

Factors Affecting Farmers Decision to Convert Wetland

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Abstract

This study aims to determine the rate of conversion of wetland area the last five years, and the factors that influence the decisions of farmers converting land. This research was conducted in Kecamatan Kualuh Hilir, Kabupaten Labuhanbatu Utara. Sampling method was used simple random sampling strata based on the large number. The analytical method was used descriptive, measurement scale, the least squares trend. Results of the study is that the rate of conversion of wetland in Sub KualuhHilir decreased by 7.36%. While wetland conversion rate based on primary data has decreased by 14.19% annually. In general it can be seen that 59.24% of respondents stated quite agree on the factors of land, agronomy, prices, income, climate, and environmental policies affecting farmers converting paddy fields.

Keywords: affecting farmer, wetland conversion, factors influence decision

1. Introduction

Land is a natural resource strategic development. Almost all sectors of the physical development needs land, such as agriculture, forestry, housing, industry, mining, and transportation. From the economic side, the land is still the main input of the production of a commodity. The amount of land used for the production activities in general is a derived demand resulting from commodity demand. Therefore, the development of land requirement for each production activity will be influenced by the growing demand of any commodity.¹

In line with increased activity in commodity demand, the need for land is also increasing rapidly. While the availability and land essentially unchanged. Although the quality of land resources can be improved, the quantity in each region is relatively fixed. In these conditions, the increased need for land for production activity will reduce the availability of land for production activities. This causes frequent conflicts of interest and conversion.²

Land conversion is a change in the function of some or all of the land area of the original function (as planned) into another function which becomes the negative impact (the problem) to the environment and the potential of the land itself. Land conversion can also be interpreted as a change to other uses due to factors that broadly cover the need to meet the needs of a growing population numbers and increasing demands for a better quality of life.³

The growth followed a growing population with housing needs to make farmland is reduced in many areas. Land of the narrow increasingly fragmented due to the need for housing and industrial land. Farmers prefer to work in the informal sector of the last in the agricultural sector. The attractiveness of the agricultural sector continues to decline and farmers also tend to release their land ownership. The release of land ownership tends to be followed by changes in land use or often called the land conversion.⁴

Landowners do the conversion of cropland is mainly wetland to other uses therefore expect to benefit more. Economically, agricultural land, especially paddy, higher selling prices because it usually is in a thriving location. However, to peasants and farm workers, land conversion into a disaster because they could not change jobs. Farmers are getting stuck with increasingly limited opportunities for employment that will cause social problems that complicated.⁵ One of the areas that suffered the conversion of land in Sumatra Utara is KabupatenLabuhanBatu Utara. BPS data, in 2011 there is a decrease ear vast rice fields in KabupatenLabuhanBatu Utara from 35 771 ha to 31 375 ha in 2012. It appears that there is a decrease in the period of one year amounted to 4,396 hectares, it indicated the symptoms of wetland conversion in KabupatenLabuhanBatu Utara resulting in land area in the district will decrease wetland area in the future. Agricultural land is diminishing, especially paddy fields in KabupatenLabuhanBatu Utara, certainly will influence the production of paddy and rice production in the District. More extensive data wetland and paddy production in KabupatenLabuhanBatu Utara in five years is shown in Table 1.

Table 1. Land and Production of Rice

Year	Wetland (Ha)	Production (Ton)	% Changes Land
2008	59.491	258.787	
2009	32.376	152.523	- 45,58
2010	40.815	189.871	26,06
2011	35.771	178.855	-12,36
2012	31.375	155.250	-12,29
Average Change			-8,83

Source :KabupatenLabuhanBatu Utara in Figures Various Year of Publication

Table 2. Land Area, Production and Productivity of Rice in KecamatanKualuhHilir

Year	Land Area (Ha)	Production (Ton)	Productivity (Ton/Ha)
2000	26.250	116.442	4,43
2001	23.478	101.303	4,31
2002	22.561	96.671	4,28
2003	20.967	83.984	4,00
2004	19.731	81.236	4,11
2005	18.580	70.281	3,78
2006	17.580	80.235	4,56
2007	19.501	80.418	4,12
2008	17.064	78.238	4,58
2009	15.442	66.015	4,27
2010	15.442	63.023	4,08
2011	12.461	25.200	2,02
2012	13.256	77.290	5,83
2013	11.075	36.640,90	3,30

Source :KabupatenLabuhanBatu Utara in Figures Various Year of Publication

Kecamatan Kualuh Hilir is one of sub district in KabupatenLabuhanbatu Utara in recent years continue to have the conversion of land, especially agricultural land. This resulted in the conversion of agricultural land in Kecamatan Kualuh Hilir especially paddy rice tends to decrease. Land most experienced conversion is a type of wetland into a dry land and non-agricultural land, such as is used for plantations and other things so forth. More data is the land area, production and productivity of paddy in KecamatanKualuhHilir in the last 14 years are shown in Table 2.

Based on the above problems, the study aims to determine the rate of conversion of wet land area, in addition, this study also aims to determine what factors are affecting farmers in the conversion of land in KabupatenLabuhanBatu Utara KecamatanKualuhHilir. The formulation of this research are:

1. How did the rate of conversion of paddy land in the last five years in the area of research?
2. What factors were affecting the farmer's decision to convert the land?

2. Literature

2.1 Definition of wetlands

Specifically land a development resource that has the characteristics of availability or extent of relatively fixed because the area changes as a result of natural processes (sedimentation). Moreover the suitability of land to accommodate community activities also tend to be specific because the land have different physical properties such as the types of rocks, minerals, topography and so forth. For farmers, the land has great significance because of their land to defend their lives with their families through farming and animal husbandry. Because the land is a factor of production in farming, then the tenure status of the land is very important with regard to the decision whether commodities to be commercialized.⁶

2.2 Land Use

Land use (land use) is any form of intervention (intervention) humans to land in order to meet their needs both material and spiritual. Land use can be grouped into two major groups, namely (1) the use of agricultural land, and (2) non-agricultural land use. Agricultural land is the land designated for agricultural activities, such as rice fields, vegetable gardens, and others. Fields is a type of agricultural land use for management using the puddle. Therefore the fields is always a flat surface bounded by dikes to withstand waterlogging. Based on the type of irrigated rice fields are divided into three types: (1) technical irrigated fields, the form comes from the rice fields irrigation reservoir and flowed through the primary channel and further divided into secondary and tertiary canals through the building door divider; (2)

rice field technical semi irrigation, the form of rice fields irrigation comes from reservoirs, but the government only controls tapper construction to regulate the importation of water, and (3) irrigated fields is simple, namely irrigation from springs and manufacture of the channel is made without a permanent building by the local community. As for the fact that in Indonesia there are rainfed, namely rice irrigation does not use irrigation. Watering in paddy fields based only on rain water.⁷

Wetland can be considered a public good, because in addition to the individual benefits for the owner, also provides benefits that are social. Paddy fields have functions that are widely associated with the benefits of direct, indirect benefits, and benefits default. Benefits directly related to, concerning the provision of food, provision of employment opportunities, providing a source of income for the people and the area, the cultivation of a sense of community facilities (gotongroyong), means the preservation of traditional culture, means of prevention urbanization and tourism facilities. The benefits are not directly related to its function as a means for conservationists. Benefits of default associated with its function as a means of education, and the means to maintain biological diversity.⁸

2.3 Definition Conversion

Land conversion is a change in the function of some or all of the land area of the original function (as planned) into another function which becomes the negative impact (the problem) to the environment and the potential of land. Land conversion can also be interpreted as a change to other uses due to factors that broadly cover the need to meet the needs of a growing population numbers and increasing demands for a better quality of life.⁹

2.4 Factors Occurrence of Land Conversion

Another factor that causes the conversion of agriculture is mainly determined by (1) the low value of the lease land (land rent); wetland located around the center of development compared to the rental value of land for housing and industry; (2) the lack of control functions and enforcement of the rules by the relevant institutions, and (3) growing prominence of short-term goal is to enlarge the local revenue (PAD) without considering sustainability (sustainability) natural resource decentralization

According to research conducted by Ilham (2003) in Irsalina (2010) is known to cause a conversion factor of external and internal sides of the farmer, the economic pressures during the economic crisis. This causes many farmers to sell their assets in the form of paddy fields to meet the needs of the impacted wetland increase conversions and improve land tenure to the parties of capital owners. Rainfed most experienced conversion (319,000 Ha) nationally. Paddy fields in Java with various types of irrigation experienced a conversion, respectively 310,000 ha of rainfed, irrigated fields Ha 234,000 technical, semi-technical irrigation rice field 194,000 ha and 167,000 ha irrigated rice simple.

Meanwhile outside Java conversion occurs only in irrigated and rainfed simple. The high conversion of irrigated rice in Java further strengthen the indication that control policies wetland conversion have not been effective. The occurrence of wetland conversion to oil palm trees for a variety of things, namely oil palm farm income is higher with lower risk, the sale value of collateral is higher gardens, palm oil farm production costs are lower and the limited availability of water.

2.5 Policy Aspects In Land Conversion

Various policy issues related to wetland conversion control has been a lot made. One aspect of the policy of wetland conversion stipulated in the Law of the Republic of

Indonesia Number 41 of 2009 on the Protection of Agricultural Land Sustainable Food explained that what is meant by the Agricultural Land Sustainable Food is a farm plots is set to be protected and developed consistently to produce staple food for self-reliance, resilience, and national food sovereignty. While the protection of agricultural land sustainable food itself is defined as a system and a process to plan and establish, develop, utilize and develop, control and supervise food agricultural land and the region in a sustainable manner. The purpose of the protection of agricultural land sustainable food is (1) to protect agricultural land area and sustainable food; (2) ensure the availability of agricultural land sustainable food; (3) achieve independence, food security and sovereignty; (4) protect the ownership of agricultural land owned by farmers food; (5) increase the prosperity and welfare of farmers and the community; (6) improving the protection and empowerment of farmers; (7) increasing the employment of a decent life; (8) maintain the ecological balance, and (9) to realize the revitalization of agriculture. Agricultural land is protected only be converted for public use, which is regulated by government legislation. Conversion of land that has been set to do with the conditions as follows: (1) conducted a feasibility study strategic; (2) plans are exempt land conversion ownership rights of the owner, and the plot is provided in lieu of land converted¹⁰.

Determination of perennial agricultural land is one policy option by some parties considered most appropriate to prevent the conversion of agricultural land. Basically perennial agricultural land is the establishment of the area as a conservation area, or protection, especially for agricultural businesses. Conversion of agricultural land to other uses prohibited by a statute legislation. If it can be effectively implemented then surely the conversion of land in conservation areas will not happen. Theoretically, the

assumption can be effected, this policy option is most effective to prevent the conversion of agricultural land.¹¹

3. Material and Methods

This study used a case study (case study) the research done with a direct view of spaciousness, as the case study was a method that describes the type of research on a particular object for a certain period, or a phenomenon found in a place that is not necessarily the same as other areas¹².

3.1 Method of Determining Location

The research area was determined by purposive in Kecamatan Kualuh Hilir of Labuhan Batu Utara. This area is conversion of productive agricultural land, especially land.

3.2 Method of Sampling

Determination of the sample of this research was to proportionate stratified random sampling that taking samples at random strata simple by the large number. The population in this study were farmers who convert agricultural land whether it is doing most conversions, and converting entirely. These farmers were members of the seven village Desa Kampung Masjid, Kuala Bangka, Teluk Binjai, Sungai Sentang, Sungai Apung, Teluk Piai And Teluk Mangedar. Based on information obtained from the head of the agricultural extension in Kecamatan Kualuh Hilir the number of the population that had wetland conversion in the amount of 1312 people.

If the population size is too large, then the sample size for descriptive studies do not need to be huge, just 5% alone is considered representative of the population. Determination of the number of samples for each village is as follows¹³.

3.3 Data Collection Methods

The data collected in this study consisted of secondary data and primary data.

Tabel 3. Number of Samples of Each Village

Village	Population	Sampel
Kampung Mesjid	183	9
Kuala Bangka	200	10
Teluk Binjai	143	7
Sungai Sentang	231	12
Sungai Apung	167	8
Teluk Piai	190	10
Teluk Mangedar	198	10
Total	1312	66

Source: Primary Data (Processed)

The primary data obtained from interviews directly to farmers as respondents using a questionnaire (questionnaire), which had been prepared in advance. While secondary data obtained from the agencies concerned.

3.4 Data Analysis Methods

Formulation of the first problems were analyzed by using descriptive analysis by looking at the percentage changes in wetland area in Kecamatan Kualuh Hilir within 5 (five) years.

According Sutandi (2009) in Astuti (2011), in the calculation of the rate of conversion of agricultural land use land depreciation equation. The rate of land conversion can be determined by calculating the rate of depreciation of land partially. The rate of land conversion may be determined by the difference between the total area of all t with the area prior to year-t (t-1). Then divided by the area year-to-t (t-1) are multiplied by 100 percent. This was done also in subsequent years in order to obtain the rate of conversion of land every year. The second problems were analyzed using descriptive rating scale measurements. Where respondents were given a few questions about

the factors that affect land conversion. Then the farmer respondents will be asked to declare the contents of agreement or disapproval of the inquiry into the four categories of the given numbers, namely (1) 4 agreed; (2), 3 quite agree; (3) 2 is less agreement, and (4) one does not agree. Then, if the farmer has declared kesetujuannya respondent, then the figures tabulated the known prior to analysis. The analysis was based on figures obtained by the tabulation.

4. Result and Discussion

4.1 Wetland in Kecamatan Kualuh Hilir

The rate of conversion of paddy land in the Kecamatan Kualuh Hilir within five years of extensive views of the percentage change in wetland per year can be seen in the following Table 4.

In Table 4 it can be seen that since the period of 2009-2013 decreased wetland area. Only in 2010 to agricultural land area has decreased from the previous year, in 2009 the land area equal to the land area in the year 2010 of 15,442 Ha. However, in 2011 the land area in Kecamatan Kualuh Hilir again decreased initially in 2010 amounted to 15,442 ha to 12 461 ha. Increased rice field area slightly occurred in 2012 amounted to 13 256 hectares and declined in 2013 to 11 075 ha. In Table 5 can be seen that the rate of wetland conversion.

The highest occurred in 2011 which amounted to 19.30% or occur penunurunan rice field area of 2,981 Ha. The increase in rice field area which is equal to 795 hectares or 6.30% which occurred in 2012.

Overall, from 2009 to 2013 there has been a wetland conversion amounted to 7.36%. Thus wetland area in Kecamatan Kualuh Hilir shrinkage land. While the rate of conversion of wet land in Kecamatan Kualuh Hilir based on primary data in Table 5.

Table 4. Conversion Rate Wetland Five Years in Kecamatan Kualuh Hilir

Year	Land Area (Ha)	Changes Land Area (Ha)	% Changes Land Area
2009	15.442		
2010	15.442	0	0
2011	12.461	-2.981	-19,30
2012	13.256	795	6,30
2013	11.075	-2.181	-16,45
Average Change			-7,36

Source: Secondary Data (Procesed).

In Table 5 above shows that the vast palm plantation in Kecamatan Kualuh Hilir from 2010 to 2014 continued to increase in the amount of 4.42%. Increased land area from 2010 to 2011 amounted to 8.22%, from 2011 to 2012 amounted to 5.39%, whereas the increase in the land area from 2012 to 2013 amounted to 6.03% and from 2013 to 2014 experience increase in land area of 2.47%. The rate of conversion of paddy land area in Kecamatan Kualuh Hilir from 2010 to 2014 continued to decline. Rice field area in 2010 has decreased by 16.09% in 2011, a decrease in wetland area also occurred in the year 2012 amounted to 14.07%, in 2013 amounted to 21.82% and in 2014 decreased by 18.95%. Overall, a wetland area in Kecamatan Kualuh Hilir shrinkage of 14.19% annually.

Decrease in wetland area in Kecamatan Kualuh Hilir caused by land conversion. Farmers converting paddy fields to other crops such as oil palm trees as a result of wet land is capable of producing only once a year, because the rice fields in Kecamatan Kualuh Hilir is rainfed areas which can only be planted at the end of the year or on a rainy day only. It is also the cause of farmers only earn income once a year, and the income received by the farmers are not able to meet the

needs for the next year. Therefore, farmers prefer to replace the rice crop fields to palm trees.

The decline in rice field area can not be separated from the differences in land rent. The allocation of land use wetland to use plantation crops is to provide economic surplus (land rent) higher. Hence the desire of farmers to earn more profits (allocation of land on higher land rent) of the land is the reason farmers replace paddy rice commodities.

Table 5. Conversion Rate Wetland Petani Respondents Five Years in KecamatanKualuhHilir

Year	Sawit Land (Ha)	% Change	Paddy Land (Ha)	% Change
2010	334,5	0	88,96	0
2011	362	8,22	74,64	-16,09
2012	381,5	5,39	64,14	-14,07
2013	404,5	6,03	50,14	-21,82
2014	414,5	2,47	40,64	-18,95
Average Change		4,42		-14,19

Source: Primary Data (Processed)

Table 6. Description of Tabulation Conversion Factors Affecting Wetland Based on Land Indicators

Commentary	Criteria							
	S		CS		KS		TS	
	N	%	n	%	N	%	n	%
• Soil replacement plant is able to produce	36	54,54	27	40,91	3	4,54	0	0
• substitute crop land is more beneficial	35	53,03	30	45,45	1	1,52	0	0
• Quality of paddy fields increased	12	18,18	10	15,15	19	28,79	25	37,88

Source : Primer Data (Processed)

Table 7. Description Tabulation Conversion Factors Affecting Wetland Based Agronomy Indicators

Commentary	Criteria							
	S		CS		KS		TS	
	n	%	n	%	n	%	n	%
• Rice is more susceptible to pests	51	77,27	15	22,73	0	0	0	0
• Rice more use of labor	45	68,18	21	31,82	0	0	0	0
• Ability to post-harvest handling	13	19,70	22	33,33	21	31,82	10	15,15
• Mechanical cultivation easier replacement	38	57,58	28	42,42	0	0	0	0
• Irrigation smooth	0	0	0	0	39	59	27	41
• When harvesting crops shorter replacement	28	42,42	38	57,58	0	0	0	0

Source : Primary Data (Processed)

Table 8. Description of Tabulation Conversion Factors Affecting Wetland Based Price Indicator

Commentary	Criteria							
	S		CS		KS		TS	
	n	%	n	%	n	%	n	%
• High cost production	37	56,06	29	43,94	0	0	0	0
• Price substitute commodities higher	41	62,12	24	36,36	1	1,52	0	0
• Price cropland replacement collateral selling higher	42	63,64	24	36,36	0	0	0	0

Source : Primary Data (Processed)

Table 9. Tabulation Description Size Conversion Factors Affecting Wetland Based Income Indicator

Commentary	Criteria							
	S		CS		KS		TS	
	n	%	n	%	n	%	n	%
• Farming Substitute crops could provide for the family	33	50	33	50	0	0	0	0
• Income Higher replacement crop farming	34	51,51	32	48,49	0	0	0	0

Sumber : Primary Data (Processed)

However, in general, farmers in Kecamatan Kualuh Hilir have done wetland conversion to oil palm trees still grow rice activity. Rice farming is a side activity in addition to the palm oil business. This is because farmers want to get the rice production at the end of the year, which is only used in rice production to meet the needs of family life.

4.2 Factors Affecting Farmers Convert Land

Factors that influence farmers to convert land can be seen by the indicator - an indicator that there is previously given to the farmers whose land conversion affecting land conversion in Kecamatan Kualuh Hilir.

Based on Table 6 above it can be seen that the main reason farmers land conversion is 54.54% or 36 out of 66 people with reason substitute crop land is capable of producing as desired. Amounted to 53.03% or 35 people to do the conversion on the grounds substitute crop land is more beneficial. While 37.88% of the farmers land conversion for assessing the quality of wetland decline. Therefore the main

reason farmers replace rice commodity with another commodity is a commodity due to replacement land has an exchange value that is greater than rice, so it is judged that commodity more profitable replacement. While the description of the factors that affect conversion tabulation extensive wetland based agronomic indicators can be seen in Table 7 below.

Table 7 shows that 77.27% or 51 out of 66 inhabitants agreed to convert the grounds of rice are more susceptible to pests and diseases. 68.18% or by 45 people expressed more rice using labor, 33.33% or 22 people claimed to do the conversion for the ability to post-harvest handling is not good. While other reasons farmers do a conversion that is equal to 57.58%, or about 38 people on the grounds of plant cultivation technique of replacement is easier than in rice, and 57.58%, or about 38 people expressed converting land for crop replacement time is shorter.

The above table shows that the reason farmers do a conversion is 56.06%, or 37

people on the grounds of high cost of rice production in compare replacement crops. 62.12% or 41 mental states to do the conversion on the grounds substitute commodity prices higher. While 63.64% or 42 out of 66 mental states to do the conversion on the grounds the sale price higher collateral substitute crops. Here are the factors that affect farmers' land conversion based on indicators of income.

It can be seen on the chart above that the reason farmers do a conversion of 50% or 33

souls agree with the reasons crop farming replacement could provide for the family. While 51.51% or 34 mental states to do the conversion by reason of higher farm income replacement. This suggests that rice farming in KecamatanKualuhHilircan not provide benefits for farmers.

Based on Table 10 shows amounted to 57.58% or 38 out of 66 mental states to convert land for reasons more supportive weather crop replacement. While 100% states the grounds that rice farming depending on the season.

Table 10. Tabulation Description Conversion Factors Affecting Wetland Based Climate Indicator

Commentary	Criteria							
	S		CS		KS		TS	
	n	%	n	%	n	%	n	%
• The weather replacement plant more support	38	57,58	28	42,42	0	0	0	0
• Farming depending on the season	66	100	0	0	0	0	0	0

Source : Primary Data (Processed)

Table 11. Tabulation of Description Conversion Factors Affecting Wetland Based Indicators Government

Commentary	Criteria							
	SB		CB		KB		TB	
	n	%	n	%	n	%	n	%
• Government Policy	0	0	0	0	22	33,33	44	66,67

Source: Primary Data (Processed)

Table 12. Tabulation of Description Conversion Factors Affecting Wetland Based Environmental

Commentary	Criteria							
	S		CS		KS		TS	
	n	%	n	%	n	%	n	%
• Influenced other farmers who convert	33	50	20	30,30	3	4,55	10	15,15
• means and good infrastructure	0	0	0	0	29	43,94	37	56,06

Source: Primary Data (Processed)

In general, the fields in KecamatanKualuhHilir is irrainfed. The weather is often erratic make the product quality and production declined.

Farmers also for the rainfed areas are not capable of producing the appropriate or expected, because the rice crops could be planted at the end of the year only or on a rainy day only. Precisely paddy farmers only do once a year. It is also why farmers only earn income once a year, and the income received by the farmers is not considered to be sufficient for the next year. It is this which is one of the reasons to replace commodity farmers plant rice in addition to requiring time and labor Luangan larger than a replacement of commodities such as palm oil and so forth. While the factors that affect farmers perform conversions based on indicators of government policy can be seen in Table 11.

The above table shows that 66.67% or 44 out of 66 said they had reason to convert souls with government policies that are not good, while 33.33% said they had unfavorable government policies. This is because the government has not been optimal in giving counseling to farmers in KecamatanKualuhHilir. The provision of government subsidies granted to farmers is also considered to be uneven, certain circles are only partially subsidized. While the price of a given government subsidies has not been categorized as low. While the factors that affect farmers perform conversions based on environmental indicators can be seen in Table 12 below.

Based on Table 12 above can be shown that 50% or 33 mental states to do the conversion on the grounds affected other farmers who convert. Environmental factors also become a support farmers to convert land. One of them is to see the glory of farmers. Farmers who have already converted are considered to be sufficient for life and can set aside income for the purposes just in case and as an investment in the future. While 56.06% or 37 out of 66 souls meyakini farmers do the

conversion because infrastructure is not good. In general it can be seen that 59.24% of respondents stated quite agree on the factors of land, agronomy, prices, income, climate, and environmental policies affecting farmers converting paddy fields. The big difference in the value of the rice commodity with another commodity raises the desire of farmers to obtain surplus or gain more by converting land.

Conclusion

Conclusion from the research that has been done, then people can obtain some conclusions regarding the issues examined in the field. Here is the conclusion. 1. The rate of conversion of wet land in KecamatanKualuh from 2009 to 2013 by 7.36%. While the rate of conversion of wet land in KecamatanKualuhHilir based on primary data shrank by 14.19% annually. 2. In general it can be seen that 59.24% of respondents stated quite agree on the factors of land, agronomy, prices, income, climate, and environmental policies affecting farmers converting paddy fields.

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