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Implications of the Determination of the Center for Industrial Growth on Land Use in Tanjung Balai City

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ABSTRACT

This study aims to examine the Implications of the Determination of the Industrial Growth Center Area on Land Use in Tanjung Balai City. Research on complex and wide-impact land use changes such as in Tanjung Balai should use a descriptive qualitative method, with in-depth interviews, observations, and document analysis techniques. An inductive approach in data analysis as well as triangulation and participatory involvement from the community will also increase the validity and accuracy of research results. With this approach, it is hoped that the research can provide a comprehensive overview of the impact of land conversion for industrial purposes and become a valuable input for sustainable policy formulation in Tanjung Balai. The results of the research Land use change for industry poses challenges in urban spatial planning and management. The need for public infrastructure, such as roads and drainage channels, has increased in line with industrial development, but has not been fully balanced with adequate planning. This challenge emphasizes the importance of balancing industrial development and the needs of settlements and green open spaces. In order for the negative impact of the designation of industrial zones to be minimized, it is recommended that the Tanjung Balai City Government implement sustainable spatial planning policies and consider the balance between economic development and environmental conservation. Measures such as strict monitoring of industrial waste, provision of green infrastructure, and training programs for communities affected by land conversion can help improve the quality of life of communities and preserve the environment in the midst of industrial development.

Keywords: Determination of Central Area, Industrial Growth, Land Use and Tanjung Balai City

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1. INTRODUCTION

Tanjung Balai City is a strategic area in North Sumatra that has great potential to be developed as a center of industrial growth. The designation of Tanjung Balai as the center of industrial growth has implications for various aspects, including changes in land use. The development of this industrial area is carried out to support the improvement of the economy and create new jobs. However, this process also has significant consequences for land use in the area. Land use changes resulting from industrialization often include the conversion of agricultural land, green land, or residential land into industrial estates. In addition, the existence of this industrial growth center can trigger the development of supporting infrastructure, such as roads, public facilities, and new residential areas for industrial workers. Other impacts that need to be considered are the potential for environmental degradation, increased pollution, and a decrease in the quality of life for the surrounding community.

The city of Tanjung Balai, located on the coast of North Sumatra, has a strategic geographical position and good accessibility for sea and land transportation. This position makes it one of the potential areas to be developed as a center of industrial growth. The government has targeted this city as an area that supports the acceleration of economic development through the development of the industrial sector. The designation of Tanjung Balai as an industrial growth center is expected to attract investment, increase regional income, and create jobs for the community. However, the process of industrialization in this city has various implications for land use. Newly developed industrial estates require large areas of land, so there is often a change of land use from the agricultural sector, green areas, and even residential areas, to industrial land. This land conversion triggers a number of challenges in

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spatial management, including the potential for land use conflicts between the growing agricultural, residential, and industrial sectors. In addition, land use changes can have a direct impact on environmental quality. Industrial development is often accompanied by increased air, water, and soil pollution, which can threaten the balance of local ecosystems. The loss of green lands, such as forests and farmland, also affects cities' ability to maintain air quality and reduce flood risk, particularly in the face of climate change.

Tanjung Balai City is designated as one of the centers of industrial growth in North Sumatra because of its strategic location in the coastal area and its proximity to international trade routes, especially through the Strait of Malacca. The decision to make Tanjung Balai the center of industrial growth is part of the government's policy that aims to accelerate regional economic development, reduce economic inequality, and improve the welfare of the local community. This determination involves a number of strategic steps and investments directed to build supporting infrastructure such as ports, integrated industrial estates, and adequate transportation facilities. Local governments work with the central government and the private sector to provide land and build facilities needed by the industry. This area is projected to accommodate various types of industries, ranging from seafood processing industries, manufacturing, to logistics and distribution. However, this effort also has a big impact on land use and spatial planning in Tanjung Balai. To meet the needs of industrial land, there is often a conversion of land that was previously in the form of agricultural areas, green land, and settlements into industrial land. This land conversion has an impact on the ecological balance and sustainability of other sectors in Tanjung Balai. For example, the growth of industrial estates reduces the availability of land for agriculture, which can potentially reduce local food production and increase dependence on food supplies from other regions.

In addition, industrial development increases the need for supporting infrastructure such as roads, bridges, and other public facilities, which also affects urban spatial patterns. This need often urges the government to re-plan space allocation and pay attention to environmental issues, such as potential pollution and impacts on water and air quality around industrial estates. From the social side, this determination opens up opportunities for people to get new jobs, increase income, and trigger local economic growth. However, industrialization in this city also brings challenges, such as increasing urbanization, pressure on public facilities, and the possibility of social conflicts due to differences in interests in land use. Overall, the designation of Tanjung Balai as the center of industrial growth creates new dynamics in urban development. Therefore, careful planning and integrative spatial planning policies are needed to ensure that industrial growth can go hand in hand with environmental preservation and the welfare of local communities. Significant land use in line with economic development and increased industrial activity. As a city that has been designated as a hub of industrial growth, Tanjung Balai is in the midst of a major transformation that aims to accelerate local and regional economic growth. However, rapid industrial development and urbanization also pose major challenges in spatial management and land use.

Land use change in Tanjung Balai often involves the conversion of agricultural land and green land into industrial land and residential areas. Agricultural areas that used to be the economic support of the local community have now changed their functions to support the development of industrial infrastructure, such as factories, warehouses, and trade areas. This change has the potential to reduce the productivity of the agricultural sector and cause food dependence in other regions, as well as threaten the environmental sustainability of Tanjung Balai. In addition, the conversion of land for industrial and residential purposes affects the quality of the environment significantly. The loss of green land that previously served as a water catchment area increases the risk of flooding, especially since Tanjung Balai is a coastal city that is vulnerable to flash floods and sea level rise. The reduction of green land also has the potential to increase air pollution and reduce the air quality that the community can enjoy. On the other hand, industrial activities bring the potential for water and soil pollution due to industrial waste, which can be detrimental to the surrounding community and local ecosystem. In the face of this dynamic, sustainable spatial management is crucial. City governments are faced with the challenge of balancing development needs with environmental sustainability and community welfare. Without careful spatial planning, the negative impact of this change in land use will be difficult to avoid, which can ultimately threaten the quality of life of the people of Tanjung Balai and damage the long-term economic potential of this city.

From a social perspective, the development of industrial estates in Tanjung Balai also has an impact on people's lives. Increased population density and the need for new infrastructure, such as

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housing and public facilities, are often not balanced with careful spatial planning. As a result, there have been changes in the lifestyle of local people that have an impact on their quality of life, including an increase in the cost of living, traffic density, and the potential for a shift in social and cultural values. Based on this, this study focuses on the implications of the determination of Tanjung Balai as a central area of industrial growth on land use change. This research is important to understand the relationship between industrial growth and land use dynamics in Tanjung Balai, as well as the impact of these changes on the environment and society. The results of this study are expected to provide useful recommendations for spatial planning and sustainable development policies in Tanjung Balai City.

2. LITERATURE REVIEW

Economic Impact on Land Use

According to Mariam (2018), the designation of an area as an industrial center encourages an increase in land needs for industrial facilities and other supporting infrastructure. This often leads to the conversion of agricultural land or green areas into industrial land. Mariam highlighted that while this rezoning supports economic growth by creating jobs and increasing investment, there are long-term risks to local food security due to the loss of agricultural productive land. Meanwhile, research by Suharto (2018) shows that an increase in land demand for industry is usually accompanied by an increase in land prices, which can have a negative impact on local communities. In some cases, people who previously relied on the agricultural or fisheries sectors were forced to look for new jobs in the industrial sector, which required different skills. Suharto emphasized the importance of training and skills adaptation programs for local communities to participate in new economic sectors.

Social Impact on Land Use

From the social side, Irawan (2018) explained that the conversion of land for industrial purposes can result in major changes in the lives of local communities. For example, people who previously lived in agrarian environments will face a shift towards faster urban life. This often triggers social problems such as cultural changes and potential conflicts of interest related to land use. Irawan highlighted the importance of community involvement in spatial planning so that they feel involved in the development process. Setiawan (2018) added that the social impact of industrialization also includes potential conflicts between local residents and investors. These conflicts often arise when communities feel disadvantaged by the changes that occur, especially if they do not have adequate access to land or facilities that were previously part of their lives. Setiawan recommends that fair compensation programs and support for affected communities can help reduce conflicts.

Environmental Impact on Land Use

From an environmental perspective, Santoso (2018) stated that industrialization in coastal areas such as Tanjung Balai often reduces the existence of green land and water catchment areas. The loss of this green land increases the risk of flooding and reduces air quality due to the reduction of vegetation that functions as a pollution absorber. Santoso also noted that increased industrial activity carries the risk of water and soil pollution if industrial waste is not managed properly, which can have a negative impact on the local ecosystem and the quality of life of the surrounding community. In addition, according to Hidayati (2018), waste management is a big challenge in the development of industrial estates. Tanjung Balai, as a coastal city, has an ecosystem that is sensitive to pollution. Hidayati recommends the implementation of strict environmental policies, including regular monitoring of water and soil quality, to ensure that industrial development does not damage the natural resources that support the livelihoods of local communities.

METHOD APPROACH

According to Creswell (2018), a qualitative descriptive approach is effective in understanding phenomena involving social dynamics and structural changes. In the context of this study, this approach allows researchers to describe the impact of industrialization on land use in Tanjung Balai, both from social, economic, and environmental aspects. The study can use in-depth interviews, direct observations, and document analysis to collect relevant data on community experiences and land-use change.

Sugiyono (2018) explained that in qualitative research, in-depth interviews are the main technique that allows researchers to explore individual views and understandings in more detail. By using in-depth interviews in Tanjung Balai, researchers can obtain the perspectives of residents, community leaders, government, and industry players regarding the implications of land conversion for industrial purposes. Sugiyono also added that field observations help researchers understand physical and social contexts directly, which is important for identifying visual and environmental changes

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resulting from industrial developments. Setiawan (2018) added that document analysis, such as regional spatial plans (RTRW) or land allocation policies, is very useful in reviewing land use changes. By reviewing these policies, researchers can understand how local regulations and policies play a role in encouraging or limiting land conversion for industry.

According to Suharto (2018), in qualitative research, data analysis can be carried out inductively, where patterns and themes that emerge from field data are the basis for drawing conclusions. In this study, data from interviews, observations, and documents were analyzed to identify themes related to the social, economic, and environmental impacts of the designation of Tanjung Balai as an industrial growth center. Inductive analysis allows researchers to understand the implications of the industry as a whole without having to limit the interpretation to a specific theory.

Hidayati (2018) suggested that the triangulation technique, which is the combination of various data sources or methods, is important to increase the validity of qualitative research results. In this study, triangulation can be done by comparing data from interviews, observations, and documents. If the three data sources show consistency, then the results of the study can be considered stronger and more accurate. Irawan (2018) emphasized the importance of a participatory approach in research related to social issues, such as land use change. By involving the community as active participants in the research process, researchers can gain more authentic insights into the impact of industrialization.

3. DISCUSSION

What is the impact of the determination of Tanjung Balai City as the center of industrial growth on land use change in the region

In depth, the impact of the determination of Tanjung Balai City as the center of industrial growth on land use change in the region. The development of industrial estates in Tanjung Balai has triggered significant changes to land, including land conversion, environmental impacts, socio-economic changes, and changes in urban spatial planning. This discussion covers several key aspects of land use change due to the city's designation as a hub for industrial growth:

- 1. Conversion of Agricultural Land and Green Areas
 - The designation of Tanjung Balai as an industrial center led to an increase in land demand for industrial facilities, warehouses, and other supporting infrastructure. This has an impact on the reduction of agricultural land and green areas. Land that was previously used for agrarian activities, fisheries, and vacant land has changed its function to industrial land. This change has an impact on the decrease in productive land area, which can threaten local food security due to the loss of agricultural resources. In addition, the conversion of green land has an impact on the local ecosystem. Green areas that have an important role as water catchment areas are limited, increasing the potential for flooding and other environmental problems.
- 2. Increasing Land Prices and Economic Impact on the Community
 With the development of industry, land prices in Tanjung Balai have increased significantly. This
 increase is beneficial for landowners who can sell or lease their land at a high price, but on the
 other hand it also has a negative impact on local communities, especially for those who have
 limited access to land ownership. For people with low incomes, this increase in land prices can
 result in difficulties in buying land or maintaining land ownership that has been owned for
 generations. In addition, land conversion also has an impact on changes in the employment
 sector. While some new jobs are created in the industrial sector, there are also people who feel
 affected by losing jobs in the agricultural or fishery sectors. This requires adaptation and skill
 improvement efforts for the local workforce.
- 3. Environmental Impact Industrialization carries with it significant environmental risks, especially in terms of water and soil pollution due to industrial waste. Tanjung Balai City, which is a coastal area, is very vulnerable to pollution caused by industrial activities. Waste generated from industrial processes has the potential to pollute rivers and seas, thus having an impact on the quality of the environment and fishery resources on which the livelihoods of the local community are based. In addition, the existence of industry also has the potential to increase air pollution from production and transportation activities. This decline in air quality not only has an impact on
- 4. Spatial Change and Infrastructure Development

the environment but also public health.

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With the development of the industrial sector, there has been a change in the spatial layout of the city to accommodate the needs of industrial land and its supporting infrastructure, such as roads, ports, and logistics facilities. This infrastructure development aims to support the mobility of goods and services, but also triggers changes in the structure of the city. Residential areas and public services that were previously centralized, may now be scattered or move to follow industrial development. This can create new centers of activity in the area around the industrial area. These changes can pose spatial challenges, such as urban sprawl or the sprawl of irregular urban areas. Poorly planned spatial planning can cause congestion, pollution, and reduced living comfort for people in the surrounding area.

5. Social and Cultural Impact

The impact of industrialization on social change in Tanjung Balai is also significant. Changes in land use and new socio-economic structures often trigger cultural changes in local communities. People's lives, which previously depended on the agricultural sector, now have to adapt to a faster industrial life and a different work pattern. This can shift social and cultural values that were previously upheld by agrarian communities, such as mutual cooperation and close interindividual relationships. Conflicts of interest between stakeholders can also arise, especially between local communities, governments, and industry players. Community involvement in spatial planning and industrial policy is urgently needed to minimize these negative impacts and ensure that communities benefit fairly from the changes.

The impact of the designation of Tanjung Balai City as the center of industrial growth is evident in the change in land use in the region. Land conversion, rising land prices, and environmental impacts are some of the main consequences of industrial development in the region. In addition, this change also affects the social, economic, and cultural aspects of the local community. To overcome this negative impact, it is necessary to have a fair and sustainable spatial planning policy, as well as efforts to involve the community in the industrial planning process so that the changes that occur not only benefit the industrial sector but also pay attention to environmental sustainability and the welfare of local communities.

What are the factors that affect land use change in Tanjung Balai along with industrial development?

The development of industrial estates in Tanjung Balai City has significantly affected land use changes. Along with the development of the industrial sector, various factors encourage the conversion of land from agriculture or fisheries to industrial estates and supporting facilities. The following are the main factors that affect land use change in Tanjung Balai as the industry develops: One of the main factors driving land use change is the government's policy that establishes Tanjung Balai as the center of industrial growth. This policy includes spatial planning and zoning of land that encourages the transformation of non-industrial areas into industrial land. The Regional Spatial Plan (RTRW) of Tanjung Balai City is the main guideline in allocating land for industrial purposes and supporting infrastructure, such as roads, ports, and warehouses. This RTRW adjustment is often the main reason for large-scale land conversion. Along with the increase in industrial activity, the demand for supporting infrastructure such as access roads, power grids, clean water, and transportation is also increasing. This need encourages the government and the private sector to develop land that was previously used for other purposes in order to accommodate more complex and dense infrastructure development. Infrastructure such as ports and logistics facilities have also changed the structure of land use and require significant land in urban areas and on the outskirts of Tanjung Balai.

Industrial development in Tanjung Balai increases the economic value of land in the region. Rising land prices often encourage landowners to sell or convert their land for industrial purposes, especially for landowners who see greater economic opportunities in this sector. In addition, the increase in land prices also has an effect on the decline of green land and agriculture, because the land is more profitable if it is converted into industrial areas or housing for industrial workers. The thriving industries in Tanjung Balai attract workers from various regions, which increases the urbanization rate and population growth in this city. An increase in population means an increase in the need for housing, public facilities, and other public services. As a result, there was a change in land use for housing and social facilities. Population growth also impacts the pressure to open up new land and expand residential areas, which contributes to the loss of non-industrial land. Industrial expansion often offers greater economic opportunities than traditional sectors, such as agriculture or fishing. Local communities may be encouraged to sell land or convert it into industrial land in the hope of making higher profits. This is

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especially true if the industry offers more stable jobs or partnerships and has the potential to provide higher incomes compared to agrarian work. This economic factor causes people to prefer to switch from traditional economic activities to the industrial sector, leading to major changes in land use.

The physical environment and the availability of natural resources also affect land-use change. Tanjung Balai as a coastal city has access to the port, which is an advantage for the industry in terms of logistics and distribution. The proximity to fishery resources also encourages the growth of the marine product processing industry. However, pressures from industrial activities also pose a risk of water pollution and deterioration in soil quality, which negatively impacts agricultural land and residential areas. This environmental condition is further encouraging the shift from green land to industrial land. Support from investors, both domestic and foreign, has also affected land use changes in Tanjung Balai. Investment in industrial development includes the need for land and facilities, thus encouraging the conversion of land for this purpose. Cooperation between the government and the private sector in developing industrial estates also accelerates the process of land conversion. In some cases, the existence of incentives for investors such as tax breaks and business licenses strengthens Tanjung Balai's attractiveness as an industrial investment location, which has an impact on more intensive land use.

The availability of economic infrastructure such as transportation access, distribution networks, and logistics facilities in Tanjung Balai provides benefits for industrial growth. This infrastructure increases the city's attractiveness as an industrial hub, which in turn increases pressure on land use for industrial purposes. The better the infrastructure available, the more likely it is that industrial development in the region will occur, which will have a direct impact on the use of non-industrial land converted into industrial land. Land use change in Tanjung Balai due to industrial development is driven by a combination of government policies, economic growth, urbanization, and investment support. In addition, environmental and infrastructure factors also play a role in accelerating land use transfer in this region. Each of these factors is interrelated and influences how land in Tanjung Balai is used, with significant impacts on the local community and environment. To manage these changes wisely, sustainable spatial planning and community involvement in decision-making processes is needed, so that industrial development can provide long-term benefits without compromising the environmental balance and well-being of local communities.

What is the impact of land use change due to industrialization on the environment and society in Tanjung Balai City

Changes in land use in Tanjung Balai City due to the designation of the area as the center of industrial growth have a significant impact, both on the environment and the community. The rapid industrialization process has changed the characteristics of land, shifting the functions of agricultural land, fisheries, and settlements into industrial estates and other supporting facilities. This impact can be seen in the following aspects: Water and Soil pollution with the development of industrial estates, an increase in industrial waste flowing into rivers and seas is a serious threat to water quality. Liquid waste generated from factories often contains chemicals that can contaminate water, which in turn affects the quality of the soil around industrial areas. This pollution not only affects the water ecosystem but also damages the quality of the surrounding agricultural land, so that land productivity for agriculture is decreasing. Air pollution from industrial activities such as manufacturing, burning fossil fuels, and emissions from industrial transport vehicles produces air pollutants such as carbon monoxide, sulfur dioxide, and dust particles. This air pollution has the potential to reduce the quality of health of the surrounding community, increase the risk of respiratory diseases, and damage the overall quality of the environment. Loss of Green Land and Ecosystem The conversion of land from green open space and agricultural areas to industrial areas has led to a decrease in green land in Tanjung Balai. Green land that previously functioned as a water catchment area and habitat for various flora and fauna was replaced by buildings and industrial facilities. This loss of ecosystems also affects the biodiversity in the region and decreases the carrying capacity of the environment.

Changes in Water Flow Patterns and Flood Risk Industries often require large infrastructure that can disrupt natural water flow patterns. The loss of catchment land and the increase in built-up area lead to a higher risk of flooding in the region, especially during the rainy season. Inadequate drainage systems exacerbate this risk, causing floods that damage settlements and other infrastructure. Social and Economic Changes Industrialization brought significant changes to the economic structure of the Tanjung Balai community. On the one hand, the industry creates new job opportunities that can improve the economic level of the community. However, the jobs produced generally require special skills that some local communities may not have, resulting in economic inequality between industrial workers and

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communities that still rely on traditional sectors. Changes in Lifestyle and Social Values The movement of people from the agricultural and fishery sectors to jobs in the industrial sector has changed the lifestyle and social values that were previously based on agrarian communities and culture. This modernization can give rise to a clash of cultures, where new lifestyles bring changes in values and norms that have long existed in society. Eviction and Relocation of Settlements The development of industrial estates often results in the eviction and relocation of settlements located in areas designated as industrial zones. As a result, people affected by evictions have to move to places that may be farther away from their workplaces and public facilities, which has an impact on their social and economic lives. In addition, this relocation process often raises dissatisfaction and social conflicts if not managed properly. Public Health Risks The high level of air and water pollution due to industrial activities has a direct impact on public health. Respiratory diseases, skin diseases, and other health disorders are becoming more common in areas adjacent to industrial estates. These health risks are mainly felt by vulnerable groups such as children and the elderly, who are more sensitive to environmental pollution.

Disruption of Traditional Activities Many Tanjung Balai people who previously worked in the fisheries and agriculture sectors are facing difficulties in continuing their work because their land has been converted into industrial estates. These changes disrupt the sustainability of traditional economic activities and cause people to lose their traditional livelihoods that have long been the main source of income. Pressure on Public Infrastructure Industrialization increases the need for public infrastructure such as roads, transportation, sanitation, and electricity. This high demand often exceeds the capacity of existing infrastructure, leading to a decline in the quality of public services. Unbalanced infrastructure development also exacerbates congestion and environmental degradation. Urban Spatial Planning Challenges: Rapid changes in land use due to industrialization pose major challenges in urban spatial planning. If not managed properly, industrialization can create high-density areas that are vulnerable to environmental disasters, such as floods and pollution. The balance between industrial areas, settlements, and green open spaces needs to be carefully considered so that development remains sustainable.

4. CONCLUSION

Based on the results of the research, the designation of Tanjung Balai City as the center of industrial growth has a major impact on land use change. Some of the main conclusions that can be drawn are as follows:

- 1. The determination of industrial areas causes significant changes in land function in Tanjung Balai City. Areas previously intended for agriculture, fisheries, and green spaces have been converted into industrial areas and supporting facilities. This change reduces the area of productive land in the agricultural and fisheries sectors, and has an impact on the reduction of green open space that is important for ecosystem balance.
- 2. Changes in land use due to industrialization have caused various negative impacts on the environment, including water and soil pollution due to industrial waste, increased air emissions that reduce air quality, and changes in water flow that increase the risk of flooding. This decline in environmental quality disrupts the balance of the ecosystem in the region and provides long-term impacts that need to be anticipated through better environmental regulation and management.
- 3. The people of Tanjung Balai City are facing significant social and economic changes in line with industrial development. Although the designation of industrial zones increases employment opportunities and the local economy, the process also leads to relocation and changes to the livelihoods of traditional communities, such as farmers and fishermen. These impacts often create social instability, especially for those affected by land conversion and relocation.

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