

Environmental and Social Impacts of Urbanization: Strategies for Achieving Sustainable Development

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Received: 24 Jun. 2024, Revised: 10 Nov. 2024, Accepted: 30 Nov. 2024

ABSTRACT

Urbanization has significantly increased alongside economic growth and social change, bringing both opportunities and challenges, particularly in environmental and social contexts. This study aims to analyze the environmental and social impacts of urbanization in relation to sustainable development, using a comprehensive literature review of 50 relevant articles published between 2019 and 2024. The analysis focused on two main themes: the environmental and social consequences of urbanization and strategies for achieving sustainability. The results reveal that urbanization contributes positively to economic growth, access to education, and healthcare, but negatively impacts the environment and social equity. Key challenges include pollution, waste generation, climate change, limited affordable housing, and social inequalities. Notable strategies for sustainable urbanization include effective waste management, clean energy adoption, and green city initiatives. Research from Jambi and Serang highlights community involvement in waste reduction and the promotion of renewable energy as vital components for urban sustainability. The study concludes that sustainable urban planning, emphasizing integrated solutions across environmental, economic, and social domains, is crucial for mitigating urbanization's negative impacts. Collaborative efforts among policymakers, local communities, and researchers are essential to create inclusive and resilient cities aligned with sustainable development goals.

Keywords: *Urbanization, Sustainable Development, Environmental Impact, Social Impact, Urban Planning.*



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INTRODUCTION

The phenomenon of urbanization is increasing along with economic growth and social change in various places throughout the world. The process of rapid urbanization has many consequences for sustainable progress, especially in the environmental and social fields. The increase in population in big cities is caused by the movement of people from rural to urban areas. This trend exacerbates pressure on natural resources, infrastructure, and the environment. In addition, urbanization affects the social structure of society, causing new challenges and opportunities to achieve just and inclusive social welfare.

The rapid economic growth and development of community facilities that have occurred since the 21st century have been marked by the emergence of numerous cities due to the construction of industries, infrastructure, health facilities, education centers, shopping malls, and more. As a result, many people have migrated to cities in search of work or to achieve a better quality of life. This movement of people to cities is called urbanization. Such migration has influenced social and economic changes as well as lifestyles in urban

environments. Urbanization accelerates economic growth in cities, but at the same time negatively impacts environmental sustainability. Population growth and industrial development lead to waste generation and air pollution. Every brick laid, road built, and skyscraper erected carries a hidden environmental cost, including pollution, waste production, microclimate changes, habitat fragmentation, and groundwater depletion (Ramachandra et al., 2023). Additionally, the concentration of large populations in urban areas results in negative side effects such as limited employment opportunities, homelessness, the expansion of informal settlements, inadequate infrastructure and services, substandard healthcare and education, and high pollution levels. Rapid, unplanned urban population growth drives urban sprawl, causing harmful economic, social, and environmental effects (Rashed, 2023). Addressing these challenges requires sustainable urban planning to effectively manage the arising problems. As such, the rate of urbanization growth is a significant concern for sustainable development (Rana, 2011). The 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro introduced sustainable development as a framework for progress, emphasizing the integration of economic growth, social advancement, and environmental protection as mutually reinforcing pillars for long-term development.

Some key environmental effects of urbanization include air and water pollution, reduced green spaces, and rising greenhouse gas emissions contributing to climate change. Social impacts include shifts in residential patterns, uneven access to essential services like healthcare and education, and increasing economic and social inequality. Thus, understanding how to manage urbanization effectively is crucial to supporting sustainable development goals defined as meeting current generational needs without compromising the ability of future generations to meet theirs.

The aim of this article is to present a comprehensive review of existing literature on the environmental and social consequences of urbanization in the context of sustainable development. By analyzing diverse studies and publications, it seeks to identify major trends, challenges, and opportunities in aligning urbanization with sustainable development principles. This article aims to provide insights and guidance for researchers, policymakers, and practitioners to design effective urban management strategies that foster sustainable progress.

METHODS

To examine the environmental and social impacts of urbanization within the context of sustainable development, this research employs the literature review method, as it enables researchers to identify, analyze, and integrate findings from various relevant studies, providing a comprehensive understanding of the topic. More details can be seen in Table 1 below.

Table 1. Measurement result data

Title	Author/ Year	Method	Result
Analisis Keberlanjutan Pembangkit Listrik Tenaga Mikro Hidro (PLTMH) Melalui Implementasi Kemitraan Konservasi Di Taman Nasional Kerinci Seblat	Riko Kurniawan et al. (2024)	Case study, qualitative analysis	Demonstrate the success of conservation partnerships in supporting the sustainability of PLTMH and environmental preservation.
Pengaruh Faktor Internal dan Eksternal Terhadap Persepsi Masyarakat dalam Pengelolaan Sampah Rumah Tangga Melalui TPS 3R Sular Berkah dan Makmur Jaya di Kota Jambi	Siti Sholeha Anggunisa Heryeni et al. (2024)	Surveys, statistical analysis	Found that public perception is influenced by internal and external factors in sustainable waste management.
Evaluasi Kebijakan Urbanisasi dalam Mendukung Pembangunan Berkelanjutan: Studi Kasus di Kota-Kota Besar Indonesia	Dewi Kartika (2022)	Policy studies, qualitative analysis	Identifying the successes and shortcomings of urbanization policies in large Indonesian cities in supporting sustainable development.
Urbanisasi dan Dampak Sosial di Kota Besar Indonesia	Inayah Hidayati (2021)	qualitative through literature review, field observations and supported by secondary data	Social problems occur due to urbanization such as unemployment, slums, traffic jams. Anticipation of crime can be done to equalize development and industrialization down to the villages
Dampak Urbanisasi Dalam Kehidupan Masyarakat Kota	Solu Nor Amaya et,al (2024)	literature review and getting involved in daily activities and the environment in several relevant urban areas in the city of Serang.	Urbanization impacts social and lifestyle changes, which can influence cultural values, daily habits, and patterns of social interaction. Apart from that, changes occur in urban infrastructure and the impact they have on infrastructure access and traffic.
Evaluasi penerapan konsep forest city dalam pembangunan berkelanjutan lokasi calon ibu kota negara Indonesia	Alin E. Nurfatih et,al (2024)	qualitative approach	The issue of urbanization against the general environmental paradigm often arises in several regions, offering a unique perspective on the implementation of urban forests in candidate locations for the National Capital.
Analisis Ruang Terbuka Hijau Dalam Perspektif Pembangunan Kota Berkelanjutan	I Made Agus Mahendra1 (2022)	qualitative approach.	The ideal composition of green open space in a city is a very important point in realizing sustainable city development

The literature search process was conducted using academic databases, including Google Scholar, PubMed, Scopus, and JSTOR. Keywords utilized in the search encompassed urbanization, sustainable development, environmental impact, social impact, and various combinations of these terms. The search was limited to articles published within the last five years (2019–2024), excluding those that focused solely on theoretical concepts. A total of 165 search results were retrieved, emphasizing the environmental and social impacts of urbanization. The identified literature was screened based on titles and abstracts to assess its relevance to the research topic. Articles meeting the inclusion criteria were then examined in detail to extract pertinent data, resulting in a total of 50 articles, with 18 identified as directly relevant.

The selected literature was analyzed using a qualitative approach, categorizing the collected data into two primary themes: the environmental and social impacts of urbanization and strategies for sustainable development. This analysis aimed to uncover patterns, trends, and gaps within the existing literature. Following a thorough review of the 18 relevant articles, 7 were deemed suitable and acceptable for further analysis. The steps and procedures for article selection are presented in Fig 1, outlining the process from identification to final selection.

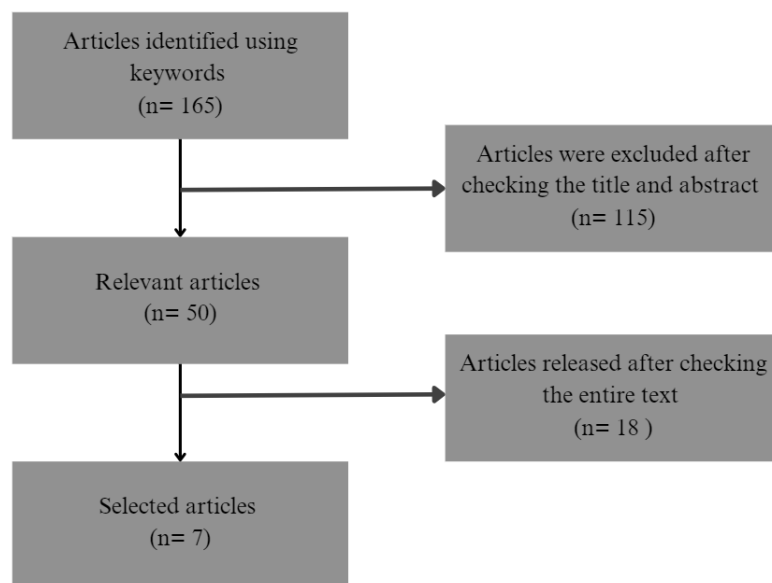


Figure 1. Article selection

RESULTS

From the description above, the literature review identified several key drivers of urbanization. One of the main causes is the rapid economic growth in urban areas, which motivates rural residents to migrate to cities in search of a better quality of life. Urbanization brings both positive and negative impacts. On the positive side, it contributes to economic growth and provides easier access to education and healthcare. However, it also generates negative consequences, such as increased crime rates, unemployment, poverty, landscape changes, pollution from waste, air pollution, and climate change.

An analysis of the research findings, based on the quality of the literature and data extraction process, revealed that out of the 7 selected studies, all were conducted in Indonesia. The studies focused on several topics: two discussed the concept of Green Open Spaces (GOS) in urban development, three examined the impacts of urbanization, one examined the implementation of a sustainable electricity supply, and one addressed sustainable 3R waste management at temporary waste disposal sites.

3.1 Impact of Urbanization

Urbanization brings a mix of social, economic, and environmental impacts, both positive and negative.

Positive Impacts

Research by Amaya et al. (2024) in Serang City highlights the economic benefits of urbanization. The rapid economic growth in Serang City has resulted in increased job opportunities and improved quality of life for residents. Sectors such as industry, trade, and services have developed significantly. Henderson (2003) also emphasized that urbanization is a crucial factor for economic progress, noting that almost no country has achieved substantial economic development without undergoing urbanization. Proponents of this view see urbanization as a comprehensive development effort, extending beyond administrative boundaries. Cities are regarded as "agents of modernization and change", concentrating capital, expertise, creative power, and essential facilities for development. They serve not only as hubs for industrialization but also as crucial points for agricultural countries, functioning as ports and terminals for agricultural goods. For migrants, moving to cities is viewed positively, as they can potentially earn higher wages than in rural areas, which can offset the costs of migration (Hidayati, 2021).

Negative Impacts

Despite its benefits, urbanization also poses several challenges, particularly in urban areas. One major issue is the shortage of vacant land. Rapid population growth in cities often outpaces their carrying capacity. Currently, open land in urban areas is scarce, leaving limited space for housing, transportation infrastructure, and GOS. In some cases, such spaces no longer exist (Harahap, 2013). Research by Permana (2024) in Serang City shows that rapid urban development has made it difficult to provide adequate housing for everyone. High demand for housing has driven up land prices and rents, making affordable housing inaccessible to low-income residents. This situation highlights the need for urban development policies that consider environmental sustainability and prioritize affordable housing.

Hidayati (2021) further notes that limited land forces migrants to live in informal settlements, such as riverbanks, along railway tracks, or under bridges, where land is free from rent. These makeshift homes are often constructed with basic materials like plywood or cardboard, offering minimal shelter and living conditions. Urbanization also leads to urban chaos, characterized by overcrowded layouts, severe traffic congestion, and increased traffic accidents. The imbalance between the number of public transportation

options and passengers, as well as insufficient road infrastructure, exacerbates these problems. This chaos contributes to environmental degradation, including declining air and water quality. Pollution from urban activities can render the environment uninhabitable and harmful to human health and overall well-being.

In Serang City, urbanization has resulted in traffic congestion, higher air pollution levels, and the depletion of natural resources (Amaya, 2024). To address these challenges, good planning and sustainable development practices are essential to ensure that urban growth remains environmentally friendly.

3. 2. Sustainable City Development

Urban growth and development have brought significant environmental challenges. According to Mohanty (2020), rapid urbanization, supported by globalization, has caused structural and cultural transformations in cities worldwide, including in Indonesia. Cities contribute substantially to global environmental issues, such as climate change and biodiversity loss. Konbr (2019) emphasizes that implementing the green city paradigm offers a viable solution to addressing both global environmental crises and local challenges.

Waste-free cities as a pillar of sustainability

A sustainable city is free from unmanaged waste. Improper waste management leads to environmental problems, such as water pollution, greenhouse gas emissions, and heightened risks of disease. Urban populations, characterized by increasingly consumptive lifestyles, exert significant pressure on the environment, as greater urbanization generates more waste. To ensure clean cities within the framework of sustainable development, effective waste management is essential.

Research by Heryeni et al. (2023) highlights waste reduction initiatives in Jambi City, where the municipal government aims to reduce waste by 30% of total waste generation by 2030. In 2022, Jambi City generated 159,688.01 tons of waste per year, achieving a 22.45% reduction. Given that 51.3% of waste comes from households, effective waste management must begin at the source. Community participation plays a crucial role in ensuring environmentally sound waste reduction and handling. One initiative by the Jambi City Government is the establishment of Waste Processing Sites based on the Reduce, Reuse, Recycle (3R) model.

Clean energy and urban sustainability

Providing clean or green energy is another cornerstone of sustainable urban development. As electricity demand rises yearly due to population and industrial growth, reliance on coal remains dominant. However, coal, as a fossil fuel, significantly contributes to air pollution, global warming, and climate change. In sustainable urban development, cities aim to balance environmental, economic, and social objectives without compromising any of them. Despite this aspiration, Konbr (2019) notes that energy conservation policies and initiatives are rarely included in most strategic planning

documents or development control decisions. Effective implementation of green city concepts goes beyond the creation of parks and green spaces; it involves city management based on sustainable paradigms. This includes prioritizing energy efficiency, promoting renewable energy, adopting green solutions, encouraging land compactness with mixed land use, and integrating social equity into planning systems (Pankaja et al., 2015).

Citizen participation and future cities

The sustainable development of cities envisions them as spaces of interaction and active citizen participation. Such cities enable residents to meet their needs and aspirations while also addressing the requirements of the broader community. Importantly, they create opportunities for future generations to meet their own needs. This approach aligns with principles of green growth and equity, fostering cities that are not only sustainable but also inclusive and resilient.

CONCLUSIONS

Urbanization has become a widespread societal phenomenon since the 21st century, bringing both positive and negative impacts. On the positive side, it contributes to economic growth, increases job opportunities, and improves living standards. However, it also results in challenges such as a shortage of housing land, rising poverty levels, higher crime rates, traffic congestion, and significant environmental issues like water and air pollution, as well as land degradation. Sustainable development is a concept proposed to address these urbanization challenges. It emphasizes the adoption of clean energy solutions, efficient waste management practices, inclusive housing initiatives, and comprehensive land-use planning. Achieving sustainability requires integrated planning and policies that consider social, economic, political, and cultural factors, along with fostering strong collaboration between residents and immigrants.

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