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Spatial Planning Policy in Overcoming Urban Sprawl in Makassar City

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ABSTRACT

Urban sprawl has become one of the major spatial challenges faced by Makassar City amid rapid urban growth and suburban expansion. The increasing conversion of agricultural and open land into residential, commercial, and infrastructure areas has encouraged uncontrolled urban expansion toward peri urban areas such as Biringkanaya, Tamalanrea, and surrounding corridors. This condition has created various urban problems including traffic congestion, inefficient infrastructure services, environmental degradation, flood vulnerability, and fragmented land use patterns. This study aims to analyze the role of spatial planning policies in addressing urban sprawl in Makassar City and to identify the main challenges in controlling spatial expansion in suburban areas. The research uses a qualitative approach through library research by examining various scientific studies related to urban sprawl, land use change, suburban development, and spatial planning policies in Makassar. Data were analyzed descriptively and critically to understand the relationship between urban expansion and the effectiveness of spatial planning policies. The findings indicate that urban sprawl in Makassar is driven not only by population growth and urbanization, but also by weak spatial control, increasing real estate development, transportation accessibility, and uneven urban development patterns. Existing spatial planning policies have not fully controlled dispersed urban growth, particularly in peri urban areas experiencing rapid land conversion. Therefore, strengthening spatial governance through compact city approaches, mixed land use development, integrated transportation systems, and stricter land use control is necessary to support more sustainable urban development in Makassar City.

Keywords: Urban Sprawl, Spatial Planning Policy, Suburban Area, Compact City, Makassar City

INTRODUCTION

The development of Makassar City in recent years has shown increasingly rapid spatial changes, particularly in the suburbs. Built-up area growth continues to accelerate along with the development of new residential areas, commercial areas, and urban infrastructure development (Arifin et al., 2023; Mahyudin et al., 2025; Rahim & Abbas, 2024). These changes are evident in suburban areas such as Biringkanaya and Tamalanrea Districts, as well as several development areas in the eastern part of Makassar City, which are experiencing rapid urban expansion. This increase in built-up area indicates that Makassar's development is no longer concentrated in the city core but is instead shifting toward peri-urban areas in a dispersed and uneven manner (Arifin et al., 2023; Mahyudin et al., 2025; Rahim & Abbas, 2024).

The development of Makassar's suburbs is influenced by the increasing need for space due to population growth, urbanization, and high levels of large-scale housing development. These conditions have led to urban sprawl, characterized by dispersed development patterns, low density, and the conversion of undeveloped land into residential areas and other urban activities. Urban sprawl not only results in physical changes but also shifts the city's spatial structure toward suburban areas, previously dominated by agricultural land and open space (Ebrahim et al., 2025; Erasu Tufa & Lika Megento, 2022; Sadian & Shafizadeh-Moghadam, 2025).

The phenomenon of urban sprawl in Makassar City is increasingly evident through the development of new real estate and activity centers in the peri-urban areas. The corridor connecting Makassar with Gowa Regency is one of the areas experiencing significant land use changes due to increased housing and commercial property development. This development is influenced by lower land prices, improved transportation accessibility, and developers' strong interest in suburban areas. As a result, productive agricultural land continues to be converted into built-up areas.

The rapid growth of built-up areas has given rise to various urban issues. Urban sprawl drives increased population mobility from suburban areas to the center of Makassar, resulting in traffic congestion and a high dependence on private vehicles. The dispersed development pattern also results in inefficient infrastructure services, as road networks, drainage, and urban facilities must reach sporadically developing areas. Furthermore, unintegrated urban development leads to spatial fragmentation and imbalances in urban land use (Ghasemi et al., 2025; Ma et al., 2024; Soltani, Azizi, Rahimioun, et al., 2025).

The impacts of urban sprawl also impact the urban environment. The conversion of open land to built-up areas has reduced water catchment areas and increased flood vulnerability in several areas of Makassar City, particularly in the rapidly developing outskirts. Biringkanaya District is an area exhibiting a high level of vulnerability due to uncontrolled urban sprawl. Scattered development and the reduction of open space have worsened environmental quality and increased pressure on urban drainage systems.

The increasing urban sprawl in Makassar City demonstrates that spatial planning control has not been optimal. Although the government has established spatial planning policies through regional spatial plans, urban development still exhibits a scattered and uncoordinated pattern. Real estate development in peri-urban areas continues to increase, encouraging the formation of new growth centers outside the city's core. This situation demonstrates challenges in monitoring spatial use and weak integration between spatial planning policies and urban development (de Almeida Souza et al., 2024; Marchant et al., 2023; VARKEY et al., 2025).

Urban sprawl is a phenomenon where urban areas spread uncontrollably to suburban areas. This development is characterized by low-density development patterns, the conversion of undeveloped land into built-up areas, and the emergence of new settlements and urban activities in suburban areas. Urban sprawl generally occurs due to the increasing demand for urban space that can no longer be accommodated by the city's core area, leading to urban development shifting towards peri-urban areas.

Urban sprawl is not only understood as the physical expansion of a city but also relates to changes in spatial structure and urban land use patterns. This spreading urban development leads to the emergence of new built-up areas separated from the main city center and developing sporadically. This condition results in spatial fragmentation, a reduction in open land, and increased pressure on suburban areas (Aduko et al., 2025; Soltani, Azizi, Javadpoor, et al., 2025; Zhou et al., 2024).

Several studies explain that urban sprawl is characterized by low population density, unintegrated development, and high dependence on road transportation networks. Urban

development tends to follow main road corridors, forming a linear or ribbon development pattern. Furthermore, urban sprawl is also characterized by the emergence of new built-up areas that leapfrog and separate from the main urban area, known as leapfrog development. In the context of Makassar City, the phenomenon of urban sprawl exhibits distinctive characteristics due to the rapid development of suburban areas and the formation of increasingly complex spatial patterns. The development of Makassar City in recent decades has demonstrated significant changes in its spatial structure. Urban growth is no longer concentrated in the city center but has shifted to the outskirts, developing into new suburban areas. This condition is evident in the increase in built-up areas in several sub-districts in the eastern and northern parts of Makassar City, such as Biringkanaya, Tamalanrea, and Manggala. These changes indicate a shift in the direction of urban development, which is increasingly spreading to peri-urban areas.

The growth of suburban areas in Makassar City is influenced by the increasing need for space due to population growth and urbanization. Limited land availability in the city center has led to residential development shifting to the outskirts, where there is still ample land available. Furthermore, relatively lower land prices and the development of road networks and transportation infrastructure have also driven urban expansion toward the suburbs.

Urban sprawl in Makassar City is also characterized by the development of large-scale real estate and residential areas in the peri-urban areas. The corridor connecting Makassar with Gowa Regency is one of the areas experiencing rapid development due to increased housing development and commercial activity. This development has triggered the continuous conversion of agricultural land into built-up areas. The high rate of real estate development in the suburbs indicates that urban development is moving more horizontally than in the core area.

To control this urban sprawl, policy instruments are needed that can direct land use and urban growth in a more integrated manner. Spatial planning policy plays a crucial role in directing urban development to be more orderly, efficient, and sustainable (Dekolo et al., 2025; Filepné Kovács et al., 2024; Schuster-Olbrich et al., 2024). In an urban context, spatial planning not only regulates the distribution of land use but also serves as a development control instrument to prevent uncontrolled urban sprawl. Spatial planning control is necessary to maintain a balance between urban development needs and environmental sustainability and the efficiency of city infrastructure services.

The compact city approach also encourages mixed-use development in urban areas, allowing residential, commercial, service, and public services to be integrated within a single area. Mixed-use development is considered capable of reducing people's dependence on long-distance travel and increasing the efficiency of urban space utilization. In the context of Makassar City, the mixed-use concept is considered relevant for suburban areas experiencing rapid residential development.

In addition to mixed-use development, controlling urban sprawl also requires integration of spatial planning policies with urban transportation systems. Suburban development that is not integrated with public transportation will increase reliance on private vehicles and exacerbate urban congestion (Iamtrakul & Chayphong, 2023; Zou et al., 2023). Therefore, urban development needs to be directed towards more compact development patterns connected to efficient transportation networks.

Several previous studies have discussed urban sprawl in Makassar City from various perspectives, such as built-up land development, urban sprawl typology, suburban densification, and its impact on mobility and the urban environment (Rohmadiani & Kunce, 2020). However, research specifically highlighting spatial planning policies as an instrument for controlling urban sprawl is still relatively limited. Most studies focus more on spatial

aspects and physical changes in the area, resulting in limited in-depth studies on the effectiveness of spatial planning policies in controlling suburban development.

Based on these conditions, this study aims to analyze the role of spatial planning policies in addressing urban sprawl in Makassar City and identify challenges in controlling spatial use in peri-urban areas. This research is expected to provide an understanding of the relationship between urban development and the effectiveness of spatial planning policies in supporting more targeted and sustainable development in Makassar City.

While prior research has investigated urban sprawl in Makassar through the lenses of land-use change, suburban expansion, urban morphology, and environmental consequences, insufficient focus has been placed on the function of spatial planning policy as a governance tool for regulating urban growth. Most current research focuses on the physical manifestations of urban sprawl rather than on the impact of planning strategies on development patterns in peri-urban regions. This study enhances literature by offering a policy-focused examination of urban sprawl in Makassar City, emphasizing the interplay between spatial planning governance, land-use regulation, and sustainable urban development initiatives. The research synthesizes recent findings about suburban expansion dynamics and provides an integrated framework that combines compact city principles, mixed-use development, and transportation integration as strategies for controlling urban sprawl.

METHODS

This study employs a qualitative approach in the form of library research. The qualitative approach is used to gain an in-depth understanding of the phenomenon of urban sprawl and spatial planning policies in the city of Makassar through the analysis of various relevant scientific sources. The study focuses on the development of suburban areas, changes in land use, the dynamics of urban sprawl, and spatial planning controls within the context of sustainable urban development.

The research objects in this study are spatial planning policies and the development of urban sprawl in Makassar City, particularly in peri-urban areas experiencing rapid growth of built-up areas such as Biringkanaya, Tamalanrea, and Manggala subdistricts, as well as the development corridor leading to Gowa Regency. The research focus is directed at the relationship between urban area development and the effectiveness of spatial utilization control.

The data used in this study consists of secondary data sourced from scientific journals, research articles, and academic documents addressing urban sprawl, spatial planning, suburban development, and land-use changes in Makassar City. All references utilized are drawn from scientific sources relevant to the research topic and were analyzed based on thematic relevance, research findings, and their contribution to the discussion of urban sprawl and spatial planning policies.

Data collection was conducted through a literature review by identifying, examining, and categorizing various sources according to the research focus. The data obtained was then analyzed using qualitative descriptive analysis techniques. The analysis examined the relationship between urban sprawl development and the implementation of spatial planning policies in Makassar City, followed by interpreting various research findings to gain an understanding of the challenges in spatial control and the direction of sustainable urban development policies.

In the analysis process, this study employs an interpretive approach to understand the patterns of suburban area development, the causes of urban sprawl, its impacts on the

environment and urban infrastructure, as well as spatial control strategies through the compact city approach and mixed-use development. The analysis results are then systematically organized to explain the relationship between the dynamics of Makassar City's development and the effectiveness of spatial planning policies in controlling urban sprawl.

RESULT AND DISCUSSION

The Dynamics of Urban Sprawl in Makassar

The development of Makassar in recent years has shown an increasingly intensive trend of urban expansion toward the city's outskirts. The growth of built-up areas is no longer centered on the city core but is shifting toward suburban areas such as the subdistricts of Biringkanaya, Tamalanrea, and Manggala, as well as the corridor connecting Makassar with Gowa Regency. This expansion of built-up areas indicates a shift in the city's spatial structure, characterized by the spread of residential, commercial, and service activities into peri-urban zones (Adam et al., 2023; Song et al., 2024).

The transformation of Makassar's spatial structure is driven by increasing demand for space resulting from population growth and urbanization. Land constraints in the city center have caused development to shift toward outlying areas with lower land prices and greater availability of space. Developers have capitalized on these conditions to build large-scale real estate developments in suburban areas. Consequently, urban development tends to expand horizontally and spread outward from the city center.

The phenomenon of urban sprawl in Makassar is clear in the development of new residential areas in the Biringkanaya and Tamalanrea districts. Research indicates that both areas have experienced a significant increase in built-up area due to housing development and commercial activities. Urban sprawl in these areas develops in the patterns of ribbon development and leapfrog development, namely development that follows major road corridors and the emergence of new built-up areas separated from the city's development center. These patterns indicate that urban area development occurs sporadically and lacks integration.

The development of urban sprawl in Makassar City is influenced not only by housing needs but also by the emergence of new economic growth centers in suburban areas. The Panakkukang, Biringkanaya, and Tamalanrea areas have developed into commercial, service, educational, and residential activities, driving increased development intensity in urban areas. This situation has led to the spatial structure of Makassar City evolving into a multi-centered pattern, meaning urban activities are no longer concentrated in the main city center.

Additionally, the development of suburban areas in Makassar is supported by improved transportation accessibility. The construction of major road corridors and the expansion of infrastructure networks have facilitated public mobility toward outlying areas. However, this increased accessibility has accelerated the conversion of agricultural land into built-up areas, as suburban zones are perceived as more promising for residential and commercial property development.

Upon deeper analysis, urban sprawl in Makassar City does not occur entirely naturally due to population growth but is also influenced by weak spatial planning controls. Real estate development in peri-urban areas continues to expand despite the potential to reduce open spaces and lead to uncontrolled expansion of built-up areas. This indicates that the city's development trajectory is more heavily influenced by real estate market interests than by integrated spatial planning.

These conditions indicate that Makassar's current development is trending toward urban expansion rather than urban consolidation. Peripheral areas continue to develop as new residential centers, while efforts to strengthen the city's core through densification and land-use optimization remain relatively limited. Consequently, urban sprawl continues to expand, resulting in a city development pattern that is inefficient in terms of both spatial planning and urban services.

This research illustrates that urban expansion in Makassar diverges from the compact development paradigm advocated in sustainable urban planning. Instead of focusing on development in established metropolitan areas, growth has progressively migrated to periphery zones where land is more economical and regulations are less stringent. This pattern indicates that spatial planning rules have not yet operated effectively as mechanisms for managing growth. The prevalence of market-driven growth over planning-led development signifies a governance deficiency that could exacerbate spatial fragmentation and infrastructure inefficiencies in the future.

Weaknesses in Spatial Planning Control in Makassar

The urban sprawl developing in Makassar indicates that the implementation of spatial planning policies has not been optimal. Although the government has a regional spatial plan as an instrument for controlling urban development, suburban areas continue to expand rapidly and spread. This indicates a gap between spatial planning and the reality of land use on the ground.

One of the main issues lies in the weak oversight of land conversion in peri-urban areas. The conversion of agricultural land into residential and real estate areas continues to rise, particularly along development corridors leading to the city's outskirts. This massive development demonstrates that spatial utilization controls have not been able to effectively limit the expansion of built-up areas.

Furthermore, the development of suburban areas in Makassar tends to proceed without strong integration between spatial planning and the urban transportation system. New residential areas develop along major road corridors without adequate public transportation support. Consequently, community mobility relies heavily on private vehicles, thereby increasing traffic volume toward the city center.

Weak spatial planning control is also evident in the emergence of sporadic and fragmented development patterns. New residential areas emerge separately from the main urban areas, forming a leapfrog development pattern. This situation leads to inefficient infrastructure services, as road networks, drainage systems, electricity, and public facilities must extend to widely dispersed areas.

In the context of public policy, the issue of urban sprawl in Makassar indicates that spatial planning policies remain more focused on the physical regulation of space rather than the comprehensive control of urban growth. Findings explain that Makassar faces challenges in managing long-term urban growth, including suboptimal coordination in controlling suburban development. Consequently, urban expansion is outpacing the government's capacity for spatial regulation.

If this situation persists, urban sprawl has the potential to exacerbate disparities in urban development. Suburban areas will continue to expand as new centers of residential and economic activity, while pressure on the environment, infrastructure, and urban services continues to increase. Therefore, strengthening spatial planning controls is essential to guide the development of Makassar City in a more integrated and sustainable manner.

An incisive analysis of these facts indicates that the issue lies not solely in the presence of spatial planning standards, but in their execution and enforcement. The ongoing occurrence

of unregulated land conversion suggests that planning tools exert minimal impact on private development choices. This scenario illustrates a wider governance challenge in swiftly expanding cities, where urban growth frequently outpaces the institutional capability for oversight and control. Thus, enhancing regulatory enforcement may be equally crucial as amending spatial planning documents.

The Impact of Urban Sprawl on the City of Makassar

The spread of urban sprawl in the city of Makassar has had a significant impact on the city's physical, social, and environmental conditions. One of the most visible impacts is the increase in traffic congestion due to high population mobility from suburban areas to the city center. Suburban areas developing as new residential zones are not yet fully supported by adequate service centers, so residents remain dependent on the city center for work, shopping, and other activities. This situation leads to increased daily commuting and places a greater burden on the urban road network.

Public reliance on private vehicles is also a consequence of urban sprawl that is not integrated with public transportation systems. Residential areas that expand in a scattered manner result in greater distances between activities, making private vehicle use seem more effective than public transportation. In the long term, this not only worsens congestion but also increases energy consumption and air pollution in urban areas.

Beyond transportation issues, urban sprawl also impacts the inefficiency of urban infrastructure provision. The sporadic development of residential areas forces road networks, drainage systems, electricity grids, and public services to cover increasingly vast territories. Consequently, the cost of providing infrastructure becomes higher compared to urban areas that develop in a compact manner. Findings explain that non-compact urban development makes the provision of urban facilities and infrastructure less efficient because built-up areas develop in a fragmented manner.

Urban sprawl in Makassar City also accelerates the conversion of agricultural land and open spaces into built-up areas. This land-use change occurs significantly in suburban areas targeted for real estate development and new commercial zones. This situation reduces the ecological functions of the city's outskirts as water absorption areas and urban environmental buffers (Usman, 2019).

The environmental impacts of urban sprawl are increasingly evident through rising flood vulnerability in several areas of Makassar City. Rapid development of built-up areas has led to a continuous reduction in open spaces and water absorption areas. Findings explain that urban sprawl in Biringkanaya District has a significant association with increased flood vulnerability due to land-use changes and the uncontrolled expansion of built-up areas. These conditions indicate that urban sprawl is not merely a spatial planning issue but is directly linked to the sustainability of the urban environment.

In addition to its environmental impacts, urban sprawl also influences changes in the social and economic structure of suburban areas. The development of new growth centers in the city's outskirts has led to a transformation of land use from agricultural areas into urban zones. Non-agricultural economic activities are becoming increasingly dominant alongside the expansion of commercial, service, and residential areas. These changes also influence the lifestyles of suburban communities, which are growing increasingly dependent on urban economic activities (Pradoto et al., 2024; Rahman et al., 2022).

The development of urban sprawl also drives uneven densification in suburban areas. Some areas experience increased building density and changes in land use due to high development pressure. However, this development often occurs without integrated planning,

leading to an imbalance between the growth of built-up areas and the capacity of urban infrastructure and services.

When viewed as a whole, urban sprawl in Makassar demonstrates that uncontrolled urban development can give rise to various multidimensional issues. Urban sprawl not only causes physical changes to the city but also increases pressure on the environment, infrastructure, mobility, and urban governance. Therefore, controlling urban sprawl cannot be achieved solely through land-use regulations but requires the integration of policies on spatial planning, transportation, the environment, and sustainable urban development.

The findings indicate that urban sprawl in Makassar produces interrelated effects on transportation, environmental, and socio-economic aspects. These repercussions should be regarded not as separate issues but as indications of unsustainable spatial expansion. The growing reliance on private vehicles, escalating infrastructure expenses, and environmental deterioration combined suggest that the present development path may undermine long-term urban resilience. Consequently, tackling urban sprawl necessitates comprehensive interventions that concurrently address spatial planning, environmental conservation, and mobility management.

Sustainable Spatial Planning Strategies to Control Urban Sprawl

Controlling urban sprawl in Makassar City requires spatial planning policies that not only serve as planning documents but also guide the development of urban areas in a more integrated and sustainable manner. To date, suburban development has tended to outpace the government's spatial control capabilities. As a result, the expansion of built-up areas continues to move to the outskirts of the city, triggering various urban problems such as congestion, spatial fragmentation, and environmental degradation.

One strategy that can be implemented to control urban sprawl is to strengthen the compact city approach in urban development. The compact city concept emphasizes denser, more efficient, and more integrated urban development, thereby reducing the spread of urban development. This approach is crucial in Makassar City because suburban development has been dominated by horizontal expansion rather than the densification of previously developed urban areas.

The implementation of a compact city can be achieved through the development of mixed-use areas that integrate residential, commercial, service, educational, and public service functions within a single area. Mixed-use development allows residents to access various activities without having to travel long distances to the city center. This strategy can reduce the high daily mobility of suburban residents while reducing dependence on private vehicles.

Furthermore, strengthening the integration between spatial planning and transportation systems is also a crucial step in controlling urban sprawl. To date, suburban development in Makassar City has largely followed main road corridors without being accompanied by adequate public transportation development. As a result, the growth of new residential areas has actually increased traffic volumes heading towards the city center. Therefore, urban development needs to be directed towards a transit-oriented development pattern so that residential growth is better connected to the public transportation network and city services.

Urban sprawl control strategies also need to focus on protecting agricultural land and open spaces in peri-urban areas. The ongoing land conversion in the outskirts of Makassar City demonstrates weak oversight of land-use change. The government needs to strengthen control of development permits in areas with important ecological functions to ensure that the expansion of built-up areas does not further reduce water catchment areas and green open spaces.

In the context of public policy, controlling urban sprawl cannot be achieved solely through spatial planning regulations; it also requires intersectoral coordination in urban development management. Strengthening oversight of spatial use, controlling real estate development in suburban areas, and synchronizing transportation and environmental policies are crucial for guiding the more sustainable development of Makassar City.

In addition to strengthening spatial control policies, the government also needs to encourage the revitalization and optimization of the city's core areas to prevent urban development from shifting to the outskirts. Vertical utilization of urban space, improving the quality of city center infrastructure, and developing residential areas with measured densities can be steps to reduce development pressure on suburban areas. These strategies are crucial to prevent Makassar City's development from continuing to create a pattern of uncontrolled urban expansion.

Therefore, controlling urban sprawl in Makassar City requires a more adaptive and integrated spatial planning approach. The implementation of compact cities, mixed-use development, integration of transportation and spatial planning, protection of open spaces, and strengthening supervision of spatial use are important strategies to reduce the impact of urban sprawl and support urban development that is more efficient, sustainable, and oriented towards the quality of the city's environment.

Synthesis of Findings and Research Contribution

The synthesis of findings indicates that urban sprawl in Makassar City is driven not only by demographic and economic pressures but also by institutional weaknesses in spatial governance. While previous studies primarily documented patterns of suburban expansion and land-use change, this study demonstrates that ineffective spatial control mechanisms play a central role in shaping dispersed urban growth. The study contributes to the urban planning literature by emphasizing the importance of governance-oriented approaches to urban sprawl management. The findings suggest that sustainable urban development in Makassar requires a shift from reactive land-use regulation toward proactive and integrated spatial governance that combines planning, transportation, environmental management, and development control.

CONCLUSION

Urban sprawl in Makassar City shows that urban development is moving increasingly rapidly to the suburbs due to population growth, urbanization, real estate development, and the increasing need for urban space. This development has led to changes in spatial structure, conversion of agricultural land, increased private vehicle mobility, congestion, infrastructure inefficiency, and increased environmental pressure on suburban areas. This condition indicates that spatial planning control in Makassar City has not been fully able to direct the city's development in an integrated and sustainable manner. Therefore, strengthening spatial planning policies through a compact city approach, mixed-use development, integration of transportation and spatial planning, protection of open spaces, and monitoring of land use are important steps in controlling urban sprawl and supporting a more efficient and sustainable development of Makassar City.

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