


Analysis of Agricultural Land Changes on the Spatial Pattern of Langkat Regency

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ABSTRACT

This study aims to examine the Analysis of Agricultural Land Change on the Spatial Pattern of Lalat Regency. In this research, the researcher uses a descriptive research method with a qualitative approach. The purpose of this descriptive research is to make a systematic, factual, and accurate picture or painting about the facts, properties and relationships between the phenomena being investigated. Qualitative BMetode is a research procedure that produces descriptive data in the form of written or spoken words from observable behavioral people. Data collection techniques are the most strategic step in research, because the main purpose of a study is to obtain data. Data Reduction, Data Display and Conclusion Drawing / Verification. The results of the study Land use change in Lalat Regency, from 2021 to 2023, show signs of massive development. The area of buildings and roads has increased, but on the other hand, the area of vegetation and green forests has decreased due to the increasingly intensive land conversion. The local government of Langkat Regency should immediately realize a policy on the protection of agricultural land for food crops in Langkat Regency so that it can prevent the conversion of agricultural land for food crops, through accelerating the realization of activities and including farmer groups in deliberations for development so that they can achieve the goal of protecting agricultural land for sustainable food crops.

Keyword : Changes in Agricultural Land and Spatial Patterns in Langkat Regency

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1. INTRODUCTION

Land conversion is actually not a new phenomenon in human civilization and has been going on for quite a long time. Humans will continue to increase and use land to maintain their civilization. Land control and use have become disrupted and considered problematic in line with the growth of human population. This results in complex problems resulting from population growth, scientific development, technology utilization and development. Land that initially functioned as a medium for cultivation has changed to multifunctional use. The specific change from use for agriculture to use for non-agriculture is known as land conversion or conversion (Angraini et al., 2020). Land use mismatch is the result of land conversion that continues to increase in line with very rapid population growth. A number of regulations have been made to control land conversion but land use irregularities still occur. Spatial Planning Policy in Indonesia has actually been regulated in Law Number 26 of 2007 concerning Spatial Planning.

It is mandated in the Law that for each region to prepare a Regional Spatial Plan as a guideline in spatial planning. And in its implementation, it must be able to create a balance between the interests of the region, the community, the environment and sustainability in the use of space. In this case, it is intended that an area can accommodate the needs of the community while still considering other aspects. Planning for Agricultural Land Change to the Spatial Pattern of Langkat Regency is a form of business that utilizes the potential of land resources to the maximum to improve people's living standards and regional income without leaving the conservation aspect. Land is an area on the earth's surface whose characteristics include the biosphere, soil, water, human populations in the past and present so that it affects land use in the present and future. Therefore, the form of land use in the context of regional development must be carried out to achieve the optimization of existing land resources, in order to achieve a better order without leaving the sustainability of the environment. Along with the passage of time and with the growth of the population increasing significantly, resulting in the development of development activities carried out more rapidly.

The problem that often occurs is the limited land that is suitable to meet the community's needs for land. This results in many people opening new land or called land conversion that is not in accordance with their land. Limited land makes farmers forced to open agricultural land on marginal land. The direction of the correct land use function can avoid the misuse of land use that can damage the environment. Although if we look at the reality of the facts and issues of problems that occur in the field, there are still many violations that occur in the use of land or space. This can be evidenced by the existence of a global issue that occurs almost all over the world, which states that land use that is not in accordance with its designation has caused a lot of forest destruction due to uncontrolled land conversion. The consequences that arise from this are very diverse, such as floods and landslides.

Langkat Regency with an area of 626,329 Ha or about 8.74% of the area of North Sumatra Province which reaches 7,168,000 Ha. Topographic conditions that generally tend to be flat and are lowlands with elevation variations between 4 – 105 meters above sea level (Source: Langkat Regency in 2014 Figures). Langkat Regency is directly adjacent to Aceh Tamiang Regency to the North, Karo Regency to the South, Deli Serdang Regency to the East, and Southeast Aceh Regency/Tanah Alas to the West. Langkat Regency is one of the cross-Sumatra accesses to the northern regions. The high rate of activity can result in the Langkat Regency area having an environment that is vulnerable to activities that can affect the quality of the land. The rise of development carried out in Langkat Regency also affects land use that is not in accordance with the direction of the land use function which will later result in natural conditions that are very vulnerable to environmental changes.

That from year to year the area of agricultural land in Langkat Regency has decreased from 2022 to 2024. This can be seen from the area of agricultural land that continues to decrease, as seen from the following table:



Figure 1.1 Agricultural Land Area of Langkat Regency

Based on table 1.1, the area of rice fields in Langkat Regency from 2022 to 2024 has decreased. One of them is rice fields. Rice fields have a very wide range of functions, including in providing food, providing job opportunities, providing sources of income for the community and the region, and as a means of environmental conservation. Law Number 41 of 2009 concerning the Protection of Sustainable Food Agricultural Land and Langkat Regency Regulation Number 17 of 2013 concerning the Protection of Sustainable Food Crop Agricultural Land is an effort to build food security and sovereignty which is realized through sustainable agricultural development in an effort to achieve the country's goal, namely the welfare of the people. Langkat Regency Regional Regulation Number 09 of 2013 concerning the Regional Spatial Plan (RTRW) of Langkat Regency for 2013-2033, in the spatial planning policy of Langkat Regency includes development policies, one of which is in article 5 paragraph (1) letter g, namely "protection of agricultural land against land conversion for regional activities". One of the land protections in question is the protection of wetlands, namely rice fields. The decrease in the area of rice

fields in Langkat Regency is the largest number of conversions when compared to other sub-districts in Langkat Regency in terms of agricultural land area. The reduction in the number of agricultural land in Langkat Regency is a problem that is being faced by the Langkat Regency Government in accordance with the issues and problems that exist in the Langkat Regency Regional Medium-Term Plan (RPJMD) for 2022 – 2024. Rice fields in Langkat Regency have changed their function into oil palm plantations, rubber, rambutan and for housing and public facilities such as the state police school (SPN).

2. LITERATURE REVIEW

Agricultural Land Changes

Warjio (2016) that "the success of development is based on high economic growth and the existence of a sustainable development that focuses on the absence of social disturbances and the absence of natural damage". Development is expected to create a better change by paying attention to several aspects, namely economic, social and environmental in order to achieve the goals of sustainable development and development. According to Winoto (2015), it is said that the change in agricultural land use to non-agricultural is not only a physical phenomenon of decreasing land area, but rather a dynamic phenomenon that concerns aspects of human life. This is closely related to changes in the economic, social, cultural and political orientation of the community in aggregate. According to Warlina (2017), it is said that the model of land use change and regional sustainability level information can be complementary to the preparation of the Regional Spatial Plan (RTRW) as a product of regional planning.

Space Pattern

Space is a container that includes land space, sea space, and air space, including space inside the earth as a unitary territory, where humans and other creatures live, carry out activities, and maintain survival. Spatial planning is a form of spatial structure and spatial patterns, (Kantaatmadja, 2019). Spatial planning can be interpreted as an orderly spatial arrangement. Regular includes a harmonious and simple meaning so that it is easy to understand and implement. In spatial planning, what is laid out is the place where various activities and facilities and infrastructure are carried out. Good spatial planning can be carried out from all good organizing activities called spatial planning. In this case, spatial planning consists of three main activities, namely spatial planning, the realization of spatial planning and spatial control, (Silalahi, M. Daud, 2015). The spatial pattern is the distribution of space allocations in an area which includes the allocation of space for protection functions and space allocations for cultivation functions, (Kartasasmita, 2017).

3. METHOD APPROACH

In this research, the researcher uses a descriptive research method with a qualitative approach, which is a type of research that describes problems that occur starting from various problems and circumstances in the field and then analyzes facts from various sources, starting from finding facts from factual and pure community experiences in the field, then drawing conclusions. Nazir (2013:54), in a book titled *Research Methods* said that "a descriptive research method is a method of researching the status of a group of people, an object of a set of conditions, a system of thought, or a class of events in the present". The purpose of this descriptive research is to make a systematic, factual, and accurate picture or painting about the facts, properties and relationships between the phenomena being investigated.

Usually in qualitative research it is more theoretically oriented where the theory is limited to the sense that a systematic statement relates to a set of propositions derived from data and retested empirically. The qualitative method is a research procedure that produces descriptive data in the form of written or spoken words from observable behavioral people. This approach is directed at the background of the individual holistically (wholly) in Moleong (2013).

Data collection techniques are the most strategic step in research, because the main purpose of a study is to obtain data. According to Sugiyono (2015:224) that "Some data sources are primary and some are secondary". In this study, the researcher uses data sources: Primary sources are data sources that directly provide data to data collectors. In this case, the primary data that the researcher intended was obtained through interviews. Secondary sources are data sources that do not directly provide data to data collectors. In this case, the secondary data that the researcher refers to is obtained through other people or through official documents or websites, and data related to the focus of the research.

According to Nazir (2013), data analysis is the process of grouping, sorting, manipulating, and summarizing (shortening) raw data that has been collected by researchers, so that the data becomes

easier to read and understand. Researchers in analyzing data, using the steps proposed by Miles and Huberman in Sugiyono (2015) stated that: Data Reduction , Data Display and Conclusion Drawing / Verification.

4. RESULTS AND DISCUSSION

Land use change is the increase in the use of a piece of land from one side of use to another followed by a decrease in other types of land use from one time to the next or a change in the function of a land at different times (Ningsih et al., 2018). Land use changes are also caused by 4 main factors, namely the expansion of city limits, the revitalization of city centers, the expansion of infrastructure networks, especially transportation networks, growth and loss of concentration of certain activities.

Table 1.1 Changes in Agricultural Land Use to Spatial Patterns of Langkat Regency

Land	Broad		Wide Range
	2021	2023	
Vegetation	14,7	8,6	32 %
Building	2,4	2,7	6,8 %
Road	1,8	4,9	16,3 %
Green Open Land	0,4	0	2,1 %

Source : BPS Langkat Regency

Table 1.1 shows that there are several significant changes regarding the land area in Langkat Regency. Both building land and roads have experienced a fairly rapid increase in area. This indicates that there is ongoing development to meet the wheels of community infrastructure in the area. Meanwhile, land area, such as vegetation cover and green open land tends to decrease. The shrinkage of green areas is caused by changes in land use for other sectors, such as the economy and industry.

Agricultural Land Use to Spatial Patterns in Langkat Regency

In general, land use changes are generally not linear, because their appearance is always changing, both in land cover and with location. Land use in Langkat Regency in 2021 is classified into 4 types which include vegetation, green open land, roads, and buildings. As for vegetation, it has an area of about 14.7 hectares, green open land with an area of 0.4 hectares, roads with an area of 1.8 hectares and buildings that have an area of about 2.4 hectares.

Table 1.2. Land Use of Langkat Regency in 2021

Land	2021
Vegetation	14,7
Building	2,4
Road	1,8

Green Open Land	0,4
Total	19

Table 1.2 shows that land use in Langkat Regency is dominated by oil palm, rubber, cocoa, sugarcane, coconut and areca nut plants. Langkat Regency is one of the largest producers of palm oil production in North Sumatra and is the economic base of Langkat Regency. The oil palm agricultural sector is still a source of livelihood for residents in Langkat. Oil palm land in Langkat reached 46,291 ha in 2014 with a production of 146,521 tons (Pinem et al., 2022). In addition, rubber plantations are a fairly large land use after oil palm, Langkat Regency has an altitude of 500-700 m above sea level (above sea level), with hilly land conditions, Ultisol soil order, total rainfall of 147.94 mm/month, rainy days 12.33 days/month, average number of wet, humid, and dry months of 1, 8, and 3 consecutive months (Purwaningrum et al., 2022), so that rubber plantations are suitable for growing in this region.

Based on the results of the percentage chart in 2023 in Langkat Regency, there is vegetation that reaches 77% of the overall yield, while in 2021 the vegetation in Langkat Regency has decreased by 55%, due to changes in the land used for roads. Buildings in Langkat Regency in 2021 are around 12% while in 2023 they are around 17%, this shows that people are building little buildings in Langkat Regency. As for roads in 2021 around 9% while in 2023 roads will reach 30%, this shows that in Langkat Regency the government is building roads to make it easier for its people to interact with the outside community and facilitate access for them to introduce their residence to the outside community. In 2021 there will be green open land that will reach 2%, for 2023 green open land will no longer exist.

Table 1.3. Land Use of Langkat Regency in 2023

Land	2023
Vegetation	8,6
Building	2,7
Road	4,9
Green Open Land	0
Total	16,2

From land use data between 2021-2023, clear changes in land use in Langkat Regency can be seen. First, it can be seen that green open land no longer exists, this is because the community has converted the land into buildings and part of it into dry land. Second, it can be seen from the comparison of the two data above that vegetation is decreasing because people are converting the vegetation into buildings. Third, the use of land into buildings/settlements has increased over time. Fourth, it can be seen that the construction of roads is getting wider, such as the construction of toll roads which in 2021 are still local roads, but in 2023 it can be seen that the road has turned into a toll road.

Land change is a condition of increasing land use from time to time which is marked by changes in the function of the land itself. From the data above, it can be described more clearly that land changes are more influenced by human factors that manage the land. In Langkat Regency, it is now decreasing

due to increasing construction. The development is like a residential area due to increasing population growth, as well as other buildings such as schools, offices, etc. Then the land change can be seen from the development of infrastructure such as roads that were previously only local roads have now developed into toll roads. The construction of toll roads is being increased to accelerate the flow of transportation. One of the special activities currently carried out by the government is the construction of the Langkat Toll Road which is able to encourage economic growth in Langkat Regency, North Sumatra (Raja et al., 2022). Land use changes in Langkat Regency from 2021 to 2023 are an inevitable condition. This concerns the need for space that is increasingly swollen for the sake of other sectors, especially industry and public facilities. The flow of land use change has mushroomed in various regions of Indonesia. The existing land for agricultural areas is converted into other areas that are more profitable from a commercial perspective. The practice of land change that is rampant in Indonesia has a very clear pattern of similarities. Initially, the land was in the form of forests or land for existing agricultural areas, then it was changed to other sector areas, such as industrial areas, settlements, and so on. This phenomenon has become a natural picture so that the exploration of the research always leads to the same thing.

Development factors and large population growth are the main reasons behind the use of land changes that occur. The development and process of regional development carried out by the government in providing infrastructure and services can have major implications for increasing land needs in urban areas. The faster the development is carried out, the more limited and the need for land increases, supported by the increase in the population, social activities, and economic activities in the region (Christian et al., 2021). (Wahyudi et al., 2019) also explained that population growth is the main actor. The high number of urban population, both triggered by natural growth and migration, has implications for increasing population pressure on urban land, especially for housing and land for other supporting facilities. Two-thirds of the city is residential and residential. The main driving factors for urban land use change are regional development and population growth rate. Land use change is one of the consequences of growth and development in an area. Areas that are in urban areas or close to cities have a tendency to experience land changes into built-up areas. Langkat Regency is located near the city of Medan, so the focus of development is also directed to potential development sectors. Natural land use, such as vegetation and forests, has decreased significantly. This is inversely proportional to land use that is influenced by human activities that have increased widely such as built-up land and vacant land. The land built is increasing due to the process of building settlements and other similar sectors (Nasrullah. et al., 2022).

5. CONCLUSION

Based on the results of the research and discussion in the previous chapter, it can be concluded as follows:

Land use changes in Lalat Regency, from 2021 to 2023, show signs of massive development. The area of buildings and roads has increased, but on the other hand, the area of vegetation and green forests has decreased due to the increasingly intensive land conversion. The local government of Langkat Regency should immediately realize a policy on the protection of agricultural land for food crops in Langkat Regency so that it can prevent the conversion of agricultural land for food crops, through accelerating the realization of activities and including farmer groups in deliberations for development so that they can achieve the goal of protecting agricultural land for sustainable food crops.

There needs to be communication in the form of counseling or socialization to the community which is the target of the policy of protecting agricultural land for food crops in Langkat Regency and can also be through various media such as banners or billboards, so that the realization of the purpose and objectives of the policy, there is a need to accelerate financial resources so that activities can be carried out, through proposals to relevant agencies in the policy of protecting agricultural land for food crops in the Regency Langkat, and it is necessary to further activate the function of farmer groups as a forum for communication for farmers, so that coordination can run as expected.

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