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Study of Changes in Geospatial Based Land Use in Ambarawa District, Pringsewu Regency

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Abstract

Ambarawa District has allegedly experienced many changes in land use. Changes in land use in Ambarawa District are dominated by changes in agricultural land to non-agricultural land. This is because the land in Ambarawa District is influenced by the role of its inhabitatns in utilizing the land so that it has an impact on land use change. This study aims to determine changes in land use, the factors that influence land use changes, the direction of development and what types of use changes are most dominant in Ambarawa District, Pringsewu Regency. The method used in this research is survei and image interpretation by looking at changes in land use in each area. The population used in this study were all villages in Ambarawa District, totaling 8 villages which were suspected of experiencing changes in land use. Collecting data in this study is a descriptive geospatial approach through the overlay technique of land use spatial data. The results showed that there was a change in land use in Ambarawa District year 2014-2019 covering an area of 2.195,8 ha (70,83%), which was caused by social and economic factors, namely the increase in population and workers and the direction of land use changes to the west and east.

Keywords: Land Use; Land Change; Geospatial; Overlay

Introduction

Changes in land use occur because of the need to meet the needs of the growing population. Almost all human activities involve the use of land to meet needs. Human social life is closely related to land, because land is an important factor in the development of facilities and infrastructure. In several regions in Indonesia, land conversion is a common phenomenon in the development of an area. Some problems arise in it from economic, social and cultural problems (Tyo Nugroho, 2017).

Bintarto (1983) in Budiono (2008) states that the increase in population comes from the city itself as well as the influx of population from outside the city which results in an increase in housing, which means less empty land or agricultural land in the city. The more residents of a city, the more buildings and supporting facilities are used to fulfill everything and to support its survival. According to Utomo, et al. (1992) Change of land function or commonly referred to as land conversion is a change in the function of part or all of the land area from its original function (as planned) to other functions that have a negative

impact (cause problems) on the environment and the potential of the land itself. Conversion of land functions is also defined as changes to other uses due to factors which broadly include the need to meet the needs of an increasing population and an increase in the quality of life for a better.

Result of the utilization of natural resources that exceeds the carrying capacity of the environment and is not accompanied by efforts to conserve soil and water, it has resulted in environmental imbalances, namely the increasing area of critical land. The increase in critical land area has also been accelerated by increasing population pressure on land, especially in Java Island. As a result, land use is exploited continuously, causing reduced land productivity and nutrient-poor land. This will result in decreased agricultural production, greater erosion, sedimentation, flooding, drought, silting rivers, reduced life of reservoirs and other environmental problems (Nugroho, 2011).

Changes land use in each district or city have different problems. Problems that generally occur, for example, in agricultural land that have changed the function of land to settlements with development that is not in accordance with the capacity of the land can cause various problems such as landslides if development is carried out on land that has a steep slope, Mulyadi (2015). In the case of changing the function of agricultural land to industry, it is drought or flood, this is because agricultural land is good for water absorption, but because the land is closed by industry, water absorption is disturbed and drought or flooding can occur, Siliwangi, (2015). The existence of new industries will also increase environmental pollution, because the industry produces side effects in the form of waste from the processing of raw materials into products. Industrial owners often dispose of this waste carelessly without proper handling, Salikin, (2003). The area palawija plants in Ambarawa District can in table 1.

Table 1. The Area of Harvest for Secondary Crops in Ambarawa District, Year 2014-2019

No.	Year	Area Crops Palawija (Ha)				Total
		Paddy	Corn	Nuts	Sweet Potatoes	
1	2014	3.747	5	46	10	3808
2	2015	3.674	0	20	4	3698
3	2016	3.674	0	5	0	3680
4	2017	3.674	0	18	5	3697
5	2018	3.629	0	5	5	3639
6	2019	3.612	0	12	3	3628

Source: Ambarawa District Central Statistics, Year 2020.

Table 1 shows that the total harvested area in Ambarawa District has continued to decline from 2014 to 2019. Agricultural land in Ambarawa District has changed many functions into other sectors, for example into housing, industry, education, trade, and other land uses. Changes in the use of paddy fields into settlements are a real threat to the attainment of conditions of food security and sovereignty for the community. With the reduction in agricultural land, there is also less employment for farmers and workers in agriculture.

Ambarawa District has allegedly experienced many changes in land use. Changes in land use in Ambarawa District are dominated by changes in agricultural land to non-agriculture. This is because land in Ambarawa District is influenced by the role of its inhabitants in utilizing the land so that it has an impact on land use change. Data on Area and Number of Population in Ambarawa District, Pringsewu Regency in 2014-2019 can be seen in Table 2.

Table 2. Area, Total Population, and Population Density of Ambarawa District, Pringsewu Regency, Year 2014-2019

No.	Year	Area (Km2)	Total Population	Population Density (people / km2)
1	2014	30,99	33.417	1078
2	2015	30,99	33.732	1.088
3	2016	30,99	34.036	1.098
4	2017	30,99	34.323	1.107
5	2018	30,99	34.592	1.116
6	2019	30,99	34.852	1.124

Source: Ambarawa District Central Statistics, Year 2020.

Table 2 shows, the population in Ambarawa District in 2014 was 33,417 people, an increase in the last 5 years, in 2019 to a total of 34,852 people. The area in Ambarawa District is ± 30.99 km² consisting of 8 Pekons. The population that is known to continue to increase without being balanced with the amount of available land will have an impact on increasing population density in Ambarawa District and will have a major effect on land use change. This is because the population increases in line with the increasing need for land. In addition, the rapid development as a result of the increasing population causes increased activities to meet the needs of life, including the need for land resources. The need for land is not only for settlements, but is also needed for the provision of the necessary facilities, such as a place for commerce, industry, education, and other facilities. So that what was originally an area of agricultural land became the main target to meet the needs of the community into other facilities.

Study on land use change so that it becomes a reference for development activities in an area. So that changes in land use need to be analyzed to find out how much land has changed and what factors lead to changes in land use each year (Arsyad, 2009). Therefore, to find out a change, it is necessary to have research by looking at the comparison between conditions in previous years and the current year, this will be raised in this study with the aim of knowing the extent, causes and direction of development of land use changes from 2014-2019.

Method

The research method is basically a scientific way to obtain data with specific purposes and uses (Gati, 2011). To achieve this goal, a method that is relevant to the objectives is needed. In line with the research objectives, the method used in this study is the survey research method and the interpretation of SPOT 6 images by looking at any changes in land use in the entire research area used as a basis for seeing changes in land use are spatial data on land use in 2014 from the interpretation of SPOT satellite imagery. 6. The research was carried out in Ambarawa District, Pringsewu Regency and this research was conducted in 2020 with all areas in the sub-district (as the population in the study).

Research tools and materials used in this study are:

1. The materials used in this research are:
a. Administrative map of Ambarawa District, Pringsewu Regency, scale 1: 50,000
b. The SPOT 6 image is the result of a split image of Lampung Province for Pringsewu Regency in 2014.
c. The 2019 RTRW of Pringsewu Regency was used to obtain a map of land use in Ambarawa Sub-district.
2. The tools used in this research are:
a. Computers, this tool is used to process data and create maps using ArcGIS software which is used to create maps to determine the area of land use.

b. GPS, a tool used to find the coordinates of locations to be studied in the field.
c. Camera, a tool used to document images during field surveys.
d. and other writing tools used during the survey

Research Variable

Suryabrata (2003), variables are everything that will be the object of research. Often also research variables as factors that play a role in the study of events or symptoms to be examined. The variables in this study are the extent, causes and direction of development of land use change. The operational definitions of each of these variables include:

1. Extent of land use change

The area of land use change in question is: The size of a clearly delimited part of the surface that has changed the use or activity of a land that is different from previous activities that have occurred in an area. It consists of residential land, paddy fields, plantations, moor, forests and mixed gardens.

2. Factors causing land use change

Factors that cause changes in land use include: Conditions, events that contribute to (influence) the occurrence of a change in use or activity on a land that is different from previous activities, consisting of:

a. Physical factors that have a big influence are hydrology, climate and altitude.
b. Economic and socio-cultural factors related to land use are population density, occupation, level of knowledge, perception and the value that lives in the community towards the use of natural resources.

3. Direction of Development Land change and changes are the most dominant.

The direction of land change development is determined based on the cardinal directions, namely west, east, north, south. To determine the direction of settlement, it is seen from the changes in dominant land use in 2014-2019. The direction of development can be seen from the following indicators:

a. West direction, if the direction of land change development in 2019 is towards the West
b. North direction, if the direction of land change development in 2019 is towards the North
c. East direction, if the direction of land change development in 2019 is towards the East
d. South direction, if the direction of land change development in 2019 is towards the South.

Data Collection Technique

1. Observation

Bungin & Sos, (2005) observation is a data collection method used to collect research data, the research data is observed by researchers. The technique of collecting data with this observation is by direct observation in the field to clearly identify the locations of land that have changed land use in Ambarawa District, Pringsewu Regency.

2. Documentation

Arikunto (2010), documentation technique is a way to find data about things or variables in the form of notes, transcripts, books, newspapers, magazines, inscriptions, minutes, meetings, lengger, agenda, and so on. The technique of collecting documentation data is carried out to collect data obtained from secondary data from related institutions. The documentation technique is also used to obtain clear evidence that there is a photo of real conditions in Ambarawa District.

3. Interview

Joko, (2011). is an activity carried out to obtain information directly by disclosing questions to the respondents. Interview means face to face between interviews with respondents, and activities are carried out orally. The interview technique used was free guided interviews, namely the interviews conducted were free guided interviews, meaning that the questions raised were not fixed on the interview guide and could be deepened or developed in accordance with the situation and conditions in the field. Through interviews with residents who live in the research location to obtain; 1) to clarify the extent of land use change, and 2) to obtain further information regarding the factors that cause land use change.

Data Analysis

Sugiyono (2010) data analysis is the process of finding and systematically arranging data obtained from interviews, field notes, and documentation by organizing data into categories, describing them into units, synthesizing, arranging into patterns, choosing which important things and which will be studied and make conclusions so that they are easily understood by oneself and others.

The data analysis methods used to obtain research results include:

1. Survey method, looking at all changes in land use in each area

2. The method of interpreting remote sensing images is carried out visually, the interpretation of the 2014 SPOT 6 image.

3. The analysis technique is done by overlapping or overlaying techniques. Overlay analysis technique is used to determine the extent of land use change in Ambarawa District, Pringsewu Regency year 2014-2019. This technique uses a computer device with software to process data obtained from observations. The data obtained is in the form of a 2014 land use map with a 2019 land use map. The results of the survey will produce a new map with new information in it, so that in this technique the input data in the form of thematic spatial information is manipulated by overlapping techniques to produce one map. thematic main output.

4. Descriptive analysis method with geospatial approach that further describes the factors causing land use change using data obtained from observation, documentation, and interviews.

Results and Discussion

1. Area of Land Use Change in Ambarawa District Year 2014-2019

The process of land use change continues to change with the times and human needs. The increasing number and density of population in Ambarawa District, the need for land is increasing to fulfill housing and sources of livelihood (Minnatika, 2019). The following shows extensive data on changes in land use in Ambarawa District from 2014 to 2019.

Table 3. Area of Land Use Change in Ambarawa District, Year 2014-2019.

No.	Land Use	Area (ha)	%
1	Empty land to settlement	74,5	2,5
2	Empty land to garden	173,2	5,6
3	Empty land to irrigated paddy field	41,9	1,4
4	irrigated paddy field to settlement	574,9	18,3
5	irrigated paddy field to garden	775,8	24,7
6	irrigated paddy field to empty land	525,4	16,8
7	Garden to empty land	30,3	1,1
8	Garden to settlement	3,4	0,1
9	Land not to change	904,2	29,05
	Sum	3.100	100

Source: Results of Land Use Data Recapitulation Ambarawa District, Year 2014-2019.

Table 3 shows the land conditions that have changed during 2014 to 2019 are empty land to settlements of 74.5 ha, empty land to gardens of 173.2 ha, empty land to irrigated paddy fields of 41.9 ha, irrigated fields to settlements 574.9 ha, irrigated paddy field to garden amounting to 173.2 ha, irrigated paddy field to empty land amounting to 574.9 ha, irrigated paddy field to garden amounting to 775.8 ha, irrigated paddy field to empty land amounting to 525.4 ha, garden to land empty of 30.3 ha, and gardens to settlements of 3.4 ha. The distribution of land use change in each area can be seen in the following spatial data.
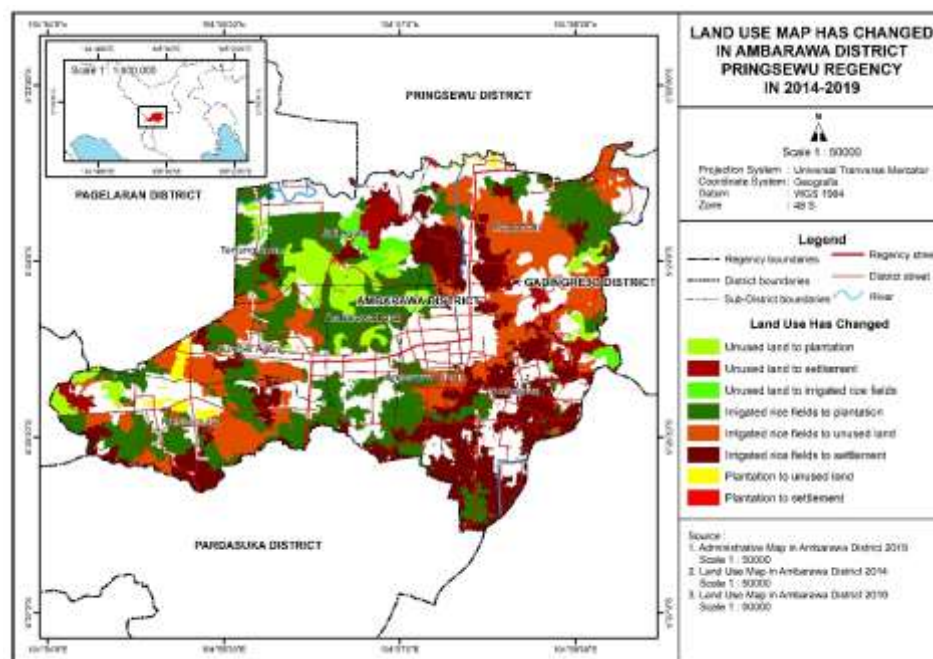

Figure 1. Map of Changes in Land Use Year 2014-2019

Figure 1 shows, Ambarawa District from 2014 to 2019 experienced very significant changes in land use. By adding up the changed land, you can find out the total land that has changed, which results in 2,195.8 ha or 70.83% of the total area of Ambarawa District. During 2014 to 2019, land that did not change was only 904.2 or 29.17% of the total area of Ambarawa District. Recapitulation of the area of land use change as a whole area can be seen in table 4.

Table 4. Recapitulation of Results of Changes in Land Use in Ambarawa District Year 2014-2019

No.	Land Use	Area 2014 (ha)	Area 2019 (ha)	Changed Land Area (ha)	
				Added	Less
1	Empty Land	386,1	645,3	555,7	289,1
2	Paddy filed	2121,2	277,9	41,9	1876,1
3	Settlement	511,5	1174,7	652,8	0
4	Garden	82,8	1003,7	949	33,7

Source: Results of Land Use Data Recapitulation Ambarawa District, Year 2014-2019

Table 4 shows land use that experienced the most significant increase in area was garden, which increased by 949 ha and only experienced a decrease in area of 33.7 ha. The plantation area, which was originally 82.8 ha year 2014, became 1003.7 ha year 2019. The increase in garden land was a change from irrigated paddy fields of 780.3 ha that occurred in almost all pekons in Ambarawa District. The second increase in the number of gardens was the result of changes in vacant land of 173.2 ha that occurred in Pekon Jati Agung and Pekon Ambarawa west. The plantation land experienced a decrease to 30.3 ha of vacant land and into settlements of 3.4 which occurred in Ambarawa District.

Total area of residential land has also undergone significant changes such as plantation land, which has increased by 645.3ha and residential land has not experienced changes to other land uses. The area of residential land, which previously was 511.5 ha year 2014, has increased to 1174.7 ha year 2019. The increase in residential land is a change from paddy fields of 574.9 ha which mostly occurred in Pekon Ambarawa, Pekon Margodadi, and Pekon Kresnomulyo. The increase in settlements also occurred from changes in vacant land of 74.5 that occurred in Pekon Ambarawa and land changes from gardens of 3.4 ha that occurred in Pekon Kresnomulyo.

Empty land in Ambarawa District has increased, namely an increase of 555.7 ha, while the empty land has changed to another area of 289.1 ha, and 90 ha has not changed and remains empty land. The number of vacant land which initially amounted to 386.1 ha year 2014 to 645.3 ha year 2019. Unoccupied land has increased in number due to land changes from irrigated paddy fields of 525.4 ha that occurred in Pekon Ambarawa, Pekon Margodadi, and Pekon Great Source. Empty land also experienced an increase from the change of garden land to empty land of 33.8 ha which occurred in Pekon Kresnomulyo. Empty land also changed to be used as other land, namely 74.5 ha of settlements, into 173.2 ha of garden land, and became a paddy field of 41.9 ha.

Land use change that experienced the most significant decline was irrigated paddy fields. Initially, irrigated paddy fields in 2014 amounted to 2121.2 ha, decreased to 277.9 ha. Irrigated paddy fields in Ambarawa District in 2019 decreased by 1876.1 ha or 88.5% of the total area of irrigated paddy fields year 2014. Irrigated paddy fields only experienced an increase in land area of 41.9 ha, this increased land the result of land change that was previously a plantation.

Paddy fields experienced the largest change into plantation land, amounting to 775.8 ha, this change occurred in all Pekon in Ambarawa District. The second change of paddy fields is the change of paddy fields to settlements of 574.9 ha which occurred mostly in Pekon Ambara and Pekon Margodadi. The third change in the use of irrigated paddy fields is the change of irrigated paddy fields to 525.4 ha of empty land which occurred in Pekon Ambarawa, Pekon Margodadi, and Sumber Agung.

1.1. Land Use Year 2014

Types of land use in Ambarawa District year 2014, including empty land, paddy fields, settlements, and plantations. The following is a table of data on the area of land use in Ambarawa District year 2014.

Table 5. Land Use Area in Ambarawa District, Year 2014

No.	Penggunaan Lahan	Area (ha)	%
1	Empty Land	386,1	12,6
2	Paddy field	2.121,2	67,66
3	Settlement	511,5	16,6
4	Garden	82,8	3,14
	Sum	3.100	100

Source: Results of Land Use Data Recapitulation Ambarawa District, Year 2014.

Table 5 shows that land use in Ambarawa District which has the largest area is the use of paddy fields with an area of 2,121.2 ha or 67.66 of the total area of Ambarawa District. Irrigated paddy fields are the dominant land and are scattered in almost all the Pekon in Ambarawa District such as Pekon Ambarawa, Pekon Margodadi, Pekon Jati Agung, Pekon Tanjung Anom, Pekon Kresnomulyo, Pekon Sumber Agung, Pekon Ambarawa West, and Pekon Ambarawa East. Settlements are scattered in each pekon, but the dominant settlements are scattered in the center of Ambarawa District and areas that are still directly adjacent to Pringsewu District which is the center of Pringsewu Regency. The distribution of each land use can be seen in the following spatial data.
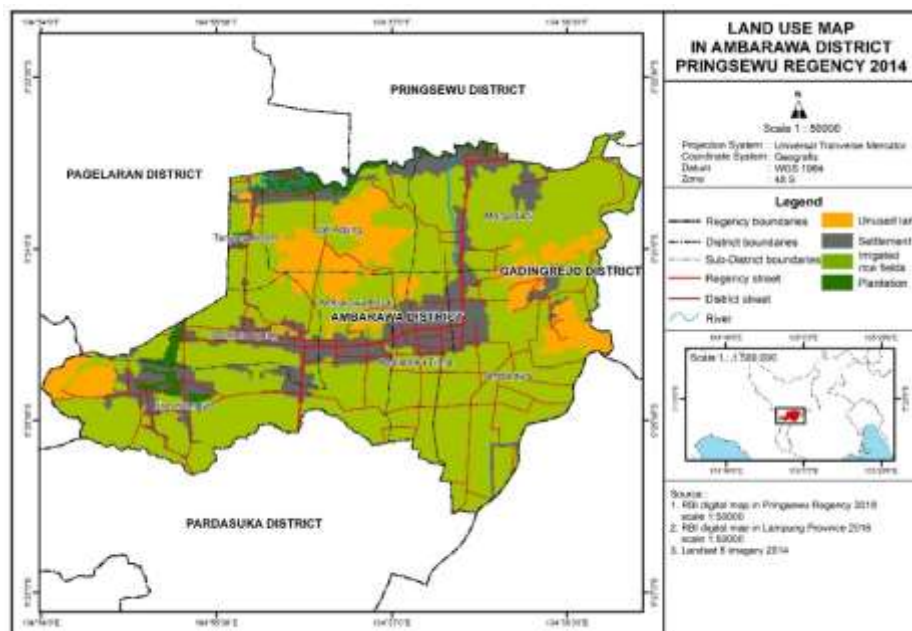

Figure 2. Land Use Map Year 2014

Figure 2 shows the least area of use in Ambarawa District is plantation, which is only 82.8 ha or 3.14% of the total area of Ambarawa District. plantations are only found in a few pekons, namely in the margodadi pekon which borders the Jati Agung pekon and the Pringsewu district, then the Jati agung pekon which borders Pringsewu and Pagelaran Districts, Pekon Tanjung Anom which borders Pagelaran District, and in Kresnomulyo Pekon.

1.2. Land Use Year 2019

Types of land use in Ambarawa District year 2019, including empty land, paddy fields, settlements, and plantations. The following is a table of data on the area of land use in Ambarawa District year 2019.

Table 6.Land Use Area in Ambarawa District Year 2019

No	Penggunaan Lahan	Luas (ha)	Persen
1	Empty land	645,3	20,9
2	Paddy field	277,9	9,22
3	Settlement	1174,7	37,6
4	Garden	1003,7	32,2
	Sum.	3.100	100

Source: Results of Land Use Data Recapitulation Ambarawa District, Year 2019.

Table 6 shows, that the land use that has the largest area in Ambarawa District is settlements, namely 1174.7 ha or 37.6% of the total area of Ambarawa District. Settlements are scattered in the north which is directly adjacent to Pringsewu District, in the middle which is the center of Ambarawa District, in the south, and west bordering other areas.

The second largest land use and an area almost equal to the area of a settlement is Plantation, which is 1003.7 ha or 32.2% of the total area of Ambarawa District. Plantations dominate the land in the West Ambarawa, Jati Agung, and Tanjung Anom pekon. Furthermore, the vacant land has an area of 645.3 ha or 20.9% of the total area of Ambarawa District and is dominantly distributed in Pekon Margodadi, Pekon Ambarawa, and Pekon Sumber Agung. To see the distribution of land use in each area, it can be seen in the following figure 3.
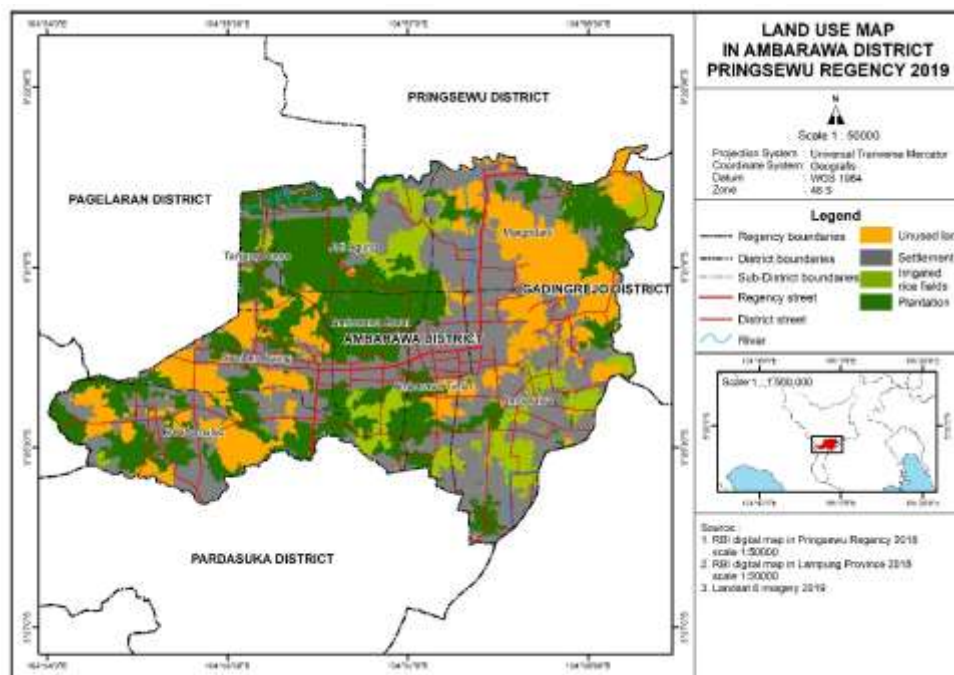

Figure 3. Land Use Map Year 2019

Figure 3 shows, the smallest land use is paddy fields, which is 277.9 or 9.22% of the total area of Ambarawa District. Paddy fields are only scattered in a few pekons, namely Pekon Jati Agung, Pekon Ambarawa Barat, and Pekon Ambarawa.

2. Factors Affecting Changes in Land Use

The factors that influence land change in Ambarawa District can be seen directly from the results of interviews and spatial approach analysis techniques. The aspects seen in the research are physical factors including hydrology, climate, and altitude. In addition to the physical factors of the study, it is also seen with social and economic factors including population, population density, and employment.

2.1. Physical Factors

The physical factor that causes changes in land use in Ambarawa District is the water factor. The low rainfall in Ambarawa District has resulted in agricultural land shortages of water sources and according to the results of interviews with respondents said that due to lack of water for agricultural land, the yield decreased, which initially could harvest 2 times a year to only 1 harvest a year, these factors are causing land use change. Irrigated paddy fields do not get enough water so that they do not get maximum results, so the land is used for other land uses.

2.2. Socio-Economic Factors

The land use change factor that occurs in Ambarawa District cannot be separated from its human activities, the increasing population and increasing population density, the need for land to meet the needs of the population will increase. The following is data on the population and population density in Ambarawa District from 2014 to 2019.

Table 7. Area, Total Population, and Population Density of Ambarawa District, Pringsewu Regency, Year 2014-2019

No.	Year	Area (Km^2)	Total Population	Population Density (People/Km^2)
1	2014	30,99	33.417	1078
2	2015	30,99	33.732	1.088
3	2016	30,99	34.036	1.098
4	2017	30,99	34.323	1.107
5	2018	30,99	34.592	1.116
6	2019	30,99	34.852	1.124

Source: Ambarawa District Central Statistics, Year 2019.

Table 7 shows that year 2014 the population in Ambarawa District was 33,417 people with a population density of 1078 people/km^2. Then it increased year 2018 by 34,852 people with a population density of 1,124 people/km^2. In line with the increase in population density, the area used for settlements also increased, namely year 2014 the amount of land used to build settlements was 511.5 ha and increased year 2019 by 1174.7 ha.

According to the results of an interview with a respondent named Sobirin who lives in Pekon Ambarawa, he said that many settlements were built in Ambarawa District due to an increase in population, such as parents building houses for their children, and the large number of migrants who built houses in Ambarawa District. In addition to population factors that affect land use change in Ambarawa District, there are also occupational factors and public facilities as supporting factors that affect land use chan The factor of employment or livelihood is also an important factor in land use change. As the

population increases, the land for work is needed so that a lot of land has changed from paddy fields and vacant land to plantations as a source of income for the community in Ambarawa District.

Based on the results of an interview with one of the respondents named Mr. Samsi, who lives in Pekon Ambarawa East, said that the factor that causes changes in land use is livelihood. Mr. Samsi, who worked in the peanut plantation, said that the land used to grow peanuts previously was paddy field, Mr. Samsi changed the paddy field to a peanut plantation because the paddy yield was not satisfactory.

In addition, the availability of public facilities is a supporting factor that affects land use changes that occur in Ambarawa District. Residential development is usually chosen close to public facilities because the existence of public facilities can support the daily activities of the population. Facilities that support community activities such as educational facilities, economic facilities, and health facilities. The following is a table of public facilities in Ambarawa District.

Table 8. Summary of Public Facilities in Ambarawa District, Year 2019.

No.	Pekon	Education Facility (School))	Economic/Market Facility	Health Facility
1	Ambarawa	11	1	8
2	Ambarawa Barat	3		4
3	Margodadi	4	1	6
4	Jati Agung	2		1
5	Sumber Agung	6	2	6
6	Kresnomulyo	6		1
7	Tanjung Anom	2	1	5
8	Ambarawa Timur	1		1

Source: Ambarawa District Central Statistics, Year 2019.

Table 8 shows that, the existing infrastructure is taken into account by residents when building new settlements to support resident activities. Health and education facilities are factors that attract residents to establish new settlements. Affordability of distance and completeness of facilities in an area will help residents to receive good service.

Economic facilities such as markets are the factors that most support the development of Fajriah & Mussadun (2014). Settlements are usually focused on the market because economic facilities are a strategic place and very supportive to meet the daily needs of the population. Residents will use the land near the market to build stalls and shops.

Strategic location is a factor that affects land changes according to one respondent named Tejo who lives in Pekon Ambarawa, saying that he built a settlement near the Ambarawa market in Pekon Ambarawa because it is a strategic place to build a shop so he can sell and fulfill his daily needs.

Based on the factors already mentioned and referring to the theory, according to Su Ritohardoyo (2013) the factors that influence land use change include physical factors and socio-economic factors. Thus it can be concluded that the most dominant factors causing changes in land use in Ambarawa District, Pringsewu Regency in 2014-2019 are socio-economic factors, namely the increase in population, livelihoods, and public facilities as supporting factors.

3. The Direction of Development of Land Use Change

The results of the map year 2014-2019 land use map showed that in the last 5 years, the most dominant changes in land development in Ambarawa District were irrigated paddy fields. Irrigated paddy land has the greatest change into garden land. This is because the land has the highest area of change. The results of land change area acquisition can be seen in Table 6. This condition occurs because the yield of paddy fields is much lower than if the land is used for developed land or planted with other agricultural commodities.

The development of changes in irrigated paddy fields has also changed land into settlements. You can see that the settlements are getting closer to the road, and closer to the centers of public facilities such as educational facilities, health facilities, economic facilities, and government facilities. Based on the topography that is owned, the choice of location to establish settlements and gardens is very supportive. This is because Ambarawa District has a gentle slope. Changes in the direction of land development in Ambarawa District based on the direction of irrigated paddy fields into gardens towards the West, which are scattered in the Pekon Ambarawa West, Sumber Agung, and Pekon Kresnomulyo areas.

The change of irrigated paddy fields into dominant settlements changed to the east in the areas of Pekon Ambarawa East and Pekon Ambarawa. This is very reasonable because the land is a strategic access point and is quite close to the main route to Pringsewu District and Pesawaran Regency. The change of irrigated paddy fields to vacant land is dominant in the north, namely in Pekon Margodadi.

Conclusions and Recommendation

Conclusion

Based on the results of research and data collection on land use change analysis in Ambarawa District, Pringsewu Regency year 2014-2019, it can be concluded as follows:

1. The area of land use change that occurred in Ambarawa District year 2014-2019 was 2,195.8 ha or 70.83%.

2. Factors that influence land use change in Ambarawa District are socio-economic factors, namely the increase in population and employment.

3. The land in Ambarawa District that experienced the largest land change year 2014-2019 was irrigated paddy field, and the largest change of irrigated paddy land to garden land. The direction of land use change that occurred in Ambarawa District was to the west and east. Land changes to the west are dominated by irrigated paddy fields into gardens. For land changes towards the East it is dominated by irrigated paddy fields into settlements.

Recommendation

The recommendation given are:

1. To local governments to be more firm in supervising development and conducting counseling on land use change, it is necessary to do so on the basis of land suitability. The government provides land owned by pekon or villages to be used as agricultural land by the community in order to reduce unemployment and later the results can be managed by Village-Owned Enterprises (BUMDES).

2. To the community, in order to maintain and achieve sustainable food self-sufficiency in order to better protect agricultural land so that it does not continue to decrease.

3. Further researchers, recommendation that can be conveyed to future researchers are to be able to conduct more in depth research on changes in land use.

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