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THE ANALYSIS OF LAND FIELD AREA AND FACTORS INFLUENCING IN SOUTH OKU DISTRICT AT SOUTH SUMATERA INDONESIA

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Abstract

The purpose of this research is to analyze the change of rice field in South OKU District, South Sumatera Province, Indonesia. The research method used is literature study method where the research is done with the study of library resources based on data and information that has been done in the form of secondary data. Types and data sources used are secondary data taking into account the availability of data, this study used data during the year (2007- 2016). Secondary data were obtained from literature studies, reports, publications, and other literature related to the study, as well as the agencies or agencies involved in the study, such as the Central Bureau of Statistics of South OKU, South Sumatera, Indonesia and other relevant agencies. The analytical method used is quantitative analysis and supported by qualitative descriptive analysis. To answer the first purpose used mathematical calculations and the second goal used multiple regression analysis. The result showed that it is concluded that the change of rice field in South OKU, South Sumatera Indonesia, decreased from year to year with the decreasing rate of 0,929% per year and the factors that have significant effect on the change of land area are the PDRB of agriculture sector, population, and the length of road.

Key Words: factors influencing, land field area

INTRODUCTION

The agricultural sector is a very important sector of its role in the economy in most developing countries. It can be clearly seen from the role of the agricultural sector in accommodating the population and providing employment opportunities to the population, creating national income and contributing to the entire product. Various data show that in some developing countries more than 75 percent of the population is in agriculture and more than 5 percent of their national income is generated from the agricultural sector, and almost all exports are agricultural (Todaro,

2000). However, the food situation in Indonesia shows the shift in the function of agricultural land to the plantation, housing and other industries. Every year for agricultural land area always undergo land transfer from paddy field to non rice field.

Changes in agricultural land use into non-agricultural land generally occur because of the human need for land. In addition to agriculture, human life requires land for development, residential and secondary and tertiary businesses. Indonesia A country that relies on the business sector as a livelihood and as a support, development. The poor are largely in rural areas with an agrarian base, this can be seen from various studies on poverty and imbalance in income-sharing (Setiowati 2016).

Furthermore, according to Irawan (2005) land conversion tends to increase due to two related factors. Firstly, in line with the construction of a residential or industrial estate in a converted allocation, accessibility to the location will further encourage increased demand for land by other investors or land speculators, resulting in increased land prices. Second, rising land prices further encourage other farmers around to sell their land. Related to this, according to Wibowo (1996), the buyer of the land is usually not a local resident so that the formation of clusters of land (land owners whose owners do not live where the land is located) is generally vulnerable to the land conversion process.

The number of paddy field conversions increases with the growing population every year. One of the regions experiencing high land conversion is Southern OKU District. Depreciation of rice fields in Southern OKU from 2007 to 2016 reached 2% per year. Central Bureau Statistic (South OKU BPS) shows that there is a decrease of wetland area from 31,205 ha in 2007 to 16,134 ha in 2016. Wetland area in South OKU is decreasing. Wetland area in South OKU from 2007- 2016 can be seen in Table 1 below.

Table 1. Wetland area in South OKU

Year	Land Area (Ha)
2007	31.205
2008	29.458
2009	28.602
2010	27.749
2011	25.341
2012	24.016
2013	23.614
2014	20.105
2015	18.040
2016	16.134
Jumlah	244.264

Source: South OKU BPS, 2016

Table 1 shows the extent of rice fields in Southern OKU from 2007 to 2016, each year declining. In 2014 the area of wetland in Southern OKU experienced the greatest decline of the other year by a margin of 3,509 ha. In relation to the above information, it is interesting to study further about the change of paddy field area and the factors that influence it in South OKU District.

Purposes

The purposes of this research is to analyse the change of paddy field area and the factors that influence it in South OKU District.

RESEARCH METHODS

The research method used is literature study method and the data is processed by using mathematical calculation with equation:

Pp = Pt / Po x 100%

Pp = Percentage change of wetland area (%)

Pt = Land area in year t (ha)

Po = Area of land in the base year (ha)

To analyze the factors that influence the width of paddy field used equation:

Y= ∝o + ∝1 X1 + ∝2 X2 + ∝3 X3

Information:

Y = Changes in wetland (Ha)

X1 = PDRB of South OKU from food agriculture sector (Million Rupiah)

X2 = Number of residents of South OKU X3 = Length of road (Km)

Ao = Intercept

A1, α2, α1 = coefficients

Test F can be formulated as follows: $$\text{F count} = \frac{R^2(k-1)}{(1-R^2)/(n-1)}$$

Where :

F = F arithmetic (which is compared to F table)

R² = coefficient of determination

k = Number of independent variables n = Number of sample respondents

The formula coefficient of determination (R2)

R^2

$$= \frac{n\sum xy - \sum x \sum Y}{}$$

RESULTS AND DISCUSSION

A. Regional General Condition

1. Area of rice field

Area of rice field and rice production in South OKU from year 2006-2016. Wetland area in South OKU Regency always decrease from year to year. The biggest decrease from 2013-2014 is 3,509 (Ha). The condition of paddy fields that is always experiencing penururnan caused by the construction of settlements as the

impact of increasing population.

Residential development requires land,

$$\sqrt{[n\sum x^2 - (\sum x)^2][n\sum Y^2 - (\sum Y)^2}$$

[

T test can formulated as: t count = b

$$\_ \qquad sb$$

Where:

b = regression coefficient of the i- independent variable

Sb = standard deviation of independent variables

The test criteria are as follows:

If $F_{count} > F_{table}$, then reject Ho, meaning the population, the length of the road, GRDP of the agricultural sector significantly affect the change in wetland area.

If $F_{count} \leq F_{table}$, then accept Ho and reject H1, meaning the population, the length of the road, GRDP of the agricultural sector has no real effect on changes in wetland area.

According to Gujarati (1997), to know the influence of each independent variable to the dependent variable, it is necessary to test the hypothesis by using t-test (t-test) one direction.

Where :

a. If $t_{count} > t_{table}$, then reject Ho and this means that the i-alleged factors have a significant effect on wetland area.
b. If $t_{count} \leq t_{table}$, then accept Ho and this means the alleged factors to-i has no significant effect on wetland area.

often the land used is wet land because it
] has a land rent (rent land) is low. The
impact of many immigrants from outside South OKU District is one of the demand for the construction of residence for both short and long term.

Table 2. Area of rice field in South OKU District 2007-2016

Year	Land field area (Ha)
2007	31.205
2008	29.458
2009	28.602
2010	27.749
2011	25.341
2012	24.016
2013	23.614
2014	20.105
2015	18.040
2016	16.134
Amount	244.264

Source: South OKU BPS, 2016

One way that can be done in inhibiting the decrease of wetland area in South OKU District as the effect of the transfer function is the formulation of Regional Regulation (PERDA) on the conversion of wetland area. The Regional Regulation (Perda) should also be applied to the people who will change the land by the relevant agencies or agencies.

2. Gross Regional Domestic Product (GRDP) of Agricultural Sector

Gross Regional Domestic Product (GRDP) of South OKU Regency during the period of 2007 to 2016 according to the prevailing price increase from year to year. In 2007, GRDP of South OKU Regency at current prices for agriculture amounted to 714,482 million rupiah, while in 2015 to 1,708.08 million rupiahs, then increased in 2016 to 1,854.72 million rupiah. GRDP of South OkU agricultural sector from 2007- 2016 can be seen in table 3 below

Table 3. GRDP Agriculture Sector South OKU 2007-20016

Year	Agricultural PDRB (million rupiah)
2007	714.482
2008	807.401
2009	938.528
2010	987.574
2011	1.054.32
2012	1.207.63
2013	1.425.07

2014	1.654.62
2015	1.708.08
2016	1.854.72
Amount	3456.8894.4

Source: South OKU BPS, 2007-2016

One of the factors to reduce the GDP of the agricultural sector is the need for regulation related to the use of paddy fields and other agricultural land issued by the local government of South OKU Regency. Besides that, extensification strategy and intensification of agriculture should also be done to increase the production of PDRB of South OKU Regency.

3. Population

South OKU District, always increase the number of population from year to year that is 246,925 people in 2007 and in 2016 that is equal to 501,352 people. The population has increased population growth of 5,956 people. Table 4 below shows the total population of South OKU from 2007-2016.

Table 4. Population of South OKU Year

2007-2016

Year	Total population
2007	286,925
2008	294.071
2009	302,421
2010	319,418
2011	324,068
2012	328,718
2013	333,468
2014	339,424
2015	344,074
2016	401,352
Amount	3273.939

Source: South OKU BPS, 2007-2016

How to cope with population growth in South OKU in order not to increase the high one of them is, family activities and counseling about the lack of good early marriage. This is done because the population increase on one side but the reduction of paddy fields on the other side as the impact of increasing population.

4. The Length of Road

South OKU is an area that is not directly adjacent to the sea, so that the means of transportation and transportation facilities used are two-wheeled vehicles, four wheels and so on. The increase in the length of the road is disebkan due to the addition or widening of the road To facilitate the mobility of residents between regions, the existence of transport facilities such as roads is needed. In table 5 can be seen the length of the road from 2007- 2016 as follows:

Table 5. Length of Southern OKU Road

2007-2016

Year	Long of road (km)
2007	403,72
2008	712,90
2009	729,90
2010	729,90
2011	742,32
2012	751,00
2013	773,42
2014	867,47
2015	873,24
2016	905,00
Amount	7466.45

Source : Publik work service of South OKU District, 2007-2016

Based on Table 5. The length of the road of South OKU Regency always experiences development from year to year. In 2007 it was 403.72 km long. Meanwhile, those who do not experience the long roads are in 2009-2010 which is

729.90. And until now the length of the existing road in Southern OKU is 905.00. The addition of long roads to the corners of the region has caused or impacted the development that led to the use of wetland as a place of development.

B. Percentage change of rice field area of South OKU

Table 6. Percentage change in reduction of rice field area 2007-2016

Year	Land field area (ha)	Land field in %
2007	31.205	95%
2008	29.458	94.40
		(0,944) GDP

2009	28.602	97.09
		(0,970)
2010	27.749	97.01
		(0,970)
2011	25.341	91.32
		(0,913)
2012	24.016	94.77
		(0,947)
2013	23.614	98.32
		(0,983)
2014	20.105	85.14
		(0,851)
2015	18.040	89.72
		(0,897)
2016	16.134	89.43
		(0,894)
means		
24.375		93.02
		(0,929)

Source: Southern OKU horticultural crops and food (processed), 2016

Table 6. shows that in South OKU there is a change of paddy field. The highest percentage of paddy field change is in 2013 with land area 23,614 ha with percentage 98,32 (0,983%) and decrease of rice field change in 2014 20,105 ha with percentage 85,14 (0,851%). Average Wetland area decreased from year to year with a growth rate of 0.888% per year. The condition is caused by the GRDP variable, the population, and the length of the road. Regional development as the impact of autonomy in need of land, often the land used is wet land because it has a low land rent (rent of land).

This is consistent with the theory according to Titias (2016), concluding that wetland area decreases every year with 95% confidence level with dependent wetland area with independent variables of GDP of agriculture sector, population, length of road. One way that can be done to anticipate or prevent the occurrence of the reduction of wetland area is the application of Law no. 41 of 2009 on the protection of sustainable agricultural land, the government regulation No. RI. 1 of 2011 on the determination and transfer of sustainable food land function, and RI government regulation no. 12 Year 20012 on incentives to protect sustainable agricultural land including sanctions that are very necessary, in addition to reducing the occurrence of land conversion also to support food security programs.

C. Analysis of the Change of Wetland Area

Factors identified in the model that may affect changes in land area are GRDP (X1), population (X2), and length of road (X3). To analyze the change of paddy field area, data collection is then processed by using multiple regression analysis which is shown in Table 7.

Table 7. Regression results that affect changes in wetland area

Independent var	**Regression Koef**	**T hitung**	**Significance**
Intersep	37.961		
PDRB	0.420	2.160	0.074
			0,01
Population	0.121		0.048
Length of	-0.606	0.742	0,05
Road		-	0.018
		3.230	0,05
R2	= 0.860 = 86.0%		
F	= 12.297 (0.006)		
Periode sampel	= 2007-2016		
N	= 10		

The condition is caused by the GRDP variable, the population, and the length of the road. Regional development as the impact of autonomy in need of land, often the land used is wet land because it has a low land rent (rent of land).

This is consistent with the theory according to Titias (2016), concluding that wetland area decreases every year with 95% confidence level with dependent wetland area with independent variables of GDP of agriculture sector, population, length of road. One way that can be done to anticipate or prevent the occurrence of the reduction of wetland area is the application of Law no. 41 of 2009 on the protection of sustainable agricultural land, the government regulation No. RI. 1 of 2011 on the determination and transfer of sustainable food land function, and RI government regulation no. 12 Year 20012 on incentives to protect sustainable agricultural land including sanctions that are very necessary, in addition to reducing the occurrence of land conversion also to support food security programs.

Based on Table 6. Retrieved Determination (R^2) value of 0.860 (86.0%) This shows that the variable of land area change of 86.0% is explained by GRDP of agricultural sector, population, and length of road, while the remaining 14% other factors not included in this equation model. F value counted 12.2976 with a significant number of 0.006. With a significant level of 99% (α = 0.01). Significant figures 0.006 <0.01. On the basis of such comparison, then Ho is rejected or

means the variable of GRDP (X1), population (X2), length of road (X3) has a significant influence together on the wetland area at a significant level of 99% or belief α: 0 , 01.

The analysis of the factors affecting wetland area in OKU Selatan Regency is processed by SPSS program. Based on the results obtained in Table 7, the equations of factors affecting changes in wetland area are:

y = 37, 961 + 0,420 + 0,121 – 0,606

1. Agriculture Sector GRDP (X1) Coefficient value of independent variables in the form of GRDP of 0.420. This means that an increase of 1 Million Rupiah of GRDP will increase the change of paddy field to non wetland by 0,420 ha. Partially PDRB variables significantly affect the level of confidence 99% of changes in wetland area in OKUS district or significant effect on α = 0.01.

This is in accordance with the theory according to Titias (2016), that the transfer of wetland to non-rice is the impact of the increase of Gross Regional Domestic Product (GRDP) from the food agriculture sector. Increasing Gross Regional Domestic Income (PDRB) on one side has a positive impact on people's welfare but on the other hand it has negative impact because it triggers the conversion of rice field to non-rice field.

2. Population (X2)

The population has significance value at 95% confidence level or α = 0,05. Besides, based on the table of coefficients in the can of 0.121. This means a change of population of 1 soul will increase the change of rice field area to non wetland by 0,121 ha.

This is in accordance with the theory according to Giyarsih (2009) which found that the increase in population and population density affect the conversion of agricultural land into buildings. The results of this study are also in harmony with the findings of Sudirman (2013) which suggests that the higher population density in a region triggers changes in agricultural land surrounding it. The results of this study also reinforces the statement of Lambin (2002) that the increase in the number of inhabitants affect the occurrence of changes in rice fields into non-rice fields.

3. Length of Road (X3)

The coefficient value of the independent variable is a path length of -0.606. This means that the change of road length is 1 km, it will decrease the change of rice field area to non wetland by 0,606 ha. Partially, length of road variables significantly affect the 95% confidence level to changes in wetland area in South OKU District or have significant effect on α = 0,05.

The result of the analysis shows that the length of the road positively affects the value of coefficient of -0.606 and significant, in this research is in line with the variable length of study road conducted by Daryanto (2011) that every addition of road length will decrease the change of paddy field because the addition of road length does not always use agricultural land specially rice fields. And also the addition of road length will have good impact for farmers to facilitate and pelacar in the process of seeding, breeding and also production especially paddy field which

located in strategic area close to out of town access so it will be important for the carrying capacity in growth of rice production in maintaining independence, and food sovereignty.

CONCLUSIONS

The results showed that:

1. Area of rice field in South OKU District decreased from year to year with decreasing rate of 0, 929% per year.

2. Factors influencing changes in wetland area in South OKU are GDP of agriculture sector, population, and length of road.

BIBLIOGRAPHY

(1) Daryanto. 2011. Impact of Road Infrastructure Against the Economy of Java-Bali Island and Sumatra.

(2) Department of Food Crops and Horticulture of South Ogan Komering Ulu Regency. Area of Rice Field 2007-2016.

(3) Gujarati, Damodar. 1997. Basic Econometrics. Erlangga. Jakarta.

(4) Giyarsih, 2009. Regional Transformation. Dissertation. Faculty of Geography. University of Gajah Mada. Yogyakarta.

(5) Irawan, B. 2005. Wetland Paddy Conversion: Impact, Utilization Pattern and Determination Factor. Agro Economic Research Forum. Vol 23. No. 1. 1-8.

(6) Lambin, 2002. Causes of Land Use and Land Close Changes. University of Louvain. Belgium.

(7) Setiowati. 2016. Land Use Change.https://ugm.lahan- _pertanian.ac.id.Retrieved Wednesday 13 September 2017

(8) Sudirman, 2013. Utilization of Saturn Satellite Imagery In The Study of Land Function Transfer of Land in Suburb of Special Region of Yogyakarta. Superior Research

Report on Cooperation Between LPPM UGM and Directorate of Higher Education Jakarta.

(9) South OKU BPS. 2016. Central Bureau of Statistic of South OKU District. South Sumatera Province. Indonesia.

(10) Titias, A.H, Darsono and Wuri, S.A. 2016. Analysis of Factors Affecting Rice Field Fake Transfer to Non-Rice Fields in Sleman District Special Region of Yogyakarta. Vol.13. No. 1. Page 22-17.

(11) Todaro. 2000. Economic Development in the Third World. Seventh Edition. Erlangga. Jakarta.

(12) Wibowo, S.C. 1996. Analysis of Paddy Field Conversion Pattern and Its Impact on Rice Production: Case Study in East Java. Bogor: Department of Soil, Faculty of Agriculture. Bogor Agricultural Institute.