



## Examining Industrialization or Environment Issues: Policy Analysis of Green Land Conversion in Batu City

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### ARTICLE INFORMATION

Received: July 10, 2024  
Revised: January 20, 2025  
Available online: January 31, 2025

### KEYWORDS

Green Land Conversion; Environmental Policy; Sustainable Development; Economic vs. Environment

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### A B S T R A C T

This research focuses on environmental sustainability which is an important aspect to maintain in sustainable development. The conversion of green land into coffee shops in Batu City has an impact on the local economy, while it hurts environmental sustainability. This research aims to analyze how the policy of the government in the Batu City area is more leaning towards the issue economy or sustainability environment life. This research used a qualitative with approach case studies. Data collection was obtained from two types of data, primary through observations and interviews as well as secondary data through documentation. The study found that there is no local government policy that specifically addresses the conversion of green land into coffee shops, which has a significant negative impact on the environment. Therefore, there needs to be government attention to the environment (environmental governance) through the formulation of environmental policies, mechanisms to support green land investment, and commitment and cooperation of stakeholders to oversee environmental sustainability. Therefore, sustainable development that integrates economic and environmental interests which is required. The conclusion is that no local government policy is in place to deal with the conversion of green land to the coffee shop industry and that the local government policy in Batu City tends to focus on economic issues rather than environmental sustainability.

### INTRODUCTION

Massive green land conversion in urban areas has become a pressing issue as it threatens environmental sustainability (Alberca & Parte, 2023). Batu City, famous for its agricultural land, is now witnessing land conversion into industrial areas, especially coffee shops (Lott et al., 2020). These changes in land conversion impact the environment through climate change, pollution, and reduction of green land (El-Mallah et al., 2023). The phenomenon of green land conversion to industrial estates is also a main focus of the Sustainable Development Goals (SDGs) agenda (Elder & Olsen, 2019).

One of the areas experiencing massive industrialization is Batu City in East Java province. Batu City is an area that still has quite a lot of agricultural land, considering that it has a climate that is suitable for growing various food ingredients in the form of rice, vegetables, and fruit (Ristiawan, 2019). However, the current phenomenon is that the increasing number of residents in the city is causing widespread conversion of agricultural land into industrial sector areas (Sampurno, 2022), one of which is the coffee shop industry. The increasing number of students continuing their education in the area has also impacted on the opening of many coffee shops industrial areas everywhere. This has a good impact on economic growth but can hurt environmental resilience. Batu City DPKP, Retno I said that the area of agricultural land in Batu City in 2021 was around 4,939,010 hectares and will decrease in 2022 to 4,777,988 hectares. Where in one year there are around 161,022 hectares of land conversion (Amrullah, 2023). Previous research conducted by Samsi et al. (2022) the article entitled "Supervision of the Conversion of Agricultural Land into Cafes (Malang Regency Study) explains that there are several internal and external

factors that cause agricultural land to be converted. First, for internal factors, namely, income in the agricultural sector is not sufficient for the family's needs, then farmers decide to convert the land into a coffee shop industry. Second, external factors, namely increasing population density, make the demand for conversion of agricultural land into a place for entrepreneurship.

Land conversion in Batu City is expanding and getting worse every year. This development not only causes environmental degradation but also has a serious impact on human life (Callaghan & Mitchell, 2023). Batu City has an area of 19,908.70 Ha. Based on the RPJMD, Batu City has a 2010-2030 Regional Spatial Plan that targets the development of agropolitan areas in the northern part of the city (Widianita, 2023). Although there are no expansion plans, the demand for non-agricultural areas, especially the coffee shop industry, is increasing. Therefore, land conversion is an important topic in directing industrial development while preserving the environment (El-Mallah et al., 2019).

Research results from Hasanah et al. (2021) explain that rate switch function rice fields Partial show change usage land from year to year. Change land become non-agricultural like residential, industrial and others. Research from Noviyanti and Sutrisno (2021) also explain that impact switch function land form disappearance land agriculture fertility, loss investment irrigation, natural landscape damage and problems environment. Joo and Min (2023) reveal that intervention government impact positive to resilience environment through policy. Policies that are collaborative too help stakeholders interest For overcome imbalance between economics and sustainability environment life (Vignieri, 2023). Therefore, government area play very



method using strategies in the form of narrative, phenomenology and study case for get descriptive data in describe phenomenon or cases studies.

We conducted observations to look at social phenomena at the research locus. The sample was drawn by first making observations in three sub-districts in Batu City, namely Batu, Junrejo, and Bumiaji sub-districts. Further, the sampling of informants in this study was purposive sampling. The sample was drawn by first making observations in three sub-districts in Batu City, namely Batu, Junrejo, and Bumiaji sub-districts. This was followed by interviews with 10 local government officials and 10 coffee shop owners to understand the decision-making process in land conversion. Interviews were also conducted with 5 environmental communities and 20 residents of Batu City to understand their perceptions on land conversion. The data obtained were analyzed by the Miles and Huberman model (2014), which includes three stages: data reduction, data presentation, and drawing conclusions.

Analyzed of the research data has been enhanced by using applications such as VOSviewer and Geographic Information Systems. VOSviewer is instrumental in uncovering patterns and trends from the data set. Through careful network analyzed, the tool automatically identifies clusters or groups of closely related nodes, allowing researchers to immediately see the focus of the dataset and discover connections that may have previously gone unnoticed. As a result, VOSviewer provides not only detailed and compelling visualizations but also a deeper understanding of the structure and dynamics of research data.

**RESULTS AND DISCUSSION**

*Coffee Shop Industry and Issues Environment in Batu City*

The development of the coffee shop industry in Batu City has positive and negative impacts on social and economic aspects. Data from Batu City's BAPPELITBANGDA shows that there will be 126 coffee shops by 2024, which were previously green areas. Coffee shops increase local income through taxes, which supports economic strengthening. In addition, coffee shops attract more visitors to Batu City, becoming a tourist destination. However, the rapid growth of coffee shops has the potential to change the function of green land and affect environmental resilience. An analysis of the conversion of green land to the coffee shop industry using Geographic Information Systems (GIS) illustrates the increase in the number of coffee shops as follows:

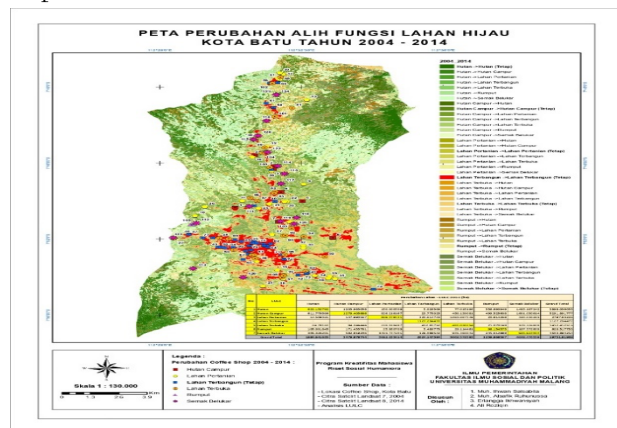
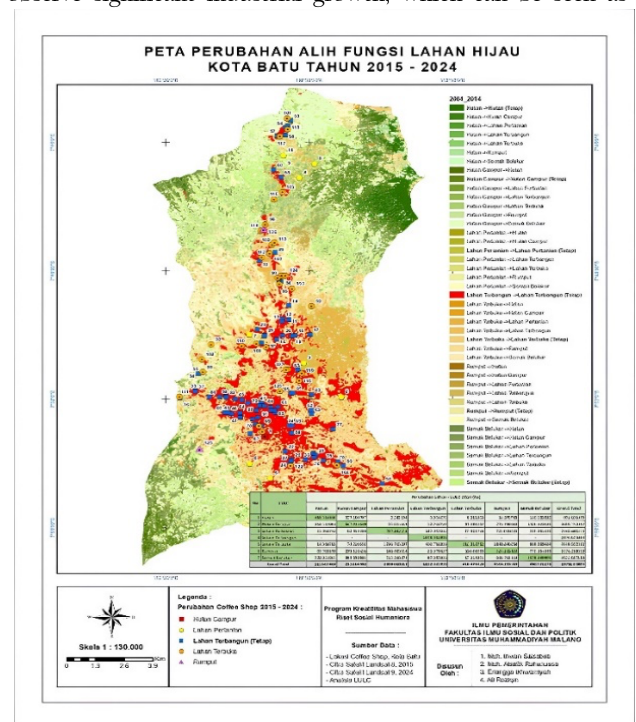


Figure 2. Geographic Information System for Land Use Changes in Batu City 2004-2014  
Source: Research Documentacion, 2024

A Geographic Information System (GIS) is a combination of two pre-existing software technologies, a database management system (DBMS) and computer-aided design (CAD), coupled with specialized functionality for managing and analyzing spatial data. Spatial data is data that can be associated with a geographic location. GIS technology has advantages over traditional DBMS or CAD software because of its ability to capture and analyze topological relationships between objects (Moore et al., 2021). GIS analysis can illustrate the change from green land use to industrial with different color markings. For example, areas marked in red indicate land use change from green to industrial coffee shops between 2004 and 2014, signifying a significant transition over time.

The Geographic Information System (GIS) provided the researcher with insights into the development of green land conversion into the coffee shop industry. The GIS map shows that from 2004 to 2014, approximately 10 % of the green land in Batu City has been converted into industrial areas, with the main focus on coffee shop development. This indicates that there is still sufficient green land available. The researcher then compared this with the GIS map of the 2015-2024 period to observe significant industrial growth, which can be seen as



follows:

Figure 3. Geographic Information System for Land Use Changes in Batu City 2015-2024  
Source: Research Documentation, 2024

Data from the Geographic Information System for 2015-2024 shows a significant increase in the growth of the coffee shop industry. This can be seen from the increasing red marks that signify the conversion of green land in Batu City. There was an increase of about 35% in the conversion of green land into industrial areas, especially for coffee shops. According to an interview with the Batu City Industry Office, this spike occurred after the COVID-19 pandemic in Indonesia. As a result, many of Batu City's youth are working in coffee shops, which contributes to the economic recovery. However, there are concerns regarding the sustainability of green land if it is not managed wisely.

Land conversion has a significant impact on agricultural productivity in Batu City. The conversion of agricultural land into industrial coffee shop areas has resulted in a decrease in the area of land available to farmers. The researchers have collected data from 2022 to 2023, presented in diagram form, showing a decline in food security, as seen in the diagram below:

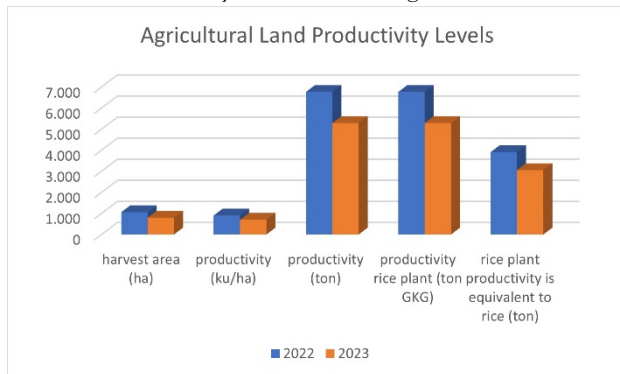


Figure 4. Level of Agricultural Land Productivity in Batu City  
Source: Batu City Central Statistics Agency, 2023

The decrease in agricultural land from 1,059 hectares in 2022 to 797 hectares in 2023 has had a significant impact on agricultural productivity in Batu City. The main cause is the conversion of green land into industrial areas, especially the coffee shop industry. The COVID-19 pandemic encouraged many youths to turn into coffee shop workers, and farmers began to change professions due to inadequate yields. Batu City, which has great potential in fruit farming, especially apples, faces challenges as the crop is highly susceptible to pest and virus attacks, forcing farmers to provide extra care. This condition also encourages farmers to sell their land to coffee shop entrepreneurs. The transformation of farmland into coffee shops provides a natural atmosphere and cool air, attracting tourists from outside the city.

The impact of land conversion is important for various stakeholders to address the problem. Therefore, there needs to be a clear definition of the roles of the government, coffee shops, and communities in addressing this issue, as shown in Table 1. role of stakeholders.

Table 1. Role of Stakeholders.

No	Stakeholders	Roles
1	Local Government	<ul style="list-style-type: none"> <li>Develop a roadmap for regional development</li> <li>Develop an environmentally friendly economic growth strategy</li> <li>Provide socialization to coffee shop entrepreneurs</li> </ul>
2	Coffee Shop Industry	<ul style="list-style-type: none"> <li>Comply with and follow business licensing procedures</li> <li>Make business tax payments</li> </ul>
3	Society	<ul style="list-style-type: none"> <li>Actively engage in monitoring the coffee shop industry</li> <li>Report to the government if there is environmental pollution due to the coffee shop industry</li> </ul>
4	Academics (Universitas Muhammadiyah Malang,	<ul style="list-style-type: none"> <li>Develop a technocratic plan for inclusive economic development</li> <li>Provide recommendations on the phenomenon of the coffee</li> </ul>

Universitas Brawijaya)	shop industry that continues to increase and threaten community agricultural land
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Source. Processed by the researcher

The rapid growth of the coffee shop industry is a serious concern if not properly monitored. Samsi et al. (2022) highlighted the lack of environmental policies in Malang City, which resulted in the uncontrolled growth of coffee shops. As a result, coffee shop development often takes over green land, which has a negative impact on available agricultural land, thus creating disharmony between humans and the natural environment. So, it is important to know the role of the government, coffee shops and the community in tackling the problem.

Current Regulations and Future Strategy

Observations revealed that there are currently no specific regulations or measures governing greenfield conversion, resulting in uncontrolled industrial growth. Interviews with 20 residents and 5 neighborhood communities showed that coffee shop development boosts the local economy as coffee shops attract visitors from outside the area and serve as marketing venues for local MSMEs. However, it has a negative impact on greenfield sustainability as waste from coffee shops is often ignored.

Interviews with 10 coffee shop owners revealed that cooperation with MSMEs and communities is an individual choice, and waste management still depends on the awareness of each entity without specific regulations. As a result, liquid waste from coffee shops is often discharged into nearby rivers, damaging water quality and potentially endangering the health of residents. This finding is in line with Alberca & Parte (2023) study that highlights the negative impact of industrial waste on the environment, particularly during waste disposal. Therefore, Batu City needs to implement a zoning policy that restricts the conversion of agricultural land to commercial use, as well as requiring developers to conduct environmental impact assessments.

Interviews with the Batu City DPRD revealed that currently there are no specific regulations regarding land conversion and spatial planning. The current focus of the local government is to increase Regional Original Income (PAD) by collecting distribution taxes of approximately 30 million rupiahs from each coffee shop industry. There are no regulations governing corporate social responsibility (CSR) for the coffee shop industry so waste development and processing initiatives still depend on the awareness of individual coffee shop owners. In addition, in the business licensing process through DPMPTSP, there is also no detailed protocol to integrate environmental aspects.

Interviews with BAPPELITBANGDA and the Environmental Agency revealed that the Batu City Government has not identified the typology of the coffee shop industry. As a result, when the community asks for advice from the local government regarding the conversion of green land into a coffee shop industrial area, there is likely not enough understanding. This is exacerbated by the fact that the local government has also not conducted mapping for the coffee shop industrial area.

Land conversion in Batu City requires specific policies. Environmental governance theory emphasizes the importance of assessment, planning, implementation, and performance

evaluation in sustainable and environmentally friendly economic development (Antonius & Ida, 2023). The regulations must contain clear provisions regarding industrial development and investment that have an impact on green areas. These regulations must include strict guidelines on land conversion procedures, including limitations and conditions that ensure the preservation of green areas. In addition, steps need to be taken against coffee shops that do not meet legal standards, such as adjusting the spatial plan by Public Works and Spatial Planning (PUPR) so that industrial development is in accordance with the existing spatial plan.

According to Switzer (2019) investment mechanisms is a rational solution to reduce undue changes in land use change. Batu City, as an open area for investment, must adopt policies and investment mechanisms that are oriented towards green land. These mechanisms must ensure that industrial projects, including coffee shops, comply with green investment standards that support environmental sustainability. The implementation of these policies must be followed by strict monitoring and evaluation to ensure the effective implementation of green investment principles in the field.

Collaboration between the government, private sector, and community is crucial. This includes internal management by the Village Government and the development of a licensing system that improves control and compliance with regulations. Collaboration between coffee shops and MSMEs for marketing and waste management can also increase investment benefits while reducing environmental damage. It is hoped that this collaboration can create an effective synergy to maintain the balance between industrialization and environmental sustainability in Batu City.

Batu City needs stronger policies to limit development in areas vulnerable to environmental damage. Uncontrolled development in these sensitive areas can result in ecosystem degradation, loss of biodiversity, and degradation of soil and water quality. Strict policies should include the establishment of development zones in vulnerable areas, such as fertile agricultural land and conservation areas. In addition, there needs to be a thorough evaluation of the environmental impact before granting development permits, involving environmental experts and local communities. The implementation of these policies also requires strict supervision and strict sanctions for violators. Collaboration between local governments, environmental institutions, and communities is essential to ensure that these policies are implemented effectively. With these steps, it is hoped that Batu City can protect vulnerable areas from damage, while still supporting sustainable development.

## CONCLUSION

This research states that the conversion of land into coffee shop industry areas contributes to economic growth. However, it also has a negative impact on environmental resilience and sustainability. Currently, Batu City government policies prioritize economic development over environmental sustainability. This raises concerns about the long-term effects of industrial development on environmental resilience, especially in the context of the coffee industry. Environmental governance theory offers a solution through the principle of sustainable development, which integrates economic growth with environmental preservation through effective environmental policies, investment mechanisms that support green spaces, and cooperation between stakeholders. This research is expected to serve as a guide for the government to

reduce biased policies/regulations. A win-win solution to balance the economy and environment is what the government expects from industrial development, as well as progressive actions as authorities, sustainable strategies, and policies. Future research should explore the long-term socio-economic impacts of greenfield conversion in other regions, focusing on policy effectiveness and community participation.

## ACKNOWLEDGEMENT

The authors would like to thank you for Universitas Muhammadiyah Malang, Directorate Learning and Student Affairs, as well Directorate General of Higher Education, Ministry of Education and Culture Republic of Indonesia Government of Batu City and its all structure which supported this research.

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