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Economic Intensification and Urban Spatial Transformation: A Growth Machine Theory Analysis of Malang City

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Abstract: Rapid urbanization and the formal designation of Malang City as a tourism development zone have precipitated extensive changes in land utilization patterns. In this context, the escalation of economic activity has been identified as a primary catalyst for spatial growth, raising concerns about unbalanced development and environmental degradation. This study investigates the mechanisms by which intensified economic forces—interpreted through the lens of growth machine theory—have influenced the expansion of urban spatial structures and land use conversion within Malang City. A qualitative methodology has been employed, incorporating secondary data derived from municipal planning documents, regional policy frameworks, and peer-reviewed literature accessed through platforms including SpringerLink, ScienceDirect, and Taylor & Francis Online. Findings indicate that significant landscape transformation occurred between 2017 and 2023, characterized by the conversion of agricultural and vacant land into built-up areas spanning several hundred hectares. This transformation has been closely associated with investment-driven infrastructure development, pro-growth regulatory instruments, and the prioritization of commercial interests in urban governance. These dynamics reflect the core principles of growth machine theory, wherein urban land is reconstituted as a commodity leveraged for economic gain. The research highlights the extent to which governance arrangements, policy choices, and development incentives have facilitated the spatial restructuring of the city. It is argued that, while economic expansion has contributed to urban growth, it has also intensified land competition and exacerbated socio-environmental imbalances. Consequently, the need for integrative urban planning frameworks that balance economic imperatives with ecological resilience and social equity is emphasized. It is recommended that future development strategies be grounded in sustainability-oriented governance models, with particular attention given to inclusive spatial policies and environmental impact mitigation.

Keywords: Growth machine theory; Urban spatial transformation; Economic intensification; Land use conversion; Urban governance; Sustainable planning; Malang City; Development policy; Environmental impact

1 Introduction

Rapid urban growth can accelerate economic growth in cities. As a result, people seeking places to live and work are flocking to expanding urban areas. The influence of social and economic factors drives people to migrate from rural areas to cities [1]. This migration is often triggered by economic disparities between regions. Additionally, urbanization occurs due to inequality in the growth and distribution of development resources, particularly between rural and urban areas. Urbanization plays a key role in enhancing economic strength and national competitiveness, as it is one of the main driving forces behind massive economic growth. Similarly, in China, the urbanization process mirrors that of developed countries [2]. China is experiencing a surplus of rural labor migrating to cities, which continues to accelerate industrialization and the agglomeration of secondary and tertiary industries in urban areas.

The effects of urbanization on vegetation growth can be categorized into direct and indirect impacts. Direct impacts are generally negative and refer to the transformation of land cover from green open spaces to impermeable surfaces, which can lead to reduced vegetation growth. Indirect impacts of urbanization on vegetation are typically influenced by human management practices in urban areas, as well as higher air temperatures compared to the surrounding natural environment [3]. According to Auwalu and Bello [4], urbanization is a key factor that places significant pressure on socio-economic development and environmental sustainability in developing countries such

as Nigeria. In recent years, by 2023, Lagos City, Nigeria, has experienced rapid urbanization, leading to a range of interconnected and complex problems. This rapid urbanization in Lagos has resulted in high urban population growth, triggering issues such as housing shortages, slum development, transportation and mobility challenges, urban poverty, and environmental problems [5].

Cities in Indonesia, including Malang City in East Java Province, have experienced rapid growth in recent years. The significant growth of Malang City, driven by tourism regulations and policies in recent decades, has led to massive land conversion, particularly in suburban areas that were previously agricultural or green open spaces. This transformation is due to the high demand for land to accommodate the tourism industry, including hotels, restaurants, educational facilities (such as schools and universities), and housing (such as apartments and residential areas) [6]. The rapid urbanization process, aimed at meeting housing and public facility needs, has reduced the amount of productive land in the city [7]. As a result, the availability of land for agriculture has become increasingly limited, which threatens local food security and raises dependence on external supplies. Moreover, land conversion has contributed to a decline in environmental quality, as there is less green open space, which plays a crucial role in maintaining ecosystem balance. The massive infrastructure development further exacerbates the situation, as land previously used for water infiltration has been converted into residential and commercial areas. Additionally, the selling price of land has steadily increased every year due to the scarcity of available land in Malang City [8].

Malang City has experienced a significant increase in urbanization in recent years. According to data from Regional Development Planning Agency (BAPEDDA) of Malang City, the area of residential and built-up land has grown substantially, from 600 hectares in 2017 to 2000 hectares in 2023 [9]. This growth highlights the high demand for housing and supporting infrastructure, driven by population growth and economic activity. In addition, land use in the suburban Lowokwaru area of Malang City from 2015 to 2020 shows an increase in built-up land of 4.9%, most of which comes from the conversion of green open spaces into settlements, industrial estates, and other facilities [10]. Although increased urbanization has positive impacts, such as economic growth and improved public facilities, challenges such as decreased environmental quality and reduced green open space also need to be considered.

Several previous studies have explained the various factors that influence spatial growth patterns and their impacts. Such as on the relationship between urban space and population growth, migration, poverty, religion, class, and race impact on political will, and power gaps in achieving a sustainable urban environment [11]. Furthermore, on the interacting technologies, demographics, and ecology in urban systems as barriers to mainstreaming nature-based solutions [12]. Or on the influence of urban growth on the philosophy, ontology, and epistemology of society [13]. This shows that growth in urban spaces has a significant impact on environmental sustainability from various perspectives. However, a comprehensive study of the causal factors of these phenomena in a theoretical, structured and systematic manner needs to be carried out to provide a thorough understanding so as to determine the right approach in overcoming problems or formulating policies on urban development. One of them can be done through the growth machine theory approach initiated by Molotch [14]. Several previous studies have discussed the impact of development on the sustainability of the urban environment. However, there are not many studies that discuss land use change and urban spatial growth based on the growth machine theory, so this encourages us to conduct the study with the aim that urbanization, land use change, spatial growth patterns, and other urban problems can be understood and developed further.

This research aims to analyze excessive economic activity and the expansion of land use in Malang City through the lens of growth machine theory. The main focus is to explore how economic pressures can drive land use changes that impact urban spatial transformation. The study also aims to identify the factors influencing development decisions and their effect on environmental sustainability. Additionally, it seeks to provide an understanding of the relationship between rapid economic growth and the challenges of maintaining environmental sustainability. Through this approach, the goal is to offer strategic recommendations for managing urban growth in a more sustainable and environmentally friendly manner.

2 Related Works

Urbanization and spatial capitalization in cities are closely related within the context of urban politics [15, 16]. The movement of people to cities in large numbers inevitably increases the demand for infrastructure, such as housing, industrial goods and services, and other facilities [17]. However, these growing needs are often not matched by the availability of resources, particularly financial resources, for local authorities to develop urban areas. This gap is exploited by economic and political elites to maximize investment and development, with the primary goal of gaining economic benefits [18]. In this context, Molotch's growth machine theory explains how various actors—such as local businesspeople, property developers, politicians, and city governments—form networks to encourage expansion and land use arrangements that benefit their personal interests [14]. According to this theory, the dynamics of spatial growth are controlled by these elite groups, leading to rapid development of urban infrastructure. However, such development typically does not reflect the interests of local communities but

rather serves the interests of the elites. Only those such as economists, policymakers, and investors are able to access the benefits [19]. Examples of this include housing, shopping centers, tourist areas, hotels, and restaurants. The lobbying power in the reciprocal relationship between government support and political contestation, coupled with guaranteed protection for businesspeople, allows elites to dominate the regulation and policy of urban development. As a result, land and buildings often operate as private markets, rather than being owned by the government or other entities. This phenomenon frequently leads to land being managed and utilized based on "exchange value" rather than "use value" [20].

In capitalist societies, land and buildings are often considered commodities to be bought and sold. In recent decades, urban growth in developed countries, such as the United States, has been driven by the growth machine, serving as a strategy to increase individual profits through urban development [21]. However, the growth machine theory has also influenced urban development in some developing countries. To fund the development of public utilities with limited financial resources, Chinese cities like Hangzhou, Ningbo, and Beijing issued urban investment bonds, aiming to promote economic recovery during times of crisis [22]. This serves as an example of how the growth machine operates, creating spatial use corridors in cities that benefit specific parties. The financial constraints of some municipalities in China prevented them from providing sufficient public facilities, so capital and private owners seized the opportunity to offer rental-based facilities, such as apartments costing as much as ¥9,200 per month. This expansion of people's needs was facilitated by the investment-friendly policies provided by local governments [23]. In Jamshedpur, India, rapid urbanization has led to significant land use changes, including a decrease in agricultural land (-87.12%), vegetation (-67.51%), riverbeds (-46.25%), and forest cover (-27.92%). The land change matrix shows the maximum transformation (+455.23%) of fallow land into residential areas between 1987 and 2016, largely due to the growth of built-up areas as a result of suburbanization [24]. This practice reflects the growth machine theory of urban development in India, as supported by research from Shin and Gimm [25], which argues that these are politically and economically charged megaprojects designed to create iconic landmarks, new cities, central business districts, and infrastructure.

Economic pressures and the desire for faster development in developing nations, such as those in Asia, drive investment practices, escalate industrial activity, and reinforce capital hegemony, as seen in the urban administration of China and India [26]. In Southeast Asia, public-private partnerships have become the primary solution for addressing energy supply and urban governance challenges [27, 28]. Data from Google Earth Engine predicts that economic growth and land use change in Ban Chang district, Thailand, will result in a spatial accuracy of 92% in urban land use change. Additionally, the compound annual growth rate (CAGR) of Ban Chang's GDP is projected to be 5.6% between 2021 and 2030, reflecting the region's economic policies and growth-oriented land use [29]. Cities in Malaysia are growing rapidly, but this growth has brought about challenges, such as increasing urban populations, high levels of consumption, and waste generation that exceeds the area's capacity. This issue is exacerbated by city development plans that are not aligned with waste reduction efforts [30]. Urban land in Southeast Asia is being overexploited to accelerate urbanization, often without considering the negative social and environmental impacts. This poses a potential threat to the urban environment due to resource exploitation [31] and unsustainable environmental planning [32, 33]. In Indonesia, various policies are being formulated to manage urban growth, especially in areas with complex geomorphological features, where urbanization is accelerating [34]. However, Indonesia's mountainous and coastal landscapes indicate the vulnerability of urban areas in highland and coastal regions [35, 36]. Therefore, analyzing urban growth in Indonesia through the lens of growth machine theory and its impact on environmental sustainability is crucial.

3 Methodology

This research uses a qualitative approach to understand the dynamics of spatial growth through the lens of growth machine theory [37]. Spatial growth in urban areas is an inseparable aspect of the social phenomenon of the urban environment, which requires policy and planning activities under the authority of the city government. The research relies on secondary data obtained from analyzing documents issued by the Malang City Government, such as public policies, government performance reports, and city planning documents. These documents include the Malang City regional medium-term development plan, Malang City regional regulation number 11 of 2010 concerning the implementation of tourism, the Malang City regional spatial plan (2022-2042), the Malang City statistics agency report, and several other government policy, planning, and report documents [9, 38, 39]. Additionally, an online review of literature from reputable sources such as SpringerLink, ScienceDirect, and Taylor & Francis was conducted to provide scientific support for the research arguments and results, based on their relevance to previous findings.

The documents were analyzed to understand how key actors, such as property developers, local governments, and the business sector collaborate in driving economic growth and spatial change in the region. Data analysis in this study employed data triangulation [40]. Data collected from various sources were reduced according to the main research questions. Next, we interpreted the data both descriptively and narratively to present comprehensive information related to the topic of spatial growth in Malang City. To maintain data validity, we cross-synthesized

the information between sources. As a result, the information presented in this research meets both scientific and holistic standards.

We used NVivo qualitative data analysis software (QDAS) version 14 for data analysis. The software's coding feature was utilized to identify and report emerging themes in the data, which offers an alternative way to communicate research findings beyond relying solely on maps or graphs from the original sources. It is important to note that codes are used to categorize and identify patterns in the data, while cases serve as containers for storing data related to individual units of analysis [41]. These codes and cases are organized based on an understanding of how growth machine theory influences the development of urban spaces. Once the benchmarks are established, the coding process begins by identifying the information needed specifically, data from the source that represents the defined codes and cases, and linking it to them until the coding is deemed sufficient. Finally, the hierarchy chart tool is used to display the coding results in the form of a treemap, offering the final visualization. NVivo 14 allows for systematic management and analysis of qualitative data. However, it is important to acknowledge potential biases, such as subjective interpretations in data categorization or the limitations of the software in capturing the full complexity of the research context.

4 Results

There are many factors driving people's mobilization to cities, whether temporarily or permanently. Industrialization, employment, and tourism are some of the primary forces that attract people to urban areas, thereby influencing spatial concentration [42, 43]. Malang City, Indonesia, is a popular tourist destination known to local, domestic, and international tourists due to its diverse range of attractions, from natural sites to artificial ones [44]. The local government has supported this growth by implementing a tourism policy since 2014, aimed at advancing various sectors through increased regional income and investment [45]. This policy is outlined in Malang Mayor Regulation Number 34 of 2014, which pertains to the regional tourism development master plan. The plan seeks to develop the tourism industry by boosting investment and fostering cooperation among tourism businesses, ultimately increasing both domestic and international tourism, which in turn boosts foreign exchange. This strong attraction makes Malang a city with bustling activities throughout the year. These conditions make urbanization flow unstoppable, positioning Malang as a city with one of the highest urbanization rates in East Jawa [46]. According to data from statistical agencies, the number of migrants to Malang City reached 22,397 in 2023 [47], and the population density was 7,627 people/km^2 [48]. Based on this, spatial growth in Malang City is intrinsically tied to political mechanisms and activities that focus on economic benefits.

The high level of urbanization driven by tourism in Malang City certainly requires facilities and infrastructure to accommodate various needs. As mentioned in the previous paragraph, opportunities for investment and capital inflows are created, allowing for infrastructure development while also generating regional income. Numerous city facility developments are being carried out on a large scale by businesses and private entities, such as hotels, apartments, housing complexes, restaurants, shopping centers, hospitals, and coffee shops, which are filling every corner of the city [49]. This triggers the expansion of built-up areas due to the increasing demand for space for living and various activities [50]. In terms of land conversion, Malang City's landscape is increasingly dominated by economic activities, with the emergence of various business sectors. This is directly linked to the formation of slums and urban sprawl in the city [51, 52]. If this trend continues, it could potentially lead to significant problems. Land expansion driven by political and economic interests in Malang City has raised concerns about the changes in water quantity and quality, as well as the loss of agricultural land, primarily due to a lack of awareness about the long-term risks of environmental damage [53]. The spatial growth and land-use changes in Malang City can be observed in Figure 1.

Based on Figure 1, which shows the map of land use changes in Malang City from 2017 to 2023, there is a significant shift in land use, dominated by an increase in residential development and built-up areas. This development is occurring rapidly, leading to the conversion of land into residential and commercial zones in response to urbanization and population growth. Conversely, the figure also shows the degradation of forest land and shrubs, and a reduction in agricultural areas, signaling the conversion of land for development purposes. This phenomenon can be explained through growth machine theory, which posits that stakeholders, such as developers, governments, and landowners, collaborate to drive economic growth by increasing land value. In this context, the expansion of residential development and built-up land is the result of efforts to maximize the economic benefits of land conversion, often at the expense of environmental considerations. Existing theories of the urban growth machine have been criticized for overemphasizing the external forces of capital and globalization [54, 55]. Furthermore, it appears that growth machine actors support policies that outwardly seem to inhibit growth, even though, in practice, they do not. This is because the involvement of growth machine actors in local governments is linked to the transformation of the built environment, as demonstrated by the issuance of new housing construction permits [56]. The degradation of forest and agricultural land occurs because economic priorities are given precedence over ecological sustainability. Thus, growth machine theory helps explain how economic interests in urban development

lead to significant land use changes in Malang City.

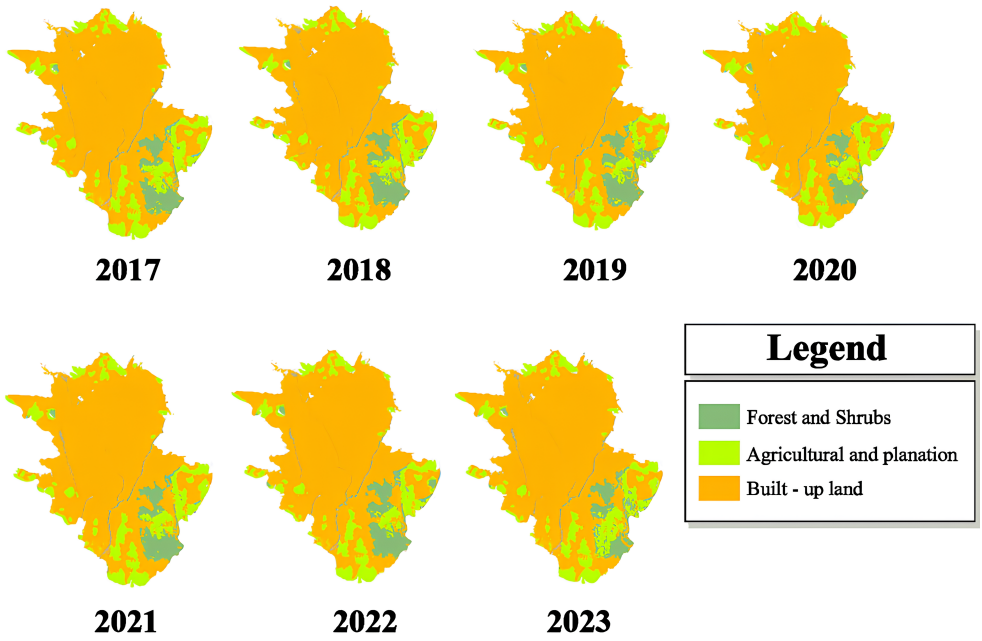

Figure 1. Map of land use change in Malang City 2017-2023
Source: Analyzed by the Author

The large-scale investment flowing into Malang City in 2023 has had a significant impact on land use changes in the city. With the entry of 47 large industrial sectors engaged in services, Malang has experienced a major shift in its spatial use pattern [57]. The presence of 35 starred hotels, 43 non-starred hotels, and 59 guesthouses across five sub-districts highlights the growth of the tourism sector and the increasing demand for accommodation [58, 59]. The development of this sector has certainly boosted economic income and created employment opportunities, but it has also affected the availability and function of land in other sectors, such as agriculture and green open spaces, in favor of commercial areas, housing, and hotels. This shift can contribute to the weakening of local agricultural systems and reduce the city's resilience to climate change [60, 61] . In addition, the growth of 13 shopping centers and 505 restaurants has further contributed to land conversion, although the number of restaurants has dramatically decreased compared to 2,418 in 2021 [62]. Notably, the rapid increase in the number of cafeterias (217) and coffee shops (47) indicates that public spaces and business-oriented facilities in this tourist city are expanding, particularly in the city center [63, 64].

The impact of this investment is evident in the land conversion that is driving modernization and urbanization in Malang City. The growing demand for land for service industries, residential areas, and tourism accommodations is increasingly reshaping the city, with a rising number of high-rise buildings and supporting infrastructure, while agricultural land, forests, water catchment areas, green spaces, and other environmentally sustainable areas are shrinking [65]. Additionally, this expansion is creating new spatial patterns that are denser and concentrated in strategic areas [66]. These changes call for careful attention to spatial management to minimize negative impacts on the environment and the quality of life for residents, particularly regarding imbalances in land use. The pattern of land use disparity in Malang City from 2017 to 2023 can be seen in Figure 2.

Based on the research results shown in Figure 2, which presents the statistics of land use change in Malang City between 2017 and 2023, there has been a significant shift in the land use structure. Residential and other built-up land have experienced tremendous growth, increasing from 600 hectares in 2017 to 2,000 hectares in 2023. This reflects the high demand for land driven by urbanization, population growth, and the booming tourism sector. In contrast, agricultural and plantation land has shrunk dramatically, decreasing from 8,800 hectares to just around 1,400 hectares in 2023. The most significant reduction occurred in forest land and shrubs, which fell from 8,200 hectares to 400 hectares. According to research conducted by Liu et al. [67], the predicted direction of land use change by 2030 is expected to be dominated by a shift from paddy fields to settlements (66%), covering an area of 2,148.02 hectares, and from moorland to settlements (20%), covering 657.97 hectares. If land use policy in Malang City does not become a serious agenda, this trend will likely continue for years to come. In contrast, the city's development pattern, which has increasingly concentrated on the tourism sector over the years, creates an interaction space primarily driven by economic interests. This can be further analyzed in Figure 3, which presents a visualization

in the form of a treemap, generated from coding on data sources using the hierarchy chart tool in NVivo 14 software.

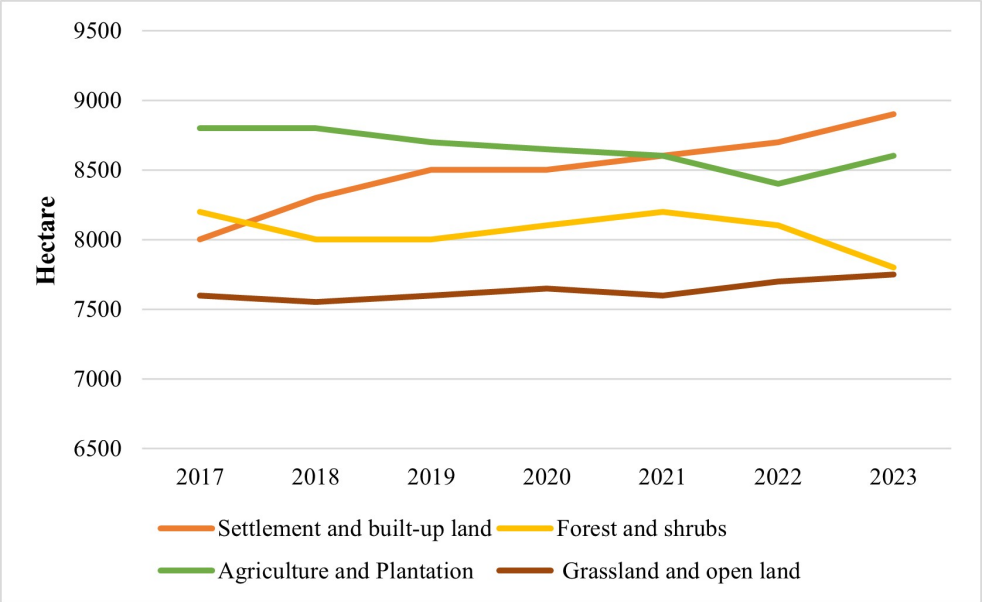

Figure 2. Pattern of land function gaps in Malang City 2017-2023
Source: Analyzed by the Author

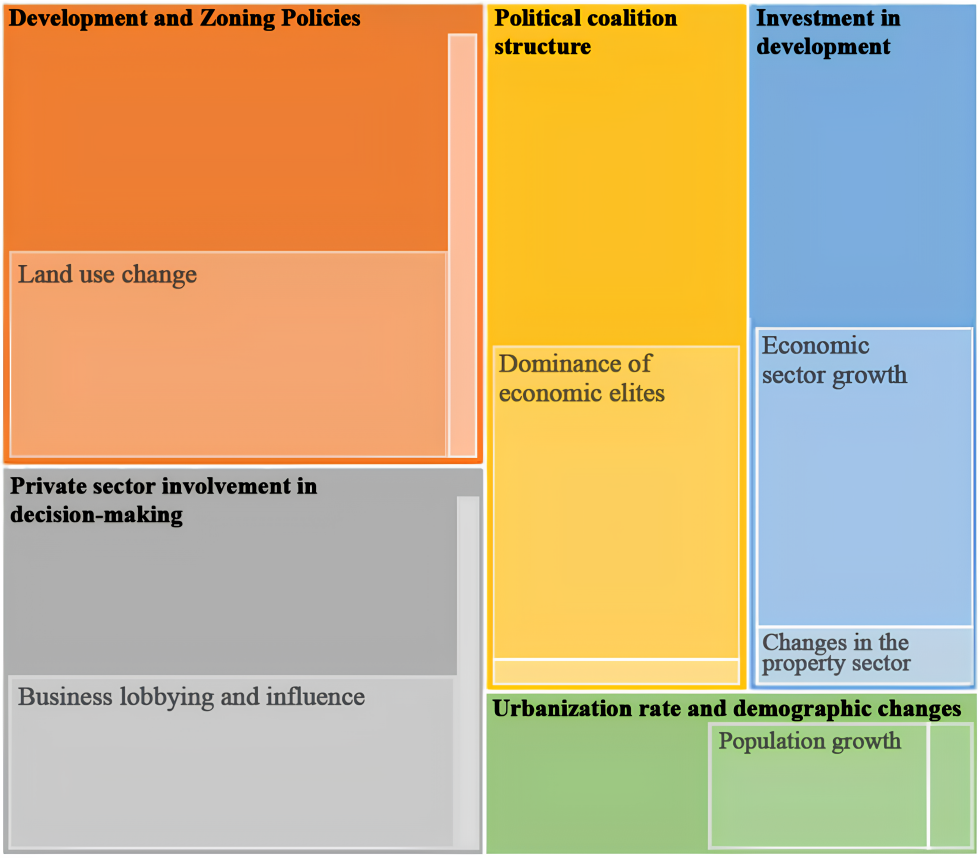

Figure 3. Visualizing growth machine theory coding in Malang City with Nvivo's plotly treemap
Source: Processed by NVivo

The growth of Malang City is dominated by several interrelated factors, in accordance with the indicators of the growth machine theory [68]. Some of these indicators have been organized into a code structure in the NVivo 14 software to form a constellation that can be seen in Figure 3. First, regional development and zoning policies

play an important role in directing land use changes that focus on the development of the property and commercial sectors. This indicator is the most dominant based on the coding results, as the majority of informants' statements during the coding process indicate that most of the policies issued by the Malang City government regarding tourism, zoning, and regional spatial planning are the most legitimized tools to provide access to the development of business and commercial areas supporting tourism, thus encouraging land use change. This trend began to appear massively since 2010 and experienced a sharp increase from 2017 to the present. This policy, which tends to be political, is closely related to the second code or indicator: the involvement of the private sector in decision-making, which is strengthened through lobbying and business influence, giving direction to development policies. One of the interesting and representative issues is the construction of a shopping center in Malang City, which was built on a water catchment area or green open space (GOS). This has sparked controversy and criticism from environmental activists regarding the development permit and its environmental impact, as the development was considered to worsen the water inundation control system. However, the development proceeded despite the government's statement that the developer had fulfilled the given technical requirements, such as modifying the drainage system, even though the area is a water catchment area that should have been designated in the regional planning document. Third, the city's political coalition structure reveals the dominance of economic elites who have the power to influence public policy. From an electoral perspective, electoral contests in Indonesia are still characterized by patron-client practices [69]. This is also true in Malang City, where the influence of the private sector and businesspeople in policy formulation serves as a reward for material support for candidates in general elections. As a result, the policies formed are limited to fulfilling transactional politics, which can lead to rent-seeking [70]. Fourth, the high level of investment in development is a key indicator of the city's economic growth, as the property sector serves as the main engine for urban development. The ease and opportunities for investment are supported by existing policies. The policy and investment outcomes of such political networks align with a targeted economic profit orientation, as high levels of urbanization and population growth create demand for infrastructure, housing, and other city services. All of these factors reflect how the urban growth machine works, with policies that favor developers and the business sector, while putting pressure on the communities affected by these changes. This aligns with the research in Romadhan et al. [71] and Adamu et al. [72], which suggests that this process is part of the often overlooked neoliberal process that shapes the political-economic and spatial logic of urban society and space. The dominance of these factors indicates a close relationship between local economies and existing political structures, with a strong influence of the private sector in development decisions. Ultimately, while the city is growing rapidly, these dynamics often lead to social inequalities and changes that do not always benefit the entire community. An analysis of how the growth machine works in Malang City can be seen in Figure 4.

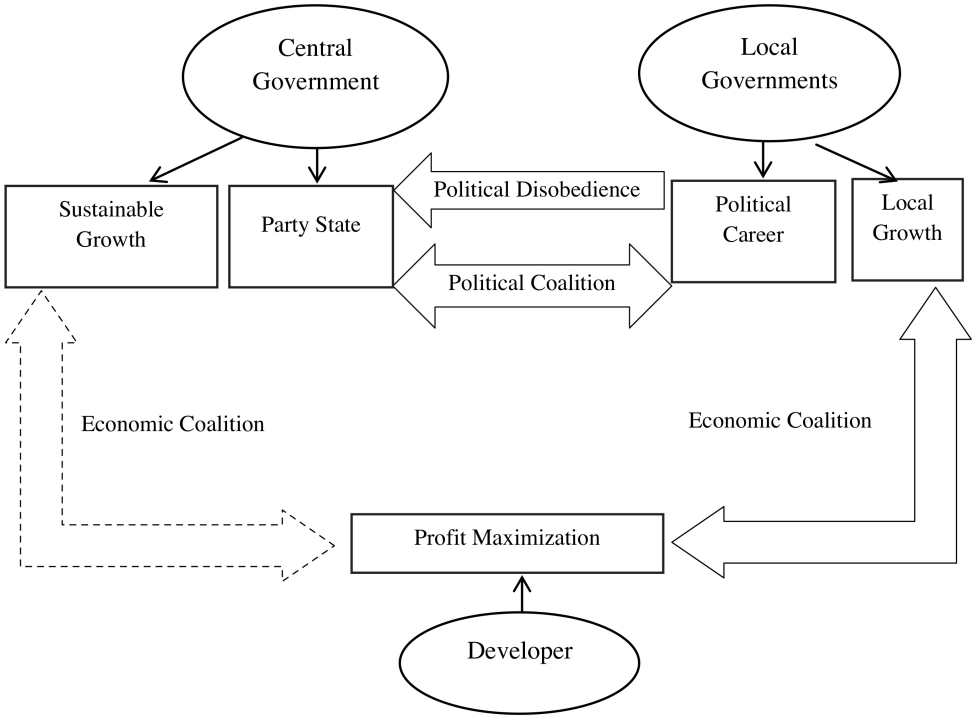

Figure 4. How the growth machine theory works

Note: This figure is sourced from Zhang [73]

Growth machine theory explains how key interest groups in urban land markets play an important role in driving urban growth through alliances that benefit them [73]. In the context of Malang City, these key interest groups include businesspeople or capital owners, property developers, local government, and investors in the tourism and service industries. These groups form coalitions to direct policies, decisions, and licenses that support the conversion of land into more economically profitable areas. The centralized nature of the local economy in Malang City allows decisions on land use and investment to be influenced by the government's interest in increasing local revenue through taxes and infrastructure development. The existence of an economic coalition in the local market can be seen in the role of property developers and investors who work with the government to accelerate land use changes, such as converting agricultural land into commercial areas, tourism, and other city facilities. This is in line with the growing tourism sector, which brings in large investments and, in turn, accelerates urbanization and the changing face of Malang City [74].

5 Discussions

The phenomenon of land conversion due to urban growth under the current political economy is a topic that urgently needs to be researched, especially for experts and stakeholders involved in designing concepts for sustainable urban environments [75–77]. This study must go beyond surface-level analysis; it needs to be in-depth, addressing the roots of complex problems and requiring comparative analysis so that the findings can be tested for validity and consistency. What happened in Malang City regarding spatial use patterns and land use changes mirrors the situation in Yogyakarta, where the potential of tourism and the education sector contributed to a 79% increase in built-up land between 2015 and 2022, particularly in the slope and valley areas [78]. In the context of policies—whether tourism, zoning, or investment—whose formulation process includes lobbying, private sector involvement, and political coalitions between politicians and businesspeople as part of patron-client transactions, there are similarities with the conversion of traditional residential areas (67.1%–75.5%) between 2015 and 2022 in Bangkok [79], as well as the conversion of forests and rainfed agricultural land in Chiang Mai [80] due to gentrification and commercialization. In these cases, policymakers tend to focus more on tourism for land use, site development, and building and infrastructure regulations [81].

On the other hand, the reach of tourism policy in Malang and Yogyakarta is still limited to the national scale, compared to Bangkok and Chiang Mai, which have reached an international scale. Additionally, there are differences in the institutions and political behaviors of urban development in these two countries, although all involve elite groups. Specifically, Indonesia is characterized by neoliberalism and market-based capitalism, while Thailand is characterized by a monarchy with royal monopolies and business elites [82]. However, the conditions in the four cities in these two countries are highly relevant to the findings of Shin and Gimm [25], which discuss urban development megaprojects in Asia that require varying degrees of state intervention to create iconic landmarks, new cities, central business districts, and infrastructure, all of which display the interplay between political and economic interests. Regarding the pattern of urbanization between Malang and other cities, both in Indonesia and Southeast Asia, there are similarities in the form of resource exploitation, particularly land, without considering the negative environmental impacts caused by increased population, development, and consumptive behavior [32–34].

The increased development of hotels, restaurants, and tourism facilities has created a demand for new land, leading to aggressive land conversion. The coalition directed policies to create commercial and recreational spaces, which were lucrative for business and economic elites. However, this change is inseparable from its impact on ecological and social balance, with a number of areas that were previously used for agriculture, green open space, or water catchment areas being transformed into centers of business activity. The growth machine theory illustrates how the dynamics between major interest groups and government policies guide the process of urban growth, which, in this case, is reflected in the development of the tourism sector and land use changes occurring in Malang City [83, 84].

Urban growth driven by economic expansion has the potential to negatively impact environmental sustainability [85]. This is due to the widespread land conversion for commercial purposes without considering other factors such as soil carrying capacity, carbon ecosystems, and food resources [86–88]. It also directly contributes to increased pollution due to waste. Rapid infrastructure development is often not accompanied by adequate waste management and reduction systems, exacerbating environmental pollution [89, 90]. Economic interests and over-reliance on modern infrastructure undermine the true function of nature and can damage ecosystems [89]. On the other hand, this phenomenon further encourages urbanization and the concentration of heterogeneous activities, which increases social inequality and creates slums in peri-urban areas [91, 92]. Therefore, unregulated urban growth can threaten environmental sustainability, create inequality, and hinder the long-term sustainability of both the environment and society.

6 Conclusions

The spatial growth of Malang City is driven by several interrelated factors, which can be explained through the growth engine theory. The development policy of the tourism industry and its accommodations are dominant factors

in land use change, particularly for the development of the property and commercial sectors. Urbanization has many causes and implications, including the conversion of agricultural land and green forests into residential areas and tourism-related facilities. Most of the land use changes in Malang City involve the expansion of elites and investors into built-up land.

This research suggests that the government, especially the local government, should have a master plan for regional development to minimize destructive land conversion. This can be achieved by collaborating with investors and entrepreneurs in a comprehensive discussion of Malang City's planning. Therefore, in order to strike a balance between economic growth and environmental preservation, more sustainable urban planning that takes social and environmental impacts into account is required. Some policies that can be implemented to control land conversion in Malang City include providing zoning areas consistent with their designated purpose and tightening taxes on investors in red zones, or requiring environmental compensation as an obligation for investors or entrepreneurs.

This research has the limitation that the study locus is focused on only one location, namely Malang City. This city is well-known as a tourist and student hub, which allows the flow of urbanization to continue increasing every year. As a result, the potential for land use change is also growing. Additionally, this research focuses on using growth machine theory to analyze the phenomenon of land conversion in Malang City. However, this phenomenon occurs in many cities across Indonesia, especially those with characteristics similar to those of Malang City.

Data Availability

Data will be available upon request to the corresponding author.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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