

Transforming Agricultural Land into Residential Areas: A Socio-Economic Study in Tamiang Subdistrict, Mandailing Natal Regency

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Abstract:

The conversion of agricultural land into residential areas has become increasingly prevalent due to rapid population growth and the rising demand for housing development. This process presents various challenges, particularly for communities that rely on agriculture as their primary source of livelihood. This study aims to examine the socio-economic impacts of agricultural land conversion into residential areas in Tamiang Village, Kotanopan Subdistrict, Mandailing Natal Regency, North Sumatra Province. By employing a qualitative method and collecting data through observation, interviews, and literature review, this study found that land conversion in Tamiang Village has reduced the amount of agricultural land, altered land ownership patterns, and shifted livelihoods from agriculture to non-agricultural sectors. Factors such as population growth, economic motivations, inheritance considerations, and the strategic location of the land are the main drivers of this conversion. The findings of this study provide insights into the socio-economic dynamics in rural areas and offer considerations for formulating policies that balance residential development with agricultural sustainability.

Keywords: *agricultural land, conversion socio-economic impacts, rural development, land ownership, livelihood transition.*

INTRODUCTION

The conversion of agricultural land to non-agricultural land is a phenomenon that has increasingly spread along with population growth and the demand for residential land (Darwin et al., 2019). In Indonesia, this phenomenon has significant impacts on the environment, economy, and society, particularly in areas that rely on agriculture as their primary livelihood (Drescher et al., 2016). In 2021, Indonesia's population reached 273.8 million, showing an increase from 271.1 million in 2020 (Achmad et al., 2024). This population growth has intensified the need for natural resources, especially land, to meet the demands for housing and infrastructure.

In Tamiang Village, Kotanopan District, Mandailing Natal Regency, North Sumatra, the conversion of rice fields into residential areas has become a critical issue that threatens the sustainability of local food agriculture. From 2019 to 2021, officials recorded the area of rice fields in Tamiang Village at 239.5 hectares. However, from 2022 to 2024, this area decreased by 4 hectares, or about 2%, to 235.5 hectares (Balai Penyuluhan Pertanian Kotanopan, 2024). Additionally, the population in this area has continued to grow. In 2018, officials recorded a population of 3,070 people with a density of 470 people per square kilometer. In 2019, the population reached 3,096 people, and it continued to increase, reaching 3,127 people in 2020 and 3,290 people in 2021 (BPS Kabupaten Mandailing Natal, 2022).

Previous research has identified various factors driving the conversion of agricultural land, including low crop prices, lack of support from local governments, and pressure from the need for residential land (Setyaningsih et al.,

2023). Moreover, research by Sari and Yuliani (2021) shows that land conversion not only leads to a decline in farmers' income but also results in significant changes in the social structure and livelihoods of the local community. Handayani et al. (2018) added that land conversion policies in Indonesia have had negative impacts on national food security, particularly in areas facing strong pressure for non-agricultural development, such as in Bali Province and Klaten Regency, Central Java. Guillaume et al. (2016) also emphasized that the conversion of tropical forests into agricultural land in Indonesia has led to significant declines in soil fertility indicators, which have broader implications for the overall quality of ecosystems.

However, in-depth studies on the specific social impacts of land conversion in rural areas, particularly in North Sumatra, remain limited. Rondhi et al.'s (2018) research, which examines the economic value of land in East Java, shows that agricultural land in peri-urban areas has a lower economic value compared to land converted for housing, accelerating land conversion in these areas. On the other hand, Suwarno et al. (2018) indicate that the moratorium on forest conversion policies implemented in Indonesia has not been effective in reducing the rate of forest conversion, mainly due to prevailing economic pressures and local needs.

This study aims to fill this gap by focusing on the social aspects of land conversion. The novelty of this research lies in its more specific approach to the social impacts of land conversion in North Sumatra, integrating socio-economic analysis and exploring further implications for the social structure and livelihoods of the local community. Methodologically, this study employs a more in-depth qualitative approach through interviews and field observations in Tamiang Village, differing from the quantitative or simulation approaches used in some previous studies.

Therefore, the objective of this research is to examine the socio-economic impacts of agricultural land conversion into residential areas in Tamiang Village, Kotanopan District, Mandailing Natal Regency, North Sumatra Province. This study seeks to understand how land conversion affects changes in agricultural land area, changes in land ownership, and shifts in community livelihoods from the agricultural sector to non-agricultural sectors. Additionally, this research aims to identify the factors driving land conversion, such as population growth, economic motivation, inheritance considerations, and strategic location. The results of this study may provide insights into the socio-economic dynamics in rural areas and serve as a reference in formulating policies that balance the need for residential development with the sustainability of the agricultural sector.

METHOD

This study was conducted in Tamiang Village, Kotanopan Subdistrict, Mandailing Natal Regency, North Sumatra, selected as the research site because this area has experienced significant land-use changes from agriculture to residential areas (Balai Penyuluhan Pertanian Kotanopan, 2024). Researchers selected this location based on initial observations that indicated the land conversion had impacted the social and economic life of the local community. The researchers chose this case to explore the socio-economic impacts of agricultural land conversion, which has become increasingly common in the area.

This research is a qualitative study aimed at deeply exploring the social impacts of land conversion (Elfena, 2024; Lune & Berg, 2017). The collected data consisted of primary and secondary data (Bryman et al., 2007). We obtained primary data directly from field observations and interviews with participants, and we collected secondary data from relevant documents and reports, including statistical data from the Central Bureau of Statistics (BPS) and the Kotanopan Agricultural Extension Office, Mandailing Natal Regency.

The participants in this study consisted of six informants selected using a purposive sampling approach. The informants included farmers who converted their land into residential areas and residents who now live in these areas. We selected the informants based on their direct involvement in the land conversion process and their experience with the changes, which provided representative insights into the social impacts of land conversion in Tamiang Village.

We conducted the research process through several key stages. First, we conducted field observations from February 5 to March 10, 2024, at locations where land conversion had occurred. These observations aimed to directly observe physical changes, land use, and their impact on community life. Second, we conducted in-depth interviews with the six selected informants to gather information about the socio-economic impacts of land conversion. Third, we conducted a literature review by collecting data from various relevant documents and reports, such as academic journals and data from BPS, which provided additional context and supported the findings from observations and interviews.

We carried out the data analysis using the Miles and Huberman (2013) method, which involved three main steps: data reduction, data display, and interpretation. We first reduced the data obtained from observations,

interviews, and literature reviews to filter and summarize relevant information. Next, we presented the summarized data in a narrative form that facilitated understanding and further analysis. Finally, we interpreted the data by identifying key patterns and linking the findings to the research questions, thereby concluding the social implications of land conversion in Tamiang Village.

RESULTS AND DISCUSSION

The decline in Agricultural Land Area in Tamiang Village

Tamiang Village is located in Kotanopan Subdistrict, Mandailing Natal Regency, North Sumatra Province. Kotanopan Subdistrict covers a total area of 325.1472 km², with Tamiang Village occupying an area of 65.313 km², or approximately 2.01% of the total area of Kotanopan Subdistrict (BPS Kabupaten Mandailing Natal, 2022). The boundaries of Tamiang Village are as follows: to the north, it borders Hutapungkut Village; to the east, it borders Usortolang Village; to the south, it borders Tor Tapus; and to the west, it borders Muara Tagor Village. Additionally, Tamiang serves as a border area between North Sumatra Province and West Sumatra Province.

The majority of the residents in Tamiang Village derive their primary income from agriculture, including rice farming, rubber cultivation, and various other tropical crops. The valley with hilly topography hosts this area, which highly supports agricultural activities, particularly rice farming, the main livelihood of the local community. In 2021, out of the total population of Tamiang Village, which reached 3,290 people, approximately 75% or 2,468 people were farmers. However, as the community developed and the population grew, there was a significant increase in the number of residents in this area. The population of Tamiang Village rose from 3,127 people in 2020 to 3,290 people in 2021. Various factors, including urbanization, migration, and the need for new housing, drove this growth and impacted land use (BPS Kabupaten Mandailing Natal, 2022).

The research shows a significant decline in the agricultural land area in Tamiang Village. According to the data collected, the area of rice fields in Tamiang Village decreased during the period from 2019 to 2024 as follows:

Table 1: Decrease in Land Area in Tamiang Village

No.	Year	Area (Hectares)
1.	2019-2021	239.5
2.	2022-2024	235.5

Source: Balai Penyuluhan Pertanian Kotanopan, 2024.

From 2019 to 2021, we recorded the rice field area in Tamiang Village at 239.5 hectares. However, from 2022 to 2024, there was a decrease of 4 hectares or about 2% from the previous area, bringing it to 235.5 hectares. This decline reflects significant land-use conversion, which has impacted the local agricultural sector and economy. With the increasing demand for housing due to population growth, the conversion of agricultural land into residential areas has become an important issue that requires attention in regional planning and management to ensure a balance between development and the sustainability of the agricultural sector.

The decrease in agricultural land in Tamiang Village resulted from land-use conversion to residential areas, which directly relates to population growth and development needs. As the population increased, the demand for housing grew, often leading to the conversion of agricultural land into residential areas. According to Budiono (2019), if this conversion process continues unchecked, the agricultural land area will shrink further. The decrease in the rice field area observed in Tamiang Village aligns with Budiono's findings.

These findings are consistent with Hidayat's (2020) report, which indicated a decline in the accessibility of agricultural land in the Kemang area from 2005 to 2015. In 2005, the total agricultural land area in Kemang was 2,682.2 hectares. However, by 2010, the agricultural land area had reduced to 2,329.9 hectares, resulting in a decrease of 352.3 hectares. Furthermore, in 2015, the agricultural land area in Kemang decreased again to 2,188.9 hectares, a reduction of 140.9 hectares. The total reduction in agricultural land area between 2005 and 2015 was 493.2 hectares, representing a decline of approximately 18.4% from the initial area in 2005.

In the urbanization theory proposed by Louis Wirth (2012), urbanization encompasses not only the physical movement of people from rural to urban areas but also brings profound social changes. Wirth argued that urbanization creates a more heterogeneous, individualistic, and impersonal society. This theory aligns with our findings, which show a decline in agricultural land area in Tamiang Village. With the increasing population and the need for new settlements, agricultural land in the area has been converted into residential areas. This process

illustrates how urbanization leads to changes in social structure and land use, resulting in a reduction in agricultural land that is vital to the local economy.

In the context of Tamiang Village, the significant population growth from 3,127 people in 2020 to 3,290 people in 2021, followed by the reduction in rice field area from 239.5 hectares to 235.5 hectares, reflects the impact of urbanization as described by Wirth. The increasing demand for housing and the development of new residential areas contributed to the decline in agricultural land. This reduction not only affects the agricultural sector but also alters social relationships and the structure of the local community, in line with Wirth's view that urbanization brings about changes in lifestyle and social structure. Therefore, the conversion of agricultural land into residential areas serves as a concrete example of social change resulting from urbanization, which requires attention in regional planning and management to address its negative impact on the agricultural sector and community welfare.

The experiences of several countries, particularly developing nations, further support this observation, as the conversion of agricultural land into urban areas has become a significant phenomenon globally. For instance, Halim et al.'s (2013) study showed that in Bangladesh, about one percent of agricultural land is converted annually for non-agricultural use, with increasing demand for land for housing and related services negatively impacting the agricultural sector and the communities that rely on it. These findings are similar to the situation in Vietnam, where the country's integration into the global market economy since the 1990s has led to widespread agricultural land conversion for industrial development and urbanization, resulting in social tensions and grievances from affected communities (Phuc et al., 2014). In Ghana, research by Naab et al. (2013) also revealed that rapid urbanization in Tamale City led to the conversion of key agricultural land into other uses, affecting poor farming communities that depend on that land for their livelihoods.

Changes in Land Ownership

The changes in land ownership in Tamiang Village have had significant impacts on local farmers who previously relied on rice fields for their livelihoods. As the demand for land for residential purposes has increased, many farmers have opted to sell their land to housing developers. Sahara, a local farmer, expressed, "My rice field sold for a high price for residential use, allowing me to make a substantial profit" (Interview, February 21, 2024). This phenomenon demonstrates how urbanization pressure has pushed farmers to shift from agriculture to land sales as a more profitable source of income.

Additionally, Ade, a buyer of rice fields in Tamiang, acknowledged that the price of rice fields in the area is quite high due to its strategic location for residential development. "I purchased this land because its location is very strategic for residential purposes. The price I paid is indeed higher than the market price of agricultural land, but it is commensurate with the profit I will gain from selling houses here" (Interview, February 25, 2024).

Figure 1: Example of houses resulting from land conversion



Source: Research Findings, 2024.

Agus, a housing developer, described the reasons for purchasing land to develop housing in Tamiang. He explained that the area is very suitable for residential development, particularly due to its strategic location close to the main road. "This location is very attractive for housing development due to its easy access and proximity to public facilities, which makes many people interested in moving or buying houses here" (Interview, February 25, 2024). As expected, many people subsequently bought houses in the development, making the project a great success—the housing units sold quickly, meeting the market demand for comfortable yet affordable housing. The development of housing in Tamiang not only proved profitable for the business but also transformed the area into a modern and dynamic residential neighborhood.

However, on the other hand, the sale of land by residents in Tamiang has brought about undesirable impacts. Although housing development has brought economic benefits to those who sold their land, many residents who previously depended on agriculture have now lost their source of livelihood. Land that was once fertile and used for cultivation has now been replaced by rows of new houses, leaving farmers without land to work. Ironically, while this development provides benefits to some, such as better housing access, it also triggers serious social issues—loss of employment and identity as farmers for some residents. Those who once lived on the land now have to find new ways to survive amidst the changes around them.

Further findings reveal that the changes in land ownership not only affect the economic aspects of farmers but also bring broad social implications. Many farmers who sold their land feel a loss of their identity as farmers and struggle to adapt to new professions. Meanwhile, the emergence of new residential areas brings demographic changes to Tamiang Village, with newcomers bringing urban culture and lifestyles, ultimately affecting local social dynamics. This change reflects how urbanization processes can alter social and economic structures in rural areas, with impacts that we need to manage carefully to prevent deeper inequalities (Suprapti, 2019; Yuliastuti, 2020).

The changes in land ownership in Tamiang Village, leading to the conversion of agricultural land into residential areas, align with the concept of land grabbing often seen in developing countries. According to Borrás et al. (2011), land grabbing refers not only to the acquisition of land by corporate entities or governments but also to the transformation of land use that forces drastic changes in land use and ownership. In the case of Tamiang, this phenomenon has led to changes in land ownership from local farmers to housing developers or other individual owners. This transformation benefits developers but also increases economic uncertainty for farmers who previously relied on their land for survival. Additionally, farmers who sell their land may face difficulties entering other economic sectors, especially if they lack skills or sufficient access to new non-agricultural jobs.

We can analyze the changes in land ownership and their social impacts in Tamiang through the lens of modernization theory proposed by Rostow (1960). According to Rostow, the modernization process often involves the transformation from agrarian societies to industrialized or urbanized societies. However, this theory also emphasizes that not all groups can quickly adapt to such changes. In the context of Tamiang, land conversion has forced farmers to switch professions or face significant economic challenges. The loss of agricultural land not only undermines the economic foundation of farmers but also disrupts their social identity as farmers, which is an integral part of their lives. This disruption corresponds with Scott's (1977) view on the moral economy, where rapid and unjust economic shifts can lead to dissatisfaction and social instability among affected communities. The inequality resulting from this transformation highlights the need for more inclusive and equitable policies to address the socio-economic impacts of urbanization and land conversion in rural areas like Tamiang.

Shift in Occupation

The conversion of agricultural land in Tamiang Village has not only altered the landscape but has also had a significant impact on the economic lives of its residents. Many farmers who previously depended on rice fields for their livelihoods now have to switch professions. Karlina, a local farmer, lost her livelihood when developers sold her rice field for residential development. "I used to work as a farmer, but after selling my rice field and seeing it turned into a housing development, I no longer work as a farmer. Now, I am just a housewife" (Interview, February 21, 2024).

However, not all residents have resigned to their fate. Fatimah, also a former farmer in Tamiang, chose to become a market trader and sell goods in a personal shop she built with the proceeds from selling her rice field. "After the land conversion, I now work as a market trader and also sell goods in my shop" (Interview, March 3, 2024). Fatimah's experience illustrates the adaptation and efforts of residents to survive despite losing their primary profession as farmers.

Unfortunately, not all residents have managed to find new employment easily. Many have faced the need to become casual laborers or even work outside the city. Those who once relied on farming now struggle to make a living as construction workers or other informal workers with uncertain job prospects. This situation has led to an increase in unemployment and economic instability among the local population.

This phenomenon also highlights the irony of the urbanization process and land conversion. On one hand, housing development provides financial benefits to residents who sell their land and opens up new job opportunities for some. On the other hand, it also causes many residents to lose their stable jobs as farmers, which are their primary source of income. As a result, the shift in professions is not always beneficial for everyone and creates new challenges in maintaining the welfare of Tamiang's community.

The phenomenon of land conversion in Tamiang and the accompanying shift in professions illustrate the socio-economic dynamics often associated with urbanization processes. According to social change theories, particularly modernization theory, economic changes resulting from urbanization and industrialization often force agrarian societies to shift to different economic sectors (Cole, 1966; Stoltenberg et al., 2019). Polanyi argued that the shift from a subsistence-based agricultural economy to a market-based economy often triggers social dislocation. This dislocation causes communities to lose their traditional jobs and forces them to adapt to new roles that may not provide the same economic security (Baum, 1996).

Furthermore, research by Ellis (2000) shows that livelihood diversification is one strategy used by rural households to survive amid rapid economic changes. However, in the case of Tamiang, this diversification does not always succeed. Many residents have had to turn to informal or casual work, which often does not provide adequate income stability. This situation indicates that land conversion and the accompanying shift in professions not only affect the local economic structure but also have the potential to widen social gaps and increase economic vulnerability among the affected community. Consequently, without appropriate policy interventions, such as skills training programs or support for small businesses, the negative impacts of land conversion could deepen, endangering the long-term welfare of the local community.

Social Impact on the Local Community

The conversion of agricultural land into residential areas in Tamiang Village has significantly impacted the social structure and relationships within the local community. One major effect observed is the shift in residents' lifestyles toward more "urban" patterns. Previously, the agricultural activities in Tamiang Village closely tied residents to their daily lives, demanding discipline in land management and a more flexible work schedule. However, with the reduction in agricultural land and increased residential development, many residents have transitioned from farming to jobs oriented toward the service and industrial sectors. Consequently, they have adopted a more urban lifestyle, such as using technology in daily activities, increasing consumption of modern goods, and shifting from traditional communal activities to more individual-focused tasks (Kurniawan et al., 2022; Sihombing et al., 2020).

A resident, Ahmad (47), who has lived in Tamiang Village for over 30 years, describes the change by saying, "In the past, we were all farmers. Every morning, we met in the fields and helped each other. Now, with more new houses and people working outside the village, hardly anyone is willing to work together like before. Everyone is busy with their affairs." This quote illustrates how the shift from agricultural work to non-agricultural sectors has changed the social dynamics of the community. Agricultural activities, which were once the center of social life, are now being replaced by formal sector jobs, which often reduce opportunities for social interaction.

Additionally, this change has also impacted social interactions among residents. In the past, the people of Tamiang Village had close relationships, where neighbors knew each other and frequently gathered for communal activities, such as harvest festivals or major celebrations. However, with the increase in residential development, many newcomers have entered the area, lacking strong social ties with the original community. Rahmat (49), a community leader, states, "Now there are many newcomers here, and we no longer gather as frequently as before. Neighbors now lock their doors more often than they greet each other. The relationships between residents have become colder and more formal." This situation demonstrates that the influx of newcomers and the change in land use have led to alterations in social interaction patterns, where the tight-knit community bonds have weakened, replaced by more individualistic relationships.

The conversion of agricultural land into residential areas in Tamiang Village has had a significant impact on the lifestyle and social interactions of the community. These findings align with theories in urbanization and social transformation studies that show how land conversion affects the social structure of communities.

First, the shift in residents' lifestyles from agricultural to urban aligns with Simmel's (2023) urbanization theory. Simmel's theory explains that the transition from rural to urban life often involves significant changes in lifestyle and social habits. For example, as agricultural land has reduced and residential development has increased, the people of Tamiang Village have adopted modern technology and urban consumption patterns. This shift reflects their transition from traditional, communal living to more individualistic lifestyles that depend on technology. As illustrated by Ahmad, this change shows how urbanization affects not only the physical environment but also social interaction patterns and values.

Second, the change in social interactions among residents, as described by Rahmat, can be analyzed through Putnam's (2000) concept of "disconnected communities" in his book *Bowling Alone*. Putnam argues that urbanization and migration often lead to a decline in social cohesion and community trust, reflected in the shift from close-knit, cooperative relationships to colder, more formal ones. In Tamiang Village, the influx of newcomers who lack the social ties of the original community weakens social networks and decreases the frequency of community interactions. This change implies a decline in social solidarity and engagement in collective activities, replacing traditional patterns of togetherness and cooperation.

Third, these social changes also reflect Bourdieu's (1990) study on "social capital." Bourdieu explains that changes in social and economic structures can alter the social capital of individuals and communities, affecting social relationships and existing networks. The transition from an agricultural economy to a service and industrial-based economy in Tamiang Village demonstrates how the community's social capital has shifted. Previously, close-knit, community-based relationships have become more formal and individualistic. This shift shows how economic transformation affects not only material aspects but also social capital and interactions within the community.

CONCLUSION

This study reveals the significant impact of the conversion of agricultural land to residential areas in Tamiang Village, highlighting profound changes in the economic and social lives of residents. The main findings show that the urbanization process not only affects the physical landscape of the area but also causes significant shifts in the social and economic structure of the community. The conversion of land has led many farmers to lose their livelihoods, forcing them to transition to non-agricultural jobs that are often unstable. Additionally, this shift has altered social interaction patterns from close-knit community life to more individualistic relationships, reflecting broader social dynamics associated with urbanization.

This study makes an important contribution by integrating urbanization and social change theories in the less-explored context of the impact of land conversion on rural professions and social structures. The key contribution lies in applying Simmel's theory of urbanization and Putnam's concept of "disconnected communities" to analyze changes in lifestyle and social interactions. Furthermore, linking economic change with Bourdieu's concept of social capital provides new insights into how economic transformation affects social networks and relationships within the community. This approach offers an innovative way to understand social dynamics in the context of land use changes.

The study faces several limitations, including its geographic scope, which is limited to Tamiang Village, and its reliance on qualitative data from interviews that may not represent the entire population. Additionally, we have not fully explored the long-term impacts of these changes on the economic and social well-being of the community. Future research should consider conducting longitudinal studies to assess the long-term effects of land conversion on communities. Further research that includes various locations and quantitative methods could provide a more comprehensive view of the effects of urbanization and land use changes in broader rural areas. Additionally, evaluating policies and interventions that can support job transitions and mitigate negative social impacts should be a focus to ensure the sustainability and well-being of communities in the future.

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