Chinese Studies Monthly 中華研究月刊

Urban Planning and Sustainable Development: A Systematic Literature Review and Future Directions

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Abstract. The accelerating pace of global urbanization necessitates urgent scholarly attention to reconcile urban growth with ecological preservation, social equity, and economic resilience. This systematic review synthesizes contemporary research on sustainable urban development through five critical lenses: (1) small-city urbanization and subjective well-being metrics, (2) adaptive reuse of waterfront public spaces, (3) regeneration strategies for resource-depleted cities, (4) cultural infrastructure in rural revitalization, and (5) ecological security pattern integration. By critically analyzing 32 peer-reviewed studies (2010–2024), this paper identifies three emergent paradigms in sustainability scholarship: the shift from growth-centric to well-being-oriented urban metrics, the spatialization of circular economy principles, and the rise of trans-scalar governance frameworks. The review concludes by proposing a research agenda emphasizing digital participatory planning, nature-based solutions, and metabolic urbanism approaches to address persistent gaps in theory–practice translation.

Keywords: Sustainable Development, Urban Planning, Systematic Literature Review

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1 Introduction

Urbanization has evolved into a planetary phenomenon, with an estimated 68% of the global population expected to reside in cities by 2050 (UN-Habitat, 2022). Although urban centers drive approximately 85% of global gross domestic product (World Bank, 2020), they concurrently emit 75% of carbon emissions and consume nearly 60% of global resources (IPCC, 2023). This paradox underscores the necessity of rethinking urban development through the integrative lens of sustainability science, balancing ecological thresholds, social foundations, and economic ceilings (Raworth, 2017).

Contemporary debates increasingly challenge the “metrocentric” bias in urban scholarship (Brenner & Schmid, 2015), advocating for polycentric regional approaches that incorporate the distinct roles of small cities, resource peripheries, and rural hinterlands (Angelo & Wachsmuth, 2020). This paradigm shift aligns with the United Nations’ Sustainable Development Goals—especially SDG 11, which emphasizes inclusivity and resilience across diverse urban typologies (UNDESA, 2021).

Against this backdrop, the present review systematically examines five interconnected domains of sustainable urban research:

1. Subjective well-being metrics in small-city urbanization
2. Adaptive reuse of waterfront public spaces
3. Regenerative transitions in resource-based cities
4. Cultural infrastructure in rural revitalization
5. Ecological security pattern integration

By synthesizing insights from these domains, this paper reveals the complexities inherent in managing urban expansion alongside social welfare, environmental integrity, and equitable governance. We conclude with a research agenda highlighting digital participatory planning, nature-based solutions, and metabolic urbanism.

2 Subjective Well-Being Metrics in Small-City Urbanization

2.1 The Peripheral Urbanization Paradox

Although small cities (populations under 500,000) constitute roughly 40% of the world's urban settlements, they receive less than 15% of urban research attention (OECD, 2021). These so-called "ordinary cities" (Robinson, 2006) grapple with infrastructural deficits, reduced fiscal capacity, and a mismatch between residential distribution and employment opportunities (Bell & Jayne, 2009; Liu & Yang, 2012). Moreover, local planning agencies often lack robust institutional frameworks to manage rapid demographic shifts or environmental pressures (Du & Teo, 2019).

In this context, *Assessing Sustainable Urbanization in Small Cities: A Life Satisfaction Perspective Using the Delphi Method and Analytic Hierarchy Process (AHP)* (2024) underscores the criticality of subjective well-being as a key performance indicator for sustainable small-city development. Rather than relying solely on economic indicators, this study integrates public health, environmental quality, and participatory governance to evaluate overall life satisfaction.

2.2 Beyond GDP: The Capability Approach to Urban Assessment

Recent empirical work has further challenged GDP-centric evaluations by introducing Amartya Sen's capability framework (Sen, 1999), emphasizing what residents can *do* and *be* (Stiglitz et al., 2018). Chen et al. (2023) propose a composite index merging environmental capability (e.g., air quality), social capability (e.g., education equity), and economic capability (e.g., job diversity). Their findings suggest that a 1% improvement in social capability correlates with a 0.7% increase in residential satisfaction—an effect surpassing purely economic interventions.

Such results echo broader calls for "well-being–oriented" urban policy (Newman & Jennings, 2008; Roseland, 2012), as exemplified in the Delphi–AHP assessment (2024). By foregrounding resident satisfaction and community resilience, small cities can leverage human-centered metrics to shape more inclusive and socially equitable planning outcomes (Campbell, 1996).

3 Adaptive Reuse of Waterfront Public Spaces

3.1 Blue-Green Infrastructure as Social–Ecological Systems

Waterfronts are often conceived as liminal zones where ecological processes and human activities converge (Childers et al., 2015). When planned sustainably, waterfront spaces can serve multiple roles: mitigating urban heat islands, regulating floods, and providing public recreation (Forman, 2014). However, unchecked development can degrade these vital "blue-green" corridors (Jenks & Jones, 2010; Wu, 2014).

Enhancing Urban Riverside Greenways through Post-Occupancy Evaluation: A Case Study of the Yangtze River Greenway in Wuhan (2024) exemplifies how post-occupancy evaluation (POE) methods yield granular insights into user satisfaction, ecological performance, and spatial connectivity. The authors report that continuous bike paths can boost non-motorized transit by up to 40%, while riparian buffers can reduce local temperatures by 2–3°C (Wang et al., 2022).
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3.2 Community-Driven Waterfront Regeneration

Beyond providing ecological services, adaptive waterfront reuse fosters opportunities for social innovation (Roseland, 2012). Community-managed wetlands, for example, can enhance flood resilience and promote biodiversity (Ahern, 2013). Integrating local stakeholder engagement into the design process—through participatory approaches such as pGIS—ensures that waterfront planning reflects both environmental imperatives and cultural values (Du & Teo, 2019). In sum, such adaptive strategies transform waterfronts into dynamic social–ecological "third spaces," bridging the gap between urban density and natural landscapes (Childers et al., 2015).

4 Regenerative Transitions in Resource-Based Cities

4.1 From Extraction to Circular Urbanism

Resource-dependent cities epitomize the tension between economic imperatives and environmental constraints (Raven, 2012). Reliance on coal, minerals, or forests can lead to abrupt economic downturns once

resources are depleted, leaving behind polluted landscapes and socio-economic vulnerabilities (Steffen et al., 2007; Evans, 2002). *Shrinkage and Expansion Mechanisms of Resource-based Cities: Analysis Based on Multidimensional Typology Definition Matrix* (2024) systematically categorizes the phases through which a city transitions from extractive industries to diversified, greener economies.

Liupanshui's post-coal metamorphosis (Zhang & Li, 2021) highlights a three-pronged strategy of industrial symbiosis (waste heat recovery), workforce reskilling (miners turned eco-guides), and ecological rehabilitation (transforming subsidence areas into solar farms). These local interventions align with the "circular urbanism" perspective, emphasizing reuse, recycling, and restoration to create resilient post-extraction pathways (Schaffartzik et al., 2014).

4.2 Multi-Scalar Policy Integration

Regenerative shifts in resource-based cities also hinge on multi-scalar policy support (Bulkeley et al., 2021). National subsidies for green technology, regional alliances for cross-boundary watershed management, and local community participation in planning collectively define the trajectory of urban renewal (Evans, 2002; Li & Wu, 2006). The 2024 typology study underscores that such transformative agendas must consider economic diversification, environmental reparations, and equitable social services (Campbell, 1996).

5 Cultural Infrastructure in Rural Revitalization

5.1 Cultural Ecosystem Services and Rural Futures

Rural regions worldwide face depopulation, infrastructural neglect, and economic stagnation (Berkes, 2007; Talen, 2002). Yet recent policy agendas—including China's Rural Revitalization Strategy—spotlight cultural infrastructure as a driver of local empowerment and long-term sustainability (Newman & Jennings, 2008). Studies indicate that investments in libraries, cultural centers, and traditional craft hubs can bolster community cohesion and open diversified revenue streams via cultural tourism (McHarg, 1992; Reed, 2008).

5.2 Cultural Space for Sustainable Development

How to Produce Cultural Space for Sustainable Development Towards Rural Revitalization: A Case Study of China (2024) underscores the transformative potential of cultural facilities in strengthening local identity and community self-organization. The study finds that when stakeholders are engaged in the co-creation of cultural programs, residents exhibit higher levels of place attachment and social trust. However, it also warns against replicating urban-centric models that ignore rural environmental sensitivities and cultural uniqueness (Roseland, 2012). Aligning with these insights, combining cultural ecosystem services with ecological rehabilitation can help rural communities pivot toward a holistic sustainability paradigm (Xie, et al., 2024).
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6 Ecological Security Pattern Integration

6.1 Ecological Security as a Governance Priority

Rapid urban expansion commonly disrupts critical ecosystem functions—reducing habitat connectivity, altering hydrological cycles, and exacerbating climate risks (Forman, 2014; IPCC, 2023). Integrating ecological security patterns into spatial planning can thus be a strategic intervention for sustainable regional development (Campbell, 1996).

6.2 Coupling Ecological Patterns with Restoration

Ecological Spatial Restoration in Gannan Prefecture based on the Coupling of Ecological Security Pattern and Ecological Problems (2025) exemplifies a place-based approach that fuses remote sensing data, ecosystem service valuation, and participatory planning. By overlaying ecological security maps with known degradation hotspots, planners can prioritize restoration efforts in wetlands, riparian corridors, and alpine meadows (Ahern, 2013). This ecological lens complements local socio-economic strategies, ensuring that development projects do not undermine long-term ecosystem stability (Jenks & Jones, 2010; Wu, 2014).
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7 Future Research Agenda

7.1 Digital Twins for Participatory Scenario Modeling

Emerging digital twin technologies enable real-time simulation of urban dynamics, facilitating participatory scenario building with multiple stakeholders (Bibri et al., 2022). When applied to small and resource-dependent cities, digital twins can illuminate how policies—such as zoning changes or infrastructure investments—affect carbon footprints, land-use trade-offs, and social welfare (Reed, 2008).

7.2 Urban Metabolism and Material Flow Accounting

Adopting a metabolic perspective on cities entails quantifying energy, water, and material flows to identify opportunities for circularity (Kennedy et al., 2015). Integrating such data with post-occupancy evaluations and ecological security analyses could help local governments target interventions that maximize resource efficiency while preserving biodiversity (Newman & Jennings, 2008; Roseland, 2012).

7.3 Institutional Innovation for Transboundary Governance

Many urban challenges—from watershed management to air pollution—transcend administrative borders (Bulkeley et al., 2021). Future scholarship can explore innovative governance structures that foster cross-scalar collaborations among municipalities, regional authorities, and national policymakers (Evans, 2002). Multi-jurisdictional partnerships, reinforced by robust legal frameworks, remain pivotal for sustainable development (Campbell, 1996; Angelo & Wachsmuth, 2020).

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