting 30% of land and 30% of oceans by 2030. Commits to mobilising USD 200 billion annually for biodiversity. Acknowledges the need for financial transfers to developing countries.

2023–2025 – Early implementation phase of the Kunming-Montreal GBF. Initial national biodiversity strategies and action plans (NBSAPs) submitted. Progress on 30x30 uneven; finance mobilisation targets largely unmet as of early 2025. Enforcement and monitoring mechanisms remain weak.

Previous Attempts to Solve the Issue

The Convention on Biological Diversity (1992) and the Aichi Targets (2010): The CBD established a global framework for conservation, requiring signatory states to develop national biodiversity strategies and action plans (NBSAPs). The Aichi Biodiversity Targets, adopted in 2010, set 20 strategic goals for 2020, including protecting 17% of terrestrial areas, halving the rate of habitat loss, and preventing the extinction of threatened species. The 2020 review concluded that not a

single one of the 20 Aichi Targets had been fully achieved. This outcome is central to understanding the limitations of international biodiversity governance: the absence of binding enforcement mechanisms means that targets function as aspirations rather than obligations, and non-compliance carries no meaningful sanction.

The Kunming-Montreal Global Biodiversity Framework (2022): The Kunming-Montreal GBF, adopted at COP15 in Montreal in December 2022, represents the most ambitious international biodiversity agreement to date. Its headline commitment – the '30x30' target of protecting 30% of land and 30% of oceans by 2030 – is significantly more demanding than the Aichi Target of 17% terrestrial protection. The framework also includes targets on reducing harmful subsidies, addressing invasive species, and integrating biodiversity into national planning. However, the GBF faces several structural challenges. First, like all CBD decisions, it is not legally binding; compliance is voluntary and nationally determined. Second, its ambition rests on the assumption that the financial pledges – USD 20 billion in annual international biodiversity finance by 2025 and USD 200 billion overall by 2030 – will be delivered. As of early 2025, wealthy nations have not met even the USD 20 billion target. Third, the measurement of '30x30' progress is contested: many existing 'protected areas' in national reporting are 'paper parks' – designated areas with little or no active management or enforcement. Fourth, several large developing nations – including Brazil and Indonesia, which host disproportionate shares of the world's terrestrial biodiversity – have expressed scepticism about the framework's finance mechanisms and their adequacy to compensate for development foregone.

Biodiversity Net Gain (BNG) in England: England's mandatory BNG regime, established by the Environment Act 2021 and implemented for major developments from February 2024, requires developers to achieve a minimum 10% net gain in biodiversity value, calculated using a standardised biodiversity metric. This approach is notable for making biodiversity improvement a legally enforceable planning condition, rather than a voluntary aspiration. However, early experience with BNG has exposed significant weaknesses. The biodiversity metric has been criticised for producing inflated baseline scores that make 10% gains easier to claim on paper than to deliver in ecological reality. Off-site biodiversity units (credits purchased from land managers elsewhere) allow developers to satisfy the requirement without protecting habitat adjacent to the development – potentially displacing rather than preventing habitat loss. Enforcement is a significant concern: local planning authorities, already under-resourced, are responsible for monitoring 30-year habitat management commitments but lack the capacity to do so systematically. The BNG market in biodiversity units is nascent and largely unregulated, raising concerns about credit quality and permanence. The model's wider replicability in countries with weaker institutional capacity is therefore limited.

Weapons Treaties as an Analogy: The Problem of Binding International Targets: The difficulty of creating genuinely binding international environmental obligations is well illustrated by analogy to arms control treaties. The Chemical Weapons Convention (CWC), widely considered one of the most successful disarmament treaties, achieves compliance through a mandatory verification

regime, on-site inspections, and significant diplomatic costs for non-compliance – but even this framework has been subject to violation (most notably regarding Syrian chemical weapons use). Biodiversity treaties lack comparable verification mechanisms, inspection rights, or sanctions. The Nuclear Non-Proliferation Treaty (NPT) similarly demonstrates that even heavily institutionalised treaty regimes face persistent compliance failures when national interests conflict with international obligations. Applying this lesson to biodiversity, the absence of a meaningful enforcement architecture in frameworks like the CBD and GBF means that binding targets, without accompanying compliance mechanisms, may increase the rhetorical ambition of international biodiversity governance while achieving little practical change.

Urban Green Infrastructure Initiatives: Several cities have pioneered urban biodiversity programmes with measurable results. Singapore's 'City in a Garden' strategy has integrated biodiversity corridors, roof gardens, and green walls into urban planning since the 1990s, contributing to an increase in recorded bird species. Copenhagen's urban biodiversity strategy includes 60% green area requirements in new developments and restoration of urban waterways. Medellín, Colombia, has implemented "green corridors" – transforming urban roads into biodiverse tree-lined streets – reducing local temperatures and increasing urban green cover. These city-level initiatives demonstrate that ambitious biodiversity integration into urban planning is technically feasible, but their scalability to rapidly urbanising cities in the developing world remains uncertain.

Causes of Biodiversity Loss in Urban Expansion

Land Conversion – Forests, wetlands, and agricultural lands are cleared for housing, roads, and industry, reducing habitat availability.

Pollution and Environmental Degradation – Urban areas generate high levels of light, noise, and chemical pollution, which disrupt the behaviour and survival of local wildlife. Water quality is often degraded by industrial runoff.

Habitat Fragmentation – Infrastructure separates populations, reducing genetic diversity and resilience.

Climate Change – Urban heat islands and greenhouse gas emissions alter habitats and stress species.

Invasive Species – Non-native species introduced through urbanisation outcompete native flora and fauna.

Impervious Surfaces and Microclimate Change – The covering of soil with impermeable materials increases runoff and reduces groundwater recharge, while also creating urban heat islands that exceed the thermal tolerance of many species.

Consequences of Biodiversity Loss

Environmental consequences include reduced ecosystem resilience, increased flooding and soil erosion, impaired pollination services, proliferation of invasive species, reduced carbon storage, and deteriorating air quality. Social consequences include loss of recreational and cultural green spaces, mental and physical health impacts from reduced access to nature, greater exposure to natural hazards, loss of potential pharmaceutical compounds derived from biodiversity, and increased transmission risk for zoonotic diseases. Economic consequences include higher farming costs, declining crop yields due to pollinator loss, increased urban maintenance costs (particularly for flood management), reduced availability of raw materials, and devaluation of natural capital. Health consequences include increased risk of zoonotic diseases, loss of natural disease regulation, heat-related illness exacerbated by loss of urban tree cover, and food insecurity.

Possible Solutions

Sustainable Urban Planning: Biodiversity Net Gain requirements can deliver measurable improvements in habitat quality where implemented robustly, but the English experience demonstrates that design and enforcement matter critically. A weak metric, an unregulated credit market, and under-resourced local authority monitoring can reduce BNG to a paper exercise. Effective BNG requires a rigorous, ecologically credible metric; mandatory on-site habitat provision as a first resort with off-site credits genuinely additional and independently verified; and local planning authority capacity to monitor 30-year management commitments. Biodiversity Action Plans and Urban Greening Factor scores – already used in cities such as London and Berlin – provide tools for integrating biodiversity into urban planning decisions. These require political commitment and enforcement capacity to achieve impact beyond demonstration projects.

Strengthened International Cooperation: Creating binding urban restoration targets through international agreement faces the structural problem that international biodiversity agreements have historically lacked enforcement mechanisms. The Aichi Targets' failure and the early implementation difficulties of the Kunming-Montreal GBF illustrate this. A more effective approach may be to embed biodiversity conditions into trade agreements and development finance conditions – mechanisms that carry direct economic consequences for non-compliance – rather than relying on free-standing biodiversity treaties. The EU's Deforestation Regulation (2023), which prohibits the import of commodities linked to deforestation, is a significant example of this approach, though its scope and enforcement are contested. Strengthening the New Urban Agenda and aligning it with CBD targets can guide national and local governments, but this requires national governments to translate international commitments into domestic planning law with genuine enforcement capacity.

Legal and Regulatory Frameworks: Compliance monitoring is central to the effectiveness of any regulatory framework. Mandatory environmental impact assessments must be accompanied by post-development monitoring requirements, independent verification of mitigation measures, and meaningful sanctions for non-compliance. The declaration of biodiversity commitments without verification mechanisms is a persistent failure mode, as illustrated by the gap between countries' nationally determined commitments under the GBF and the absence of international review processes with teeth.

Public Engagement and Education: Public support for urban biodiversity can be built through education about ecosystem services, community gardens and urban farms that transform underutilised land into habitat, and experiential learning programmes (forest schools) that foster connection to nature from childhood. These approaches are complementary to regulatory frameworks rather than substitutes for them.

Nature-Based Solutions: Restoring urban wetlands and rivers, establishing green corridors and ecological highways (connecting fragmented habitat patches through street trees, hedges, and waterways), and using native species in urban landscaping and re-vegetation are all technically effective approaches. Cities such as Singapore, Copenhagen, and Medellín demonstrate that these can be implemented at scale. The challenge is retrofitting green infrastructure into already-dense urban fabric, where land is expensive and competing development pressures are intense.

Useful Links

1. United Nations Environment Programme – https://www.unep.org
2. Convention on Biological Diversity – https://www.cbd.int
3. World Wide Fund for Nature – https://www.worldwildlife.org
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