

# GLOBAL

## SUSTAINABILITY AND DEVELOPMENT CONGRESS

OCTOBER 15-16, 2025 / KAYSERİ, TÜRKİYE



# FULL TEXT BOOK

## EDITORS

Prof. Dr. Oktay ÖZKAN  
Assoc. Prof. Dr. Şükrü Taner AZGIN



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# CONGRESS ID

## CONGRESS TITLE

INTERNATIONAL GLOBAL SUSTAINABILITY AND DEVELOPMENT CONGRESS

## DATE and PLACE

October 15-16, 2025 / Erciyes University, Kayseri, Türkiye

## PARTICIPATION

Invited & Oral & Poster

## ORGANIZATION

Sustainability Coordinatorship, Erciyes University  
IKSAD-Institute of Economic Development and Social Research, Türkiye

## PARTICIPANTS COUNTRY

Albania, Algeria, Argentina, Australia, Azerbaijan, Bangladesh, Bulgaria, China, Czechia, Egypt, Georgia, Hong Kong, Hungary, India, Indonesia, Iran, Kazakhstan, Kosovo, Lithuania, Malaysia, Morocco, Niger, Nigeria, Oman, Pakistan, Portugal, Romania, Russia, Saudi Arabia, Tunisia, Türkiye, TRNC, UAE, UK, Ukraine, USA, Vietnam

Number Of Accepted Papers-**274**

Number Of Rejected Papers-**47**

The number of abstracts from foreign countries-**141**

The number of abstracts from Türkiye-**133**

## EVALUATION PROCESS

All applications have undergone a double-blind peer review process

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# GLOBAL SUSTAINABILITY AND DEVELOPMENT CONGRESS

OCTOBER 15-16, 2025 / KAYSERİ, TÜRKİYE



## CONGRESS PROGRAM

Erciyes University Faculty of Engineering  
In-person Presentations



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# OPENING CEREMONY

Erciyes University Faculty of Engineering

Date: 15.10.2025

09:30-10:30	Registration
	Opening Speeches
	<b>Assoc. Prof. Dr. Şükrü Taner AZGIN</b> Sustainability Coordinator of Erciyes University HEAD OF ORGANIZING BOARD
10:30-11:00	<b>Dr. Atabek MOVLYANOV</b> General Coordinator of IKSAD Institute CONGRESS COORDINATOR
	<b>Prof. Dr. Fatih ALTUN</b> Rector of Erciyes University HONORARY HEAD OF CONGRESS
11:00-11:40	<b>Yunus Emre ŞEKER</b> Secretary General of the Central Anatolia Development Agency INVITED SPEAKER
11:40-11:50	Plaque Ceremony
12:00-13:30	Lunch

Participants Country: Albania, Algeria, Argentina, Australia, Azerbaijan, Bangladesh, Bulgaria, China, Czechia, Egypt, Georgia, Hong Kong, Hungary, India, Indonesia, Iran, Kazakhstan, Kosovo, Lithuania, Malaysia, Morocco, Niger, Nigeria, Oman, Pakistan, Portugal, Romania, Russia, Saudi Arabia, Tunisia, Türkiye, TRNC, UAE, UK, Ukraine, USA, Vietnam



15.10.2025 / HALL-5 / SESSION-3 / TSI Time-15<sup>00</sup>:17<sup>00</sup>



ZOOM ID: 860 5266 6988 / PASSCODE: 123456



HEAD OF SESSION: Assoc. Prof. Dr. Tolga ERKAN

Authors	Affiliation	Presentation title
<b>Shafiul Muznabin</b>	Pabna University of Science and Technology (PUST), Bangladesh	APPLICATION OF SUSTAINABLE BUILDING MATERIALS FOR GREEN CONSTRUCTION IN BANGLADESH
<b>Assist. Prof. Payam Tarighi Ali Akbary</b>	Ahlul Bayt International University, Iran	REVOLUTIONIZING CONSTRUCTION: EMERGING MATERIALS AND THEIR ROLE IN SUSTAINABLE DEVELOPMENT
<b>Mehreen Ashfaq Assist. Prof. Farhana Naz Assist. Prof. Maryam Usman</b>	Interior Designer, Lahore Pakistan Lahore College for Women University, Pakistan	FROM WASTE TO VALUE: CONCEPTUALIZING A FASHION HUB FOR SUSTAINABLE FUTURES
<b>Akhi Akther Saikat Hasan</b>	University of Rajshahi, Bangladesh Bangladesh Agricultural University, Bangladesh	SUSTAINABLE DEVELOPMENT THROUGH CULTURAL HERITAGE: A LITERATURE REVIEW OF THE NABANNA FESTIVAL IN RURAL BANGLADESH
<b>Aref Nouri Prof. Dr. Mehrdad Karimimoshaver</b>	Bu-Ali Sina University, Iran	THE EVOLUTION OF RESIDENTIAL ARCHITECTURE: TOWARDS SUSTAINABLE AND BIOPHILIC DESIGN IN THE POST-PANDEMIC ERA
<b>Lect. Pooja Shukla</b>	Hong Kong Metropolitan University, Hong Kong	CARBON NEUTRALITY TARGETS AND FIDUCIARY DUTIES IN HONG KONG
<b>Assoc. Prof. Dr. Tolga ERKAN</b>	OSTIM Technical University, Türkiye	IMPLEMENTING BIODIVERSITY IN URBAN PROJECTS
<b>Assoc. Prof. Dr. Tolga ERKAN</b>	OSTIM Technical University, Türkiye	SPATIAL AND TEMPORAL PERSPECTIVES ON URBAN BIODIVERSITY

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KOORDİNATÖRLÜĞÜ

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## SPATIAL AND TEMPORAL PERSPECTIVES ON URBAN BIODIVERSITY

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OSTIM Technical University, Faculty of Architecture and Design, ORCID NO: 0000-0002-7578-2065

### ABSTRACT

Urban areas are dynamic ecosystems where human activity and natural processes intersect, making biodiversity a critical component of sustainable development. This study explores the spatial and temporal dimensions of biodiversity in urban environments, emphasizing its role in enhancing ecological resilience and improving human well-being. Through a comprehensive review of case studies and scholarly literature, the research highlights how biodiversity can be strategically integrated throughout the urban project cycle. The analysis begins with the importance of understanding territories by examining the interactions between their natural systems and human populations, thereby fostering place-specific, knowledge-based strategies. The study argues for biodiversity protection and promotion at multiple scales: ensuring coherence and continuity of ecosystems at the territorial level, fostering ecological connectivity between regions and cities, and designing urban neighborhoods to integrate green habitats. It further examines how biodiversity meets human needs by providing ecosystem services and Nature-based Solutions, such as climate regulation, pollution mitigation, and social well-being. The research also discusses the development of biodiversity indicators to monitor urban ecosystems effectively. Risk assessment and management are addressed by identifying potential threats to biodiversity, including urban development and construction activities, while emphasizing restoration and compensation strategies. Finally, the study highlights the importance of inclusive design and governance, advocating for collaborative approaches that engage stakeholders through consultation and awareness-raising. By integrating biodiversity into urban planning and management, cities can become drivers of ecological coherence, resilience, and sustainable development.

**Keywords:** Urban biodiversity, ecosystem services, Nature-based Solutions, ecological resilience, urban planning, sustainable cities

### Introduction

The rapid intensification of urbanization stands as one of the most profound socio-environmental shifts of the twenty-first century. Projections by the United Nations (2022) indicate that by 2050, over 68% of the global population will inhabit urban areas, a demographic transition that will undeniably exacerbate pressures on ecological systems. As cities expand, they reconfigure land surfaces, fragment ecological networks, and disrupt biophysical processes. Yet, this transformation is not solely a narrative of degradation. When approached through strategic planning, restorative design, and ecologically informed governance, urbanization can also serve as a catalyst for biodiversity enhancement (Elmqvist et al., 2015: 101-103). Reconceptualizing biodiversity as an integral pillar of urban sustainability challenges the historical dichotomy between cities and nature, positioning urban areas not as ecological liabilities but as potential laboratories of regeneration and resilience.

This paper examines urban biodiversity through both spatial and temporal lenses, analyzing the ways in which it can be systematically embedded within the urban project cycle to enhance ecological resilience and promote human well-being. Informed by interdisciplinary scholarship spanning ecology, landscape planning, urban design, and environmental governance, the study conceptualizes biodiversity not merely as a biophysical asset but also as a socio-cultural construct that fundamentally shapes urban life. It contends that the deliberate

integration of biodiversity into urban planning and management processes is indispensable for advancing global sustainability agendas, particularly Sustainable Development Goal (SDG) 11 on Sustainable Cities and Communities and SDG 15 on Life on Land, as well as fulfilling the strategic frameworks outlined by the Convention on Biological Diversity and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

### **Spatial and Temporal Dimensions of Urban Biodiversity**

Urban biodiversity operates across interlinked spatial scales—territorial, regional, and neighborhood—each contributing distinct yet complementary ecological functions. At the territorial level, biodiversity planning aims to ensure ecosystem coherence and continuity by establishing ecological networks and green infrastructure that structure urban development in alignment with natural processes (Ahern, 2007). Cities such as Stockholm, Singapore, and Curitiba exemplify multi-scalar governance strategies in which ecological corridors, riparian systems, and green belts are embedded into urban morphologies to promote species movement and strengthen resilience against habitat isolation (Benedict & McMahon, 2006: 12, 13, 32–35). Within this framework, territorial biodiversity becomes not merely conserved but actively orchestrated as a spatial infrastructure that guides long-term urban form.

At the regional scale, peri-urban forests, wetlands, and agricultural zones function as ecotones that mediate the transition between urban cores and rural hinterlands. These spaces play a critical role in microclimate stabilization, hydrological regulation, and species dispersal, providing essential ecological buffers that absorb environmental shocks and support broader landscape connectivity (Elmqvist et al., 2015: 104–106). As such, regional landscapes serve as ecological interfaces, facilitating bi-directional flows of organisms, nutrients, and ecosystem services across urban gradients.

At the neighborhood scale, urban biodiversity is made tangible and experiential through the integration of micro-habitats such as green roofs, pocket forests, bioswales, rain gardens, and hedgerows, which embed ecological value directly into the built environment (Tzoulas et al., 2007: 169–171, 174, 175). These small-scale interventions contribute to thermal comfort, stormwater retention, pollinator pathways, and aesthetic well-being, enabling daily human interactions with biodiversity and fostering ecological literacy within local communities. This scale is also essential for supporting “everyday ecologies,” where residents develop affective and behavioral connections to nature that influence broader conservation attitudes.

Beyond spatial hierarchies, urban biodiversity also unfolds through temporal processes. Ecological patterns within cities are shaped by vegetation cycles, successional dynamics, seasonal phenology, and inter-annual species migration, which collectively produce evolving ecological mosaics over time. Temporal planning thus requires understanding ecological transitions, anticipating shifts in ecosystem productivity, and designing management frameworks that adapt to long-term change (Hansen & Pauleit, 2014: 58–61, 63).

With the advent of climate change, temporal dynamics are further intensified. Variations in temperature, precipitation, and CO<sub>2</sub> levels alter species composition, phenological rhythms, and habitat suitability, necessitating flexible planning strategies (Pickett et al., 2011: 10–14, 17, 18, 21). In this context, adaptive management, continuous monitoring, and stewardship-based governance become essential to maintaining functional biodiversity under increasing uncertainty. These conditions highlight the need for cities to adopt resilience-based frameworks that account for both ecological variability and socio-environmental transformation over time.

### **Ecosystem Services and Nature-Based Solutions (NbS)**

Urban biodiversity underpins a wide array of ecosystem services essential to human well-being (Bolund & Hunhammar, 1999: 299, 300). Vegetation plays a multifunctional regulatory role: it mitigates urban heat-island effects through processes of shading and evapotranspiration, reduces stormwater runoff via infiltration and

evapotranspiration, and purifies air by capturing particulate matter and absorbing gaseous pollutants through leaf stomata. Trees actively contribute to climate-change mitigation by sequestering carbon, while soils, wetlands, and riparian zones sustain hydrological cycles by enhancing groundwater recharge, moderating surface flow, and reducing erosion risks. These ecological functions are not merely environmental benefits; they translate directly into improved public health, reduced energy consumption, and heightened urban livability.

NbS extend these ecosystem service principles by intentionally designing and managing ecological systems to address complex social and environmental challenges (Raymond et al., 2017: 15, 16). In this sense, NbS represent a strategic, systems-oriented approach that aligns biodiversity conservation with urban resilience, climate adaptation, and social equity goals. For example, the restoration of mangrove belts in coastal cities such as Manila and Dakar simultaneously enhances biodiversity, stabilizes shorelines, reduces storm surge vulnerability, and safeguards marginalized communities. These interventions highlight the synergistic integration of ecological restoration and socio-spatial justice.

Similarly, urban forests throughout European cities exemplify multifunctional NbS by providing microclimatic regulation, carbon sequestration, recreational opportunities, and psychological restoration. Empirical studies demonstrate that access to biodiverse green spaces can reduce stress, enhance cognitive well-being, and foster social cohesion, thereby reinforcing the interconnectedness of ecological performance and social resilience. Furthermore, peri-urban agroforestry systems and regenerative landscapes contribute to food security, cultural identity, and ecological connectivity, reinforcing the value of biodiversity within hybrid socio-ecological networks.

The adoption of NbS thus reflects a paradigm shift from linear, reactive environmental mitigation strategies toward anticipatory, regenerative urban design that promotes resilience, co-benefits, and long-term ecological stewardship. Rather than viewing biodiversity as an external factor to be preserved in isolated areas, the NbS framework positions it as an active, infrastructural element embedded within urban systems. In this transformative vision, biodiversity becomes the foundation for adaptive urban futures that integrate ecological integrity with human well-being and climate resilience.

### **Integrating Biodiversity into the Urban Project Cycle**

Integrating biodiversity into urban planning begins with a rigorous territorial diagnosis that systematically identifies ecological assets, sensitive habitats, critical ecosystem functions, and potential vulnerability hotspots. Baseline assessments employing Geographic Information Systems (GIS), remote sensing, longitudinal biodiversity inventories, and participatory field surveys enable planners to map species distribution, characterize ecosystem typologies, and model ecological networks across spatial gradients (Goddard et al., 2010: 91–96). Such diagnostics serve as foundational evidence for informed decision-making, guiding zoning regulations, ecological impact assessments, and conservation hierarchies. When undertaken in the early phases of the urban project cycle, they ensure that biodiversity considerations are embedded proactively rather than addressed reactively, thus advancing a preventive rather than compensatory planning logic.

Within this context, green infrastructure acts as a spatial and ecological framework that links natural and semi-natural areas through multifunctional corridors designed to optimize ecological continuity and socio-environmental benefits. Corridors, buffer zones, riparian strips, and urban forests facilitate species dispersal, promote genetic exchange, and reduce the adverse effects of habitat fragmentation, which often undermine long-term ecological resilience (Forman & Godron, 1986: 98–102, 110–117, 120–122). Policy-driven applications such as Berlin's Biotopo Area Factor and London's Green Belt exemplify how metropolitan authorities can institutionalize green infrastructure through planning regulations, incentive systems, and ecological performance criteria, thereby translating connectivity principles into enforceable governance mechanisms (Hansen & Pauleit, 2014: 58–61).

Effective urban biodiversity governance requires measurable indicators capable of capturing ecological change and performance over time. Indicators may include species richness metrics, habitat connectivity indices, vegetation health scores, carbon sequestration rates, or ecosystem-service valuation metrics that quantify benefits in economic, ecological, and social terms (Alberti, 2005: 175–176). The development and standardization of such indicators enable planners and policymakers to track progress, evaluate trade-offs, and calibrate adaptive management strategies in response to emerging ecological stressors.

Regionally aligned assessment frameworks, such as the European Union’s Urban Biodiversity Index and the Singapore City Biodiversity Index, demonstrate the institutional potential of indicator-based governance by integrating ecological data into holistic policy decision-making, performance benchmarking, and longitudinal ecosystem monitoring (Chan et al., 2014: 7012–7018). When integrated into iterative feedback loops, continuous monitoring not only enables adaptive management but also enhances transparency, ecological accountability, and stakeholder confidence in urban biodiversity initiatives. Ultimately, biodiverse urban planning emerges as a dynamic, knowledge-driven process grounded in evidence, spatial connectivity, and institutional reflexivity.

### **Risks, Threats, and Mitigation Strategies**

Urbanization exerts multifaceted pressures on biodiversity through processes such as land-use conversion, environmental pollution, and habitat fragmentation. As cities expand horizontally and vertically, infrastructure development, transportation corridors, and impervious surface proliferation contribute to soil sealing, hydrological disruption, and biotic homogenization, ultimately eroding local ecological resilience (McKinney, 2008: 162–164). Additionally, the introduction and proliferation of invasive species, often facilitated by disturbed urban environments, further undermines native species populations and disrupts trophic relationships. These intersecting pressures create cumulative ecological impacts that may not be immediately visible but manifest over time through ecosystem service decline, fragmentation-induced isolation, and reduced genetic diversity.

To address these challenges, risk assessment frameworks must systematically identify critical habitats, quantify cumulative ecological stressors, and prioritize zones requiring targeted intervention. This includes distinguishing between irreplaceable core habitats, buffer zones, and areas suitable for compensatory enhancement. Institutions such as the International Finance Corporation (IFC, 2012) emphasize the importance of applying environmental and social safeguards, particularly through mitigation hierarchies that stress avoidance, minimization, restoration, and, as a last resort, offsetting.

Restoration ecology provides the scientific basis for reversing ecological degradation by re-establishing essential ecosystem processes and enhancing habitat functionality. Restoration techniques include the replanting of native and endemic species, soil remediation through organic amendments and microbial reactivation, removal of invasive species, and hydrological rehabilitation of degraded wetlands and riparian systems to restore water flow regimes and biodiversity-supporting functions. In urban wetland systems, restoration efforts have been shown to enhance flood retention capacity, improve water quality, and re-create habitats for amphibians, birds, and invertebrates.

Compensatory mechanisms such as ecological offsetting—when guided by a strict “no net loss” or “net gain” principle, as adopted by institutions like the Agence Française de Développement (AFD)—serve as policy instruments to ensure that unavoidable ecological impacts are counterbalanced through the enhancement or creation of equivalent habitats elsewhere. However, the effectiveness of such measures depends on rigorous baseline assessments, long-term monitoring commitments, and compliance with ecological equivalency standards.

Ultimately, resilient urban planning requires the adoption of a precautionary approach, one that prioritizes ecological integrity alongside socio-economic development. This involves embedding adaptive management,

landscape-level connectivity, and long-term stewardship into planning paradigms. In this framework, biodiversity becomes not merely a passive recipient of mitigation actions but a central component of urban resilience strategies, shaping how cities evolve in response to environmental uncertainty and climate change pressures.

### **Inclusive Design, Governance, and Stakeholder Engagement**

Biodiversity governance extends beyond technical management to encompass social participation, collective responsibility, and the democratization of environmental decision-making. It recognizes biodiversity not only as an ecological asset but also as a shared public good whose stewardship requires collaborative engagement across multiple societal actors. In this regard, inclusive design processes actively involve citizens, grassroots organizations, NGOs, scientists, urban planners, and policymakers in the co-production of urban ecological spaces, thereby fostering shared ownership and accountability in biodiversity outcomes (Colding & Barthel, 2013: 157–159). Such participatory modes of governance are operationalized through mechanisms such as participatory mapping, citizen-science initiatives, ecological monitoring networks, and community-managed gardens—all of which strengthen environmental stewardship and enhance ecological literacy at the neighborhood level.

At the institutional level, global and regional policy frameworks increasingly mandate participatory governance as a key component of biodiversity mainstreaming. For instance, the Convention on Biological Diversity's Decision XII/21 explicitly calls for local authorities to integrate biodiversity considerations into urban planning through multi-stakeholder collaboration, thereby aligning local action with international conservation commitments. In practice, urban biodiversity plans such as Barcelona's Green Infrastructure and Biodiversity Plan (2020) and Cape Town's Local Biodiversity Strategy and Action Plan (LBSAP) exemplify governance models that successfully merge scientific knowledge, socio-ecological data, and community engagement. These models illustrate how urban nature is most resilient when co-designed through dialogic processes that reflect diverse cultural, social, and ecological values.

Furthermore, cultural and aesthetic dimensions play a critical role in strengthening the public legitimacy of biodiversity initiatives. The idea of the “shared landscape,” as articulated by Gobster et al. (2007: 959–967), emphasizes that ecological spaces acquire meaning through emotional resonance, aesthetic perception, and social experience. When residents perceive urban nature as beautiful, culturally relevant, or spiritually meaningful, they are more likely to advocate for its protection and participate in its management. Thus, ecological stewardship is reinforced by affective bonds and place-based identities, which situate biodiversity within the cultural and sensorial fabric of urban life. In this way, inclusive governance transcends narrowly technocratic perspectives and repositions biodiversity as a co-owned societal objective grounded in plural values, local agency, and intergenerational responsibility. Biodiversity governance, therefore, becomes not only an ecological imperative but also a vehicle for environmental justice, civic empowerment, and the cultivation of ecological citizenship.

### **Discussion**

The integration of biodiversity into urban planning marks a significant paradigm shift in contemporary sustainability discourse. Instead of being perceived as a peripheral or decorative asset, biodiversity is increasingly acknowledged as a form of living infrastructure, actively involved in regulating ecological processes, enhancing climate resilience, and contributing to cultural identity. In this reimagined framework, urban biodiversity is not a static background condition but a dynamic component of urban metabolism—delivering ecosystem services, supporting mental and physical health, and shaping the experiential quality of urban life.

Spatially, this transition necessitates a reconfiguration of urban morphology around interconnected ecological networks, multifunctional landscapes, and layered green infrastructures that facilitate habitat continuity, reduce fragmentation, and enable species migration. It calls for spatial planning strategies that weave natural systems into transportation corridors, built environments, and public spaces, thereby creating ecological synergies across territorial, regional, and neighborhood scales. Temporally, it involves embracing the long-term nature of ecological processes and acknowledging that the benefits of biodiversity accrue gradually through successional growth, adaptive co-evolution, and sustained stewardship. As such, the success of biodiversity integration is contingent upon iterative learning, adaptive governance, and continuous monitoring.

Yet, this transformative vision faces persistent tensions. Economic growth imperatives continue to drive urban expansion, often prioritizing short-term development goals over ecological integrity. The commodification of ecosystem services, while useful for policy integration and valuation, risks reducing biodiversity to quantifiable metrics and sidelining intrinsic, ethical, and relational values associated with non-human life (Gómez-Baggethun & Ruiz-Pérez, 2011: 614-616, 618-621). Furthermore, socio-spatial inequalities in green space distribution reproduce environmental injustice, with marginalized communities disproportionately exposed to degraded environments and excluded from participatory decision-making processes (Anguelovski, 2016: 24-30). These contradictions underscore the need for integrated, justice-centered urban planning models that reconcile ecological functionality with social inclusion and ethical responsibility.

In response, emerging paradigms such as regenerative urbanism, circular ecology, and biophilic design propose holistic frameworks that re-establish symbiotic relationships between urban systems and natural cycles. By emphasizing closed-loop resource flows, energy recovery, water reuse, and soil regeneration, these models resonate with the foundations of regenerative agriculture and ecosystem restoration, which prioritize long-term ecosystem health and resilience (Lal, 2020: 123A–124A). When operationalized through policy, design, and participatory governance, these approaches have the potential to shift cities from net consumers of ecological resources to net contributors to biodiversity and ecosystem value. In doing so, urban environments evolve from sites of ecological deficit into productive socio-ecological systems capable of fostering collective resilience, biocultural flourishing, and just sustainability.

## Conclusion

Urban biodiversity constitutes the foundation of sustainable cities. When interpreted through spatial and temporal lenses, it becomes evident that biodiversity serves as the connective tissue that links large-scale territorial ecosystems with localized neighborhood habitats and synchronizes immediate planning interventions with trajectories of long-term socio-ecological resilience. As demonstrated throughout this paper, biodiversity delivers a spectrum of critical ecosystem services—from climate regulation, carbon sequestration, flood mitigation, and pollination to cultural identity formation, aesthetic appreciation, and psychological restoration, thereby affirming its role not only as an ecological necessity but also as a socio-cultural and ethical imperative.

Embedding biodiversity within the urban project cycle demands an integrative approach that bridges ecological science, participatory governance, socio-spatial equity, and regenerative design. This study has shown that effective strategies must prioritize ecological connectivity through green infrastructure, establish robust biodiversity indicators for iterative assessment, implement scientifically grounded restoration and compensation mechanisms, and cultivate inclusive governance models that center local communities as co-stewards of urban nature. Moreover, fostering ecological literacy and deepening emotional connections to nature are essential for sustaining long-term public support and shaping ecological citizenship.

By aligning urban biodiversity strategies with global policy frameworks such as Sustainable Development Goals (SDG 11 and SDG 15), the Convention on Biological Diversity (CBD), and the knowledge systems of IPBES, cities can enhance their legitimacy, attract international cooperation, and embed ecological integrity into broader agendas of climate adaptation, health equity, and urban justice. Importantly, the shift toward

resilience-based, nature-positive urbanism reframes cities not as ecological liabilities but as potential engines of regeneration, capable of restoring fragmented landscapes, reviving degraded ecosystems, and cultivating biocentric values within urban societies.

Ultimately, the integration of biodiversity transforms the city from a site of ecological disruption into a co-evolutionary arena where human and non-human life forms coexist in mutual interdependence. In this vision, cities are reimagined as thriving socio-ecological systems in which resilience, equity, and biodiversity are not aspirational ideals but structural principles guiding urban futures. By embracing biodiversity as a strategic asset, ethical commitment, and cultural narrative, urban environments can transition toward regenerative pathways, restoring ecosystems, and shaping cities that are not only more sustainable but also more just, more vibrant, and more profoundly alive.

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