The influence of agroindustry on the formation of rural settlements. Case study: Bangun Sari Village, Tanjung Morawa

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Abstract. Suburban area as a part of the structure of urban space where sub-urban areas are an important part of creating urban space. Its own characteristics due to being a transition area from city to village and has quite complex activities. One of the sub-urban livelihoods is agroindustry or agriculture. The variables in this study are morphology elements of settlements, factors that influence the formation of morphology and agroindustry, and various other indicators related to variables. The objective of this paper is to examine the characteristics of agroindustry area and find the factors that influence the formation of rural settlements. The research can provide a reference for optimizing land use in rural settlements. In this study, the researcher used a qualitative and quantitative method. Data collection methods are recording what events were in the field carried out by informing when interviewed and observed to obtain good results and support accurate and reliable research results. The data will be processed using the SPSS method to get the required results and become integrated results. From the result, it is expected that rural settlements need more attention to improve the environments and public services. They are improving the quality of harmonious relations between urban and rural areas through agro-industry activities.

1. Introduction

Agroindustry in suburban areas is to be important because they have an impact on the formation of settlements. James & Bound [1]. Morphology comes from morphic words that have a form meaning, so that morphology can be interpreted as a form of the physical appearance of an area. Soetomo [2] morphology has three components or elements that reflect an area, namely: Land use, Road Network Patterns, and building density patterns. Bintarto [3] said that sub-urban communities generally use their dwellings by opening a business which in large part makes it a livelihood, so by increasing occupancy, it will also result in changes in land functions from open space or rice fields and agriculture to housing and vice versa.

Miro [4] the road network can be divided into three, namely Arterial Road, Collector Road and Local Road. Sumaatmadja [5]. Settlement is part of the surface of the earth inhabited by humans, including all facilities and infrastructure that can support their lives into one unit with the residence in question. Ma et al., [6] mention that rural settlements are places of production as well as places of residence for rural residents. Sikandar Wiriaatmadja [7]. Settlement patterns in rural areas are divided into four patterns, namely spreading settlement patterns, longitudinal settlement patterns, assembled settlement patterns, and circular settlement patterns. Manali and Sajise [8]. Agroindustry is a phase of growth after the existence of agricultural development, but before the development starts into the
resistance of industrial development. Jayadinata [9]. Land or land in the countryside is usually in addition to housing also used as agricultural land to support a reproductive economy by utilizing large areas of land.

The literature above shows that there is no research that reports the effect of agro-industry on the formation of settlements in sub-urban areas. This paper tries to explore the morphological elements in the study area as well as the impact of the existence of agroindustry on settlement patterns in area. The purpose is twofold, to examine the characteristics of occupancy and find the factors that influence the formation of settlements in Bangun Sari Village. The results are expected to provide the information needed in the development of better sub-urban areas.

2. Method

Descriptive research methods with mixed methods approach (qualitative and quantitative), this mixed-method is expected to produce more directed research because it combines data collection methods with data analysis that will provide a better understanding of research. Arikunto [10]. The subject can be sampled between 10-25% or 20-55% depending on the more population. Then from a total of 800 entrepreneurs, a sample of 10% of the 800 samples was taken, namely 80 entrepreneurs. By using data collection methods from interviews, observations, and questionnaires and then SPSS to get the required results and become an integrated result.

3. Results and Discussions

3.1. Morphology Elements of Settlements

Soetomo [2] morphology has three components or elements that reflect an area, namely: Land use, Road Network Patterns and building density patterns, where all three have a relationship or relationship between one another.

3.1.1. Land Use

Figure 1 shows that the research area of land use is dominated by built-up land, namely residential and agricultural settlements precisely in Madirsan Flower Tourism Park Agroindustry. Besides that, land use in this area also has education and worship facilities where land use patterns follow the existing road network pattern. In Desa Bangun Sari residential and agricultural land use patterns predominate in the research area, namely Jalan Madirsan. So that with the emergence of agroindustry activities that
changed the function of land on Jalan Madirsan into commercial land of course, agroindustry activities influenced the formation of settlements in Bangun Sari Village and made the village icon.

3.1.2 Road Network Pattern

![Figure 2.](image)

The road network pattern is an appearance of the road structure of an area that forms a certain order. The pattern of the road network in the research area has a road dimension that is quite wide and has a diversity of dimensions.

Miro [4] road network can be divided into three, namely Arterial Road, Collector Road, and Local Road. In the Madirsan area, there are Collector Roads, namely Madirsan Road and Local Road, namely a small local aisle.

Figure 2 shows that the pattern of the road network in the Taman Wisata Bunga area has a linear road pattern that has been quite well proven to be easily accessible by various vehicles and is a liaison between good hamlet areas so that the linear road network pattern contributes greatly to the formation of better settlements.

3.1.3 Building (density)

![Figure 3.](image)
Building density is centered on the part of sub-villages 11 and 12, longitudinal or linear settlement patterns where residential settlements extend along the main Madirsan road and agricultural land in front of their respective dwellings.

Figure 3 shows the building pattern in the residential area of the sub-urban area of Desa Bangun Sari having heterogermous building patterns. The building pattern can be seen from the shape of each building, which has a basic shape, namely square. With the pattern of building density found on Jalan Madirsan, it is easier to have a business, one of which is ornamental plant agroindustry.

3.2. Factors Affecting the Formation of Morphology

A. Livelihood

Table 1. Percentage of Livelihood Variable indicators [MP]

| Parameter                                                                 | Score | Percent [%] |
|---------------------------------------------------------------------------|-------|--------------|
| Access roads play a role in the business of ornamental plants             | 314   | 12.91        |
| MP1                                                                       |       |              |
| The business of ornamental plants is a livelihood to fulfill life         | 360   | 14.80        |
| MP2                                                                       |       |              |
| Agroindustry holds an important influence in the income of the population | 367   | 15.1         |
| MP3                                                                       |       |              |
| Ornamental plant agro-industry land is arranged to attract buyers         | 355   | 14.6         |
| MP4                                                                       |       |              |
| Soil conditions affect the growth of ornamental plants                    | 335   | 13.77        |
| MP5                                                                       |       |              |
| The amount of crop production affects income                             | 348   | 14.31        |
| MP6                                                                       |       |              |
| Ornamental plant agroindustry is a promising livelihood                  | 353   | 14.51        |
| MP7                                                                       |       |              |
| Totals                                                                    | 2,432 | 100          |

Based on the results of the study table 1 on livelihood variables, it was found that from 80 respondents stated the question questionnaire number (MP 3) had the most influence on the formation of settlements with a value of 367 or 15.1% of a total of 2,432, namely statements about Agroindustry play an important role in the population income evidenced by the data in the field that there are 800 farmers/entrepreneurs who make agro-industry the main livelihood in the village of Bangun Sari.

Table 2. Percentage of Agroindustry Enterprises

| Long-time respondents agroindustry years | Respondent | Percent [%] |
|-----------------------------------------|------------|-------------|
| 0-5                                     | 2          | 2.5         |
| 6-10                                    | 18         | 22.5        |
Table 2 shows that agroindustry influences the livelihoods of the people in Bangun Sari Village. It is evident that there were 60 people who were respondents who had been in agro-industry entrepreneurs for more than ten years, and there were 18 entrepreneurs who had 6-10 years of business, and two entrepreneurs with a business duration of under five years. The spread of agroindustry livelihoods can be described as follows.

Figure 4. Distribution of agroindustry livelihoods in Madirsan

Figure 4a shows data on the distribution of ornamental plant agroindustry livelihoods up to 2009 based on questionnaires that have almost spread throughout the entire Madirsan Road, then in 2014 the spread of livelihoods has fulfilled Madirsan Road Figure 4b until now 2019 has not experienced an increase because land has been fulfilled by agroindustry entrepreneurs with the data can be explained that agroindustry as a livelihood has an influence on the formation of settlements in Bangun Sari Village which makes the residential pattern become an elongated pattern and becomes one of the morphological factors in Bangun Sari Village that the ornamental plant business becomes a livelihood so that the agroindustry affects income of residents and the formation of settlements.

B. Population

The population number is one of the factors that influence the formation of morphology and the development of settlements in Bangun Sari Village. Based on the results of population registration obtained from the Office of the Village Head of Bangun Sari, the total population of the village of Bangun Sari is 14,806 people, can be seen in the following table.

Table 3. Population in Bangun Sari Village in 2018

| Dusun | Person | Head a family |
|-------|--------|---------------|
| I     | 550    | 259           |
| II    | 942    | 280           |
| III   | 1,536  | 475           |
| IV    | 431    | 115           |
| V     | 928    | 294           |
| V-A   | 690    | 215           |
| VI    | 1,559  | 321           |
| VII   | 1,274  | 346           |
| VIII  | 1,003  | 291           |
Table 3 shows that the population in the village of Bangun Sari was 14,806 people with the number of family heads as many as 4,270 households and consisted of 17 hamlets. In the study area, there are approximately 800 agroindustry entrepreneurs, which means that 5.4% of the population has agroindustry businesses.

C. Income
Revenue is one of the factors that influence the formation of settlements in Bangun Sari Village through the Agro-industry system. From the results of the study through interviews, it was found that the income of all agro-industry entrepreneurs in Bangun Sari Village was Rp. 144 M per year which consists of 800 active entrepreneurs and obtained as much as Rp. 500,000-1,000,000 per day by individuals. With expenditures of 20% of revenues and gross profits of 50-60% of income.

Based on the results above, one of the factors forming settlement morphology in Bangun Sari Village is income from ornamental plant agroindustry which increasingly shows the welfare of the community because income from agro-industry has a high economic value so that the population turns to agro-industrial entrepreneurs decorative plants.

3.3. Agroindustry

A. The process of forming Agroindustry

Figure 5. Historical map of agroindustry

A settlement pattern in the 80s to 90s where agroindustry began to appear precisely in hamlet IX, agroindustry emerged and began to develop during the monetary crisis where Bangun Sari village was
one and divided into Bangun Sari Village and Bangun Sari Baru Village and before there were activities the majority of agroindustry are rice farmers and construction workers. Figure 5a shows that the settlement pattern has increased and started to be filled by settlements and the agro-industry has spread especially on Madirsan road where 70-80% now live as ornamental plant farmers and have bright prospects. The types of agro-industries in this region are multicultural, ornamental plants.

Figure 5b in the 2000s this business was growing and well-known to national and even international. Especially in the research area, namely the Madirsan Flower Tourism Park announced by the Government as a tourist area. The development of agroindustry starting in the 80s has been proven from the increasing number of spreading of ornamental plant business which of course besides the existence of agroindustry, having the influence of agroindustry has an impact on the formation of settlements in Bangun Sari Village which have an elongated and linear pattern that has the advantage of making it easier for visitors to experience space created so that the pattern of settlements changes due to the existence of agroindustry.

4. Conclusions

Morphological Elements of Settlements (Land Use, Road Network Patterns and Building Density) affect settlement patterns in Bangun Sari Village precisely on Madirsan Road with the use of agro-agricultural land thus forming the characteristics of longitudinal settlement patterns and Agro-industrial businesses and access roads that form corridors through agro-industry so that settlement morphology in Bangun Sari Village experienced changes in land use. Settlement Elements of Morphological Elements in Bangun Sari Village, namely (Livelihoods, Population, and Revenue) affect the formation of settlements, especially with the existence of agroindustry livelihoods that increase the income of the population so that agro-industry becomes a basic livelihood. The history of the formation of Agroindustry in Bangun Sari Village began with the monetary crisis and experienced significant development so that in the 2000s Agsoindustri experienced an increase and certainly affected the pattern of settlements on Madirsan Road which used to be settlements to become dwelling dwellings and agricultural land. The influence of agro-industry on the formation of settlements in the village of Bangun Sari is very large because of the presence of agro-industry forms a space for linear settlement patterns that are beneficial because they create the experience of space for ornamental plants.

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