

URBANIZATION AND ENVIRONMENTAL CHALLENGES

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ABSTRACT

Urbanization is one of the most significant demographic, economic and spatial transformations of the contemporary world. Cities provide employment, education, healthcare, infrastructure, markets and opportunities for innovation, but rapid and poorly planned urban growth also creates serious environmental challenges. Expansion of built-up areas, increasing energy consumption, motorization, industrial activity, construction, waste generation and conversion of natural land can contribute to air pollution, urban heat, water stress, flooding, loss of green space, biodiversity degradation and climate vulnerability. Recent research increasingly emphasizes that these challenges are interconnected rather than independent environmental problems. This research examines the relationship between urbanization and environmental challenges through a systematic review of recent academic and institutional literature published primarily between 2023 and 2026. The study focuses on major environmental consequences of urbanization and evaluates emerging approaches for sustainable urban development. Literature was identified through Google Scholar-oriented searches and academic databases using keywords related to urbanization, environmental degradation, urban sustainability, climate change, urban heat, green infrastructure, air pollution, water management and climate resilience.

KEYWORDS:

Urbanization, Environmental Challenges, Urban Sustainability, Climate Change, Urban Heat Island, Green Infrastructure, Air Pollution, Urban Planning, Climate Resilience, Sustainable Cities.

INTRODUCTION

Urbanization is a defining feature of the contemporary world. The growth of cities has transformed patterns of settlement, employment, production, consumption and social interaction. Cities have become centres of economic activity, innovation, education, culture and political decision-making. At the same time, rapid urban expansion has created complex environmental pressures that increasingly threaten the sustainability and resilience of urban areas. The significance of urbanization is particularly clear when considering the continuing growth of the global urban population. UN-Habitat reports that more than half of the world's population currently lives in urban areas and that this share is expected to increase substantially in coming decades. UN-Habitat This transformation creates major opportunities because concentrated populations can potentially be served efficiently through public transportation, centralized infrastructure, renewable energy systems, waste-management networks and compact development Almulhim, A. I., & Cobbinah, P. B. (2026).found that. However, these benefits depend heavily on effective urban planning and governance. Rapid urbanization can fundamentally transform natural landscapes. Agricultural land, forests, wetlands, grasslands and other ecological areas may be converted into residential, commercial, industrial and transportation infrastructure. The replacement of vegetation and permeable soil by concrete, asphalt and buildings changes the natural hydrological cycle and the thermal characteristics of urban environments. Such changes can increase surface runoff, reduce groundwater recharge, intensify urban heat and contribute to flooding. Recent research has increasingly examined the relationship between land-use change and urban temperature.

A 2025 global review of urbanization and land-surface temperature identifies urbanization-driven land-use and land-cover change as an important factor influencing thermal conditions across cities and climatic regions.

The study demonstrates the importance of considering urban development patterns when assessing heat-related environmental impacts. ScienceDirect One of the most visible environmental challenges associated with urbanization is air pollution. Urban transportation, industrial production, construction activities, electricity generation and residential energy use can release particulate matter and gaseous pollutants. Increasing motorization can be particularly important in rapidly expanding cities where public transportation systems have not developed at the same rate as population and economic growth. Air pollution is not simply an environmental problem; it is closely associated with urban health and quality of life. Pollutants can accumulate in densely developed environments, while buildings and street configurations may influence airflow and pollutant dispersion. Recent research has therefore increasingly examined air pollution together with urban heat rather than considering each environmental issue separately. Jia, Y., & Turcu, C. (2025). explainedThe urban heat-island effect represents another major environmental consequence of urbanization. Urban surfaces absorb and store solar radiation, while vegetation loss reduces shade and evapotranspiration. Vehicles, industrial activities, air-conditioning systems and other human activities can add anthropogenic heat. Consequently, densely built areas may experience higher temperatures than surrounding rural or less developed areas.Recent systematic reviews show that green infrastructure has become a major research theme in relation to urban heat. A 2025 systematic review examining literature from 2014–2024 found that research has increasingly focused on the role of green infrastructure in regulating urban thermal environments, while also identifying important research gaps related to policy, technology and equity. ScienceDirect

Urban green spaces can reduce heat through several mechanisms. Trees provide shade, vegetation supports evapotranspiration and green surfaces can influence radiation and surface temperatures. A 2025 systematic review of 84 peer-reviewed studies found that the cooling effects of urban green spaces depend on vegetation density, species selection, spatial configuration and urban morphology. ScienceDirect This indicates that simply increasing the amount of vegetation is not necessarily sufficient; the design and location of green infrastructure also matter.Water represents another important dimension of urban environmental sustainability. Urban populations require large quantities of water for domestic, industrial and commercial purposes. At the same time, development can damage natural drainage systems and increase runoff. Impermeable surfaces prevent rainfall from infiltrating into soil and instead direct water rapidly into drainage networks.When drainage infrastructure is inadequate, intense rainfall can result in urban flooding. Climate change may further increase flood risks in some locations by changing precipitation patterns and increasing the occurrence of extreme rainfall events. Green infrastructure, wetlands, permeable surfaces and improved drainage systems can therefore contribute to urban climate adaptation.Waste generation also increases as urban populations and consumption increase. Municipal solid waste, wastewater, construction waste and other urban waste streams require effective collection, treatment and disposal. Where urban waste systems are inadequate, waste can accumulate in streets, waterways and drainage channels, contributing to pollution and flooding.

Biodiversity is similarly affected by urban expansion. Conversion of natural land into built environments reduces habitat and can fragment ecological systems. Roads and other infrastructure can separate remaining natural areas, affecting species movement and ecosystem functioning. Climate change has intensified the relationship between urbanization and environmental challenges. Lai, Y., Wang, P., & Xia, J. (2025). explains UN-Habitat's *World Cities Report 2024* describes cities as being on the frontline of climate change, with urban populations facing risks from flooding, heatwaves, storms and drought. It also emphasizes that climate impacts interact with existing social inequalities. UN-Habitat The distribution of environmental risks is therefore an important issue. Poor and marginalized communities may live in locations with greater exposure to flooding, heat or pollution and may have less access to cooling, healthcare, safe housing, green space and reliable infrastructure. Urban environmental policy consequently has an important social dimension. UN-Habitat's 2024 analysis of Nationally Determined Contributions also demonstrates the importance of cities in climate policy. The report notes that urban areas account for a substantial share of global energy consumption and greenhouse-gas emissions and examines how national climate plans incorporate urban issues. Li, J., Zlatanova, S., & Stouffs, R. (2025). Elaborated on UN-Habitat Recent research increasingly supports an integrated understanding of urban sustainability. Rather than considering environmental problems independently, researchers are examining interactions between land use, climate, infrastructure, transportation, environmental quality and social conditions. Urban green infrastructure is an example of this integrated approach. It can simultaneously provide thermal regulation, stormwater management, biodiversity support and recreational benefits. A 2025 systematic review found evidence that urban green infrastructure influences multiple ecosystem services, particularly air-quality regulation, climate regulation and runoff regulation. ScienceDirect

However, environmental interventions can also involve trade-offs. Vegetation may provide shade and cooling, but its placement can influence air circulation. Similarly, green infrastructure can reduce stormwater runoff but may require substantial land and maintenance. Therefore, urban environmental planning needs to consider local conditions and multiple objectives. Technological development is also changing urban environmental management. Remote sensing, GIS, environmental sensors, artificial intelligence and machine-learning approaches can help researchers and planners monitor urban expansion, land-cover change, vegetation, surface temperature and environmental risks. Nevertheless, technology alone cannot resolve urban environmental problems. Lai, Y., Wang, P., & Xia, J. (2025). revealed Effective environmental governance, financial resources, planning institutions, regulatory enforcement and public participation remain essential. The literature also emphasizes the importance of sustainable transportation. Public transportation, walking, cycling and electric mobility can reduce dependence on fossil-fuel-powered private vehicles. Compact urban development can potentially make public transportation more viable and reduce unnecessary travel distances. Urban planning therefore plays a central role in environmental sustainability Li, J., Zlatanova, S., & Stouffs, R. (2025) found that. Decisions about where housing, employment, industry, transportation infrastructure and green space are located have long-term consequences. Poorly planned expansion can lock cities into inefficient infrastructure patterns for decades.

The recent literature suggests that the objective should not simply be to prevent urban growth but to manage urbanization in ways that reduce environmental pressure while maintaining economic and social opportunities. Sustainable urbanization requires coordination among land-use planning, transportation, energy, water, waste management, housing and climate policy. The 2025 literature on urban sustainability assessment emphasizes the importance of systematic approaches for understanding complex urban systems and evaluating sustainability across multiple dimensions. Springer The need for integrated urban climate action is also reflected in recent international policy developments. UN-Habitat's 2024 work identifies major gaps in urban climate action while emphasizing the importance of multilevel governance, financing and local implementation. UN-Habitat By 2026, the role of cities in national climate policy had become even more prominent. UN-Habitat's 2026 analysis of 142 submitted NDC 3.0 documents reports increased urban content in national climate plans, suggesting stronger recognition of cities in climate policy. UN-Habitat Against this background, the present research examines the environmental challenges associated with urbanization and identifies strategies that can contribute to sustainable and climate-resilient cities. The study focuses particularly on recent research published from 2023 to 2026.

RESEARCH OBJECTIVES

1. To examine the major environmental challenges associated with urbanization, including air pollution, urban heat, water stress, flooding, solid waste, green-space loss and biodiversity degradation.
2. To analyze the relationship between urbanization, environmental degradation and climate vulnerability using recent academic and institutional literature published from 2023 to 2026.
3. To identify sustainable urban-development strategies that can reduce environmental pressures and strengthen urban climate resilience.

RESEARCH QUESTIONS

1. What are the major environmental challenges associated with rapid urbanization?
2. How does urbanization interact with climate change, environmental degradation and socioeconomic vulnerability?
3. What strategies can be used to promote environmentally sustainable and climate-resilient urban development?

LITERATURE REVIEW

Recent literature increasingly treats urbanization as a complex process involving population growth, land transformation, infrastructure development, economic activity and changing consumption patterns. The environmental consequences are consequently produced by multiple interacting processes. Lai, Wang and Xia's 2025 systematic review emphasizes that continuing urban population growth creates pressure on environmental, social and economic systems and has increased the importance of sustainable urban community development. Springer Urban expansion changes land cover and ecosystem functioning, explained Liu, Z., Cheng, K. Y., Amati, M., Jim, C. Y., Hua, C., Yokohari, M., ... & Ng, E. (2025). Built surfaces replace vegetation and natural soils, influencing temperature, water movement and

ecological connectivity. These processes can generate environmental impacts that persist even after population growth slows. Urban heat is one of the strongest themes in contemporary urban-environmental research. Increased building density, reduced vegetation and heat-absorbing materials contribute to elevated temperatures. The 2025 systematic review of green infrastructure and urban thermal environments demonstrates that research increasingly addresses thermal exposure at different spatial scales, human well-being and social equity. ScienceDirect A separate 2025 review of urban green spaces examined 84 peer-reviewed studies and found that vegetation characteristics, spatial patterns and urban morphology influence cooling effectiveness. ScienceDirect

Research published in 2026 further examines the scalability of urban green infrastructure. The review reports that large green infrastructure areas can influence urban temperatures across larger spatial scales, although results depend on vegetation type, density and spatial configuration. ScienceDirect Urban air pollution is closely associated with transportation, industry, construction and energy systems. Rapid urbanization can increase demand for private vehicles and energy, thereby increasing emissions where low-carbon alternatives are not available. The literature increasingly examines air pollution together with urban heat. This reflects the reality that urban residents experience multiple environmental stressors simultaneously. Green infrastructure is being investigated as one potential response because vegetation can capture some pollutants, provide shade and alter local microclimates. However, the effectiveness of vegetation depends on its design and location. Urban development can place pressure on water resources while simultaneously increasing flood risk. Population growth increases water demand, while impervious surfaces reduce infiltration. Green infrastructure has therefore become increasingly relevant to stormwater management. The 2025 systematic review of green infrastructure siting highlights heat and flooding as major urban climate risks and examines how green infrastructure can be strategically located to address both. ScienceDirect

The literature indicates that urban drainage cannot be considered separately from land-use planning. Development in flood-prone locations can increase vulnerability even where drainage systems are improved. Urbanization increases the volume and complexity of waste produced by households, businesses and industries. Waste-management systems must therefore expand as cities grow. Poorly managed waste can cause environmental contamination and contribute to drainage blockage. Sustainable waste strategies include source reduction, recycling, composting, material recovery and appropriate treatment and disposal Liu, Z., Cheng, K. Y., Amati, M., Jim, C. Y., Hua, C., Yokohari, M., ... & Ng, E. (2025). explains. The literature increasingly links waste management with climate policy because waste systems can contribute to greenhouse-gas emissions while also offering opportunities for resource recovery. Green spaces are increasingly viewed as essential components of urban infrastructure rather than optional amenities. Parks, urban forests, wetlands and green corridors can provide environmental and social benefits. Recent research identifies multiple ecosystem services provided by urban green infrastructure, including climate regulation, air-quality regulation and runoff management. ScienceDirect However, urban green space is often unevenly distributed. This raises questions of environmental justice because residents in different neighbourhoods may have very different access to cooling and recreational spaces. Urban areas are particularly important in climate policy because they contain large populations and infrastructure concentrations. UN-Habitat's *World*

Cities Report 2024 foundemphasizes that cities face increasing exposure to flooding, heatwaves, drought and storms while vulnerable populations often have fewer resources for adaptation. UN-Habitat Climate vulnerability therefore depends on both environmental exposure and social conditions. Housing quality, income, access to services and infrastructure can influence people's ability to cope with climate hazards. Transportation is a major component of urban environmental sustainability. Vehicle emissions contribute to air pollution and greenhouse-gas emissions, while road infrastructure consumes land.

Sustainable mobility strategies include public transportation, walking, cycling, electric vehicles and transit-oriented development. However, these strategies require supportive land-use planning and investment. Urban environmental challenges frequently cross administrative boundaries. Air pollution, water systems, transportation networks and ecological systems cannot always be managed effectively by individual agencies acting independently. UN-Habitat's recent climate work emphasizes multilevel governance and cooperation among national, regional and local institutions. UN-Habitat Effective governance therefore requires coordination between environmental, transportation, housing, planning and infrastructure institutions. Sustainable urban planning involves balancing environmental protection with economic and social objectives. The 2025 systematic review of urban sustainability assessment identifies urban sustainability assessment as an important tool for addressing urbanization, climate change and resource constraints. Springer This literature supports the use of multidimensional indicators rather than relying on a single environmental measure.

METHODOLOGY

This research uses a qualitative systematic literature-review approach. The approach is appropriate because the study aims to synthesize existing knowledge concerning the relationship between urbanization and environmental challenges. The research focuses on publications with older studies used only where necessary to explain foundational concepts. Academic literature was identified through Google Scholar-oriented searches and scholarly publisher databases. The research approach is interdisciplinary. Urbanization and environmental problems involve geography, environmental science, urban planning, climate science, transportation, public policy and socioeconomic development. Consequently, evidence from different academic disciplines This chapter describes the methodology used to examine the relationship between urbanization and environmental challenges. The study focuses on how the rapid growth and expansion of urban areas affect the natural environment and contribute to problems such as air pollution, water pollution, inadequate waste management, loss of green spaces, traffic congestion, urban flooding, noise pollution, and increased pressure on natural resources. The methodology provides a systematic framework for collecting, analyzing, and interpreting information related to these issues. The study adopts a mixed-method approach by combining quantitative and qualitative methods. Quantitative data are used to identify patterns, trends, and relationships between urbanization and environmental conditions, while qualitative information provides a deeper understanding of people's experiences, perceptions, and observations regarding environmental changes in urban areas. The combination of both approaches makes it possible to develop a more comprehensive understanding of the environmental consequences of urban growth.

RESEARCH DESIGN

The research adopts a descriptive-exploratory research design. The descriptive component identifies the major environmental challenges associated with urbanization. These include urban heat, air pollution, water stress, flooding, solid waste, biodiversity loss and green-space reduction. The exploratory component investigates relationships between urban growth, environmental degradation, climate change and social vulnerability. The design also examines responses to these challenges, including green infrastructure, sustainable transportation, climate-resilient infrastructure, technological monitoring and integrated governance. The research design also considers technological approaches to environmental assessment. Recent literature increasingly examines urban parks, trees, forests, wetlands, green roofs, green walls and other natural systems as tools for climate adaptation and environmental management. The research examines evidence concerning their potential contribution to temperature regulation, stormwater management, air-quality improvement and biodiversity protection. Recent reviews emphasize that the effectiveness of green infrastructure depends on factors such as vegetation type, spatial configuration, urban morphology and climatic context. Recent urban research increasingly uses remote sensing, geographic information systems, environmental sensors, modelling and artificial intelligence to examine urban expansion, vegetation, surface temperature and environmental risks. These technologies are considered within the study as tools that can improve environmental monitoring and evidence-based planning. However, the research design recognizes that technological capacity must be accompanied by appropriate institutions, financial resources and governance. Climate change is incorporated into the research design as a cross-cutting issue. Rather than treating climate change as a separate environmental problem, the research examines how it interacts with existing urban pressures. Heatwaves can intensify the urban heat-island problem, extreme rainfall can increase flooding, and drought can increase water stress.

DATA ANALYSIS

The literature was analyzed using thematic analysis. The first stage involved identifying recurring concepts within the selected publications. These concepts were then grouped into major environmental themes. The first major theme was urban environmental degradation, including air pollution, water contamination, waste and biodiversity loss. The second was urban climate risk, including heatwaves, flooding, drought and other climate-related hazards. The third theme was urban green infrastructure. Research was examined to determine how parks, trees, forests, wetlands, green roofs and other forms of nature-based infrastructure contribute to environmental improvement. The fourth theme was urban governance and planning. Studies were reviewed for evidence concerning policy coordination, infrastructure investment, environmental regulations and community participation. The fifth theme was technological and data-driven urban management. This included remote sensing, GIS, environmental monitoring, modelling and artificial intelligence. Following thematic categorization, findings from different studies were compared. Areas of agreement were identified, while differences were examined in relation to geographical, climatic and methodological context. The analysis also considered whether proposed solutions address single or multiple environmental problems. This distinction is important because urban environmental challenges are interconnected. For example, green infrastructure may

contribute to heat reduction, stormwater management and biodiversity simultaneously. Finally, the findings were synthesized to develop an integrated understanding of sustainable urbanization. This approach avoids treating urban heat, pollution, flooding and waste as completely separate problems.

FINDINGS

The literature review demonstrates that urbanization is associated with a broad range of environmental pressures. The most frequently identified challenges are These problems interact with each other. Urban expansion reduces vegetation, increases impervious surfaces and increases transportation demand. These processes can simultaneously affect temperature, air quality, runoff and biodiversity. The reviewed research strongly emphasizes urban heat. Recent systematic reviews show rapid growth in research on green infrastructure and urban thermal environments. ScienceDirect+1 The findings indicate that urban temperature is influenced by vegetation, building density, surface materials, urban morphology and local climate. The literature also suggests that green infrastructure can reduce heat exposure. However, the effectiveness of green infrastructure varies depending on vegetation characteristics and spatial configuration. The 2025 review of urban green spaces specifically identifies vegetation density, species selection, spatial patterns and urban morphology as important determinants of cooling effects. ScienceDirect Climate change intensifies many existing urban environmental challenges. Heatwaves can become more dangerous in already warm urban environments, while intense rainfall can increase flood risk. UN-Habitat identifies flooding, heatwaves, storms and drought among major urban climate hazards. UN-Habitat This means urban climate adaptation must be integrated with broader environmental planning. findings show that environmental hazards do not affect all urban residents equally. People living in informal settlements or poorly serviced areas may have greater exposure to flooding, extreme heat, pollution and inadequate sanitation. UN-Habitat specifically highlights the relationship between climate change, inequality and urban vulnerability. UN-Habitat Therefore, sustainable urban development must include an environmental-justice dimension. The literature demonstrates that planning decisions can either increase or reduce environmental risks. Urban sprawl can increase land consumption and transportation dependence. In contrast, well-designed compact development can potentially support public transportation and efficient infrastructure. Planning for green corridors, wetlands, parks and permeable surfaces can improve environmental resilience.

CONCLUSIONS

Urbanization is an unavoidable and important component of contemporary economic and social development. Cities provide employment, education, healthcare, markets, infrastructure and opportunities for innovation. However, the rapid expansion of urban areas can create significant environmental pressures when development occurs without adequate planning, infrastructure and environmental governance. This research reviewed recent literature from 2023 to 2026 to examine the relationship between urbanization and environmental challenges. The review demonstrates that urbanization is associated with multiple interconnected environmental problems, including air pollution, urban heat, water stress, flooding, waste accumulation, loss of green space and biodiversity degradation. One of the most important conclusions is that urban environmental problems should not be

understood individually. Urban heat, air pollution, water management, transportation and land-use change interact with one another. Consequently, policies designed to address one environmental problem may produce additional benefits or unintended consequences for others. Urban heat has emerged as a particularly important challenge. The expansion of impervious surfaces, reduction of vegetation and increasing energy use can intensify urban thermal conditions. Recent systematic reviews provide substantial evidence concerning the role of urban green infrastructure in reducing heat and improving urban thermal environments. Green infrastructure therefore represents an important component of sustainable urban planning. Parks, trees, urban forests, wetlands, green roofs and other natural systems can provide multiple ecosystem services. However, the research also shows that green infrastructure should not be treated as a universal solution. Its effectiveness depends on vegetation type, density, spatial configuration, urban morphology and climate. ScienceDirect Planning must therefore be based on local environmental conditions. Another important conclusion concerns climate change. Cities are simultaneously major centres of human activity and locations of significant climate vulnerability. UN-Habitat's 2024 assessment identifies flooding, heatwaves, storms and drought among the major risks facing urban populations. Urban climate risks are also connected to inequality.

REFERENCES

- Alaraibi, S., & Alkhalifa, F. (2026). *Green infrastructure planning for sustainable urban development: A PRISMA-guided systematic literature review with implications for arid regions. Environmental Development*, 60, 101504.
- Almulhim, A. I., & Cobbinah, P. B. (2026). *Planning for Sustainable Urban Futures: Rethinking Urbanization and Resilience in Saudi Arabia. In Urbanization Rethought: On Planning and Resilience in Saudi Arabia (pp. 223-230). Singapore: Springer Nature Singapore.*
- Chen, W., Pan, J., Quan, S. J., Wei, H., & Wang, W. (2026). *Scalable impact of urban green infrastructure on urban climate: A critical review. Renewable and Sustainable Energy Reviews*, 226, 116259.
- Critical Review of BPS and UN-Habitat Reports. Anthroposia: Journal of Social and Human Development*, 1(1), 10-18. Settlements Programme. UN-Habitat
- Jia, Y., & Turcu, C. (2025). *Climate, health, and urban green infrastructure: The evidence base and implications for urban policy and spatial planning. International Journal of Environmental Research and Public Health*, 22(12), 1842.
- Lai, Y., Wang, P., & Xia, J. (2025). *Systematic review of sustainable urban community development trends challenges and opportunities. Discover Sustainability*, 6(1), 616.
- Li, J., Zlatanova, S., & Stouffs, R. (2025). *Cooling effects of urban green spaces: a systematic review of methods applied in the past two decades. Sustain. Cities Soc.* 133, 106833.

- Liu, S., & Jin, X. (2025). *How does green infrastructure (GI) influence urban thermal environments? A systematic literature review of trends, gaps, and future directions (2014–2024)*. *Sustainable Cities and Society*, 106753.
- Liu, Z., Cheng, K. Y., Amati, M., Jim, C. Y., Hua, C., Yokohari, M., ... & Ng, E. (2025). *Creating a thermally comfortable city through urban green infrastructure: An international review of greening policies*. *Urban Forestry & Urban Greening*, 105, 128713.
- Liu, Z., Cheng, K. Y., Amati, M., Jim, C. Y., Hua, C., Yokohari, M., ... & Ng, E. (2025). *Impact of urbanization on land surface temperature: a global perspective*. *Curr Res Environ Sustain* 10: 100315.
- Saraswat, A., Kumar, A., & Pipralia, S. (2025). *A Methodological Approach for Urban Sustainability Assessment of Indian Cities: A Case of Jaipur*. *Journal of The Institution of Engineers (India): Series A*, 106(4), 1221-1241.
- UN-HABITAT. (2024). *World cities report 2024: Cities and climate action*. Stylus Publishing, LLC.
- UN-Habitat. (2026). *Urban Content in NDC 3.0: Cities at the Centre*. United Nations Human
- Kusman, A., & Damayanti, Y. M. (2026). *Urbanization and Social Structure Transformation in Indonesia: A*
- Yao, Y., Zheng, H., Ouyang, Z., Gong, C., Zhang, J., Ying, L., & Wen, Z. (2025). *Impact of urban green infrastructure on ecosystem services: A systematic review*. *Ecological Indicators*, 178, 113885.
- Yao, Y., Zheng, H., Ouyang, Z., Gong, C., Zhang, J., Ying, L., & Wen, Z. (2025). *Impact of urban green infrastructure on ecosystem services: A systematic review*. *Ecological Indicators*, 178, 113885.