

Strategic Development of Post Mining Land (Ex-Peti) for Rice Farming

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ABSTRACT

The research objective was to analyze the lowland rice farming development strategy on ex-mining land. This research was conducted in Pangkalan Jambu Subdistrict, Merangin Regency, the location selection was done deliberately. The sampling method is Simple Random Side with a sample size of 40 families. Respondents were farmers prior to mining excavation activities were lowland rice farmers. The method of analysis is by doing a SWOT analysis (Strengths, Weaknesses, Opportunities Threats). The results of SWOT analysis show that paddy rice farming is in quadrant I, meaning that the internal and external positions are strong so that lowland rice farming can be developed again in the study area. For the selection of an alternative strategy is the SO (strength-opportunity) strategy by applying the concept of environmentally friendly lowland rice farming, which is capable of restoring land from mining to productive land, both for rice farming and other farming so that it is expected to be a source of income for the surrounding community after the cessation of operations mining activities.

Keywords: *Strategy, Post Mining Land, Rice, Farming.*

1. INTRODUCTION

Exploitation natural resources through Gold Mining Without Permits (PETI) on a large scale and not in accordance with operating standards during the last three years, resulting in a decline and environmental damage. Changes in the environment around mining due to the conversion process of agricultural land into mining areas that are not carried out wisely also have a negative impact on farmers who own land around the mining area [3].

The application of sustainable agriculture, indicators of lowland rice are a staple food crop for all communities around the gold mining area, rice farming has been carried out from generation to generation so that it needs to be cultivated continuously, this is indicated by the results of the sustainability index, where the index is obtained for the area around the mine. in the amount of 48.33 and 63.33 for the area outside the mine, meaning that rice as a staple food crop is very much needed but it is not sustainable enough to carry out farming activities in the area around the mine and has a sufficiently sustainable value for the area outside the mine.

Summarize soil quality variables whose changes have a significant effect on plant growth. These variables include pH, total nitrogen, available phosphorus, and exchangeable potassium, calcium, iron and aluminum. Thus, these variables must be considered in evaluating the improvement of the quality of ex-mining land in the

context of reserving land for food crop agriculture. In addition, soil organic carbon and texture are other variables that must be evaluated because they determine the need for and efficiency of nutrient addition through fertilization [2].

Mining activities are complex and very complicated business activities, full of risks, are long-term business activities, involve high technology, are capital intensive, and have regulations issued from several sectors. In addition, mining activities have great environmental changeability, so that it requires careful total planning from the initial stage to post-mining. When opening a mine, it must be understood how to close a mine. Mine reclamation is progressive, according to the post-mining land use plan [9]. Productive land is currently shrinking due to land conversion, on the other hand the government is promoting a self-sufficiency program, so alternative agricultural land is needed to support the program [6].

Ecologically, local plant species can adapt to local climates, but may not necessarily adapt well to suboptimal substrate conditions. Therefore, it is necessary to conduct research on several types of trees that are suitable for these sub-optimum conditions, especially for local species that grow fast and produce large biomass. To support the success of ex-mining land restoration, steps such as improving pre-planting land,

selecting suitable species, and using organic fertilizers are carried out [7]. Other research results indicate that the use of certain plant species and organic fertilizers in the rehabilitation of ex-gold mining land in Pongkor has produced good results [8]

Merangin Regency is one of the rice-producing areas and rice production centers which has the third largest land area and production of lowland rice in Jambi Province after Kerinci and Tanjung Jabung Timur Districts. However, the area of harvest, production and productivity of lowland rice in Merangin District has decreased due to the presence of PETI. One of the districts that was affected by the PETI activity was PangkalanJambu District.

However, the main problem with this is the land that has been turned into gravel and ponds due to PETI, as a result farmers need quite large supporting costs. Even though the farmers' decision to reprocess rice farming will face many problems but farmers still with their decision to reprocess ex crates into paddy fields.

The condition of the rice fields in Pangkalan Jambu District is very poor. Approximately \pm 1200 Ha of rice fields were damaged due to PETI. In 2015, as a result of being hit by floods, the people around the PETI area felt the impact of their land as a result of being dredged for gold illegally. In 2016 the people in the PETI area asked the government to reclaim the former PETI land into lowland rice fields again, because rice was the source of income for most of the population in PangkalanJambu District before working on PETI. According to the local district head and village head, the area is not polluted by mercury, so if he returns to cultivating lowland rice, it is not a problem. This effort is running well, this is inseparable from the role of the local government which always provides guidance and assistance to farmers so that rice production can be increased. For more details about the production and area of rice farming on ex-mining land, see Table 1.

Table 1. Development of land area, production and productivity of rice farming in the former mining land in Pangkalan Jambu District Merangin Regency, Jambi Province

Year	Harvested Area (ha)	Production (ton)	Productivity (ton/ha)
2011	2,265	11,051	4.879
2012	1,700	8,294	4.879
2013	1,307	6,179	4.73
2014	456	2,194	4.81
2015	188	808	4.30
2016	683	3,333	4.88
2017	738	3,544	4.80

Source: Food Crops and Horticulture Service of Merangin Regency (2019)

Table 1 shows the development of the area of harvest and production of lowland rice in Pangkalan Jambu District, which every year has a tendency to decline. The decline in harvested area began in 2012, which was caused by the large number of rice fields that were converted into mining areas. The rice farming development strategy is a plan to be followed through [6]. Development of rice farming by the community in Pangkalan Jambu District. This action plan is based on an analysis of the situation and objectives of the rice farming development and is a means of attaining these objectives. In terms of strategy, planning is often contained in a process that takes place continuously in a company. Therefore, the wetland rice farming development strategy of the communities around the ex-PETI is a comprehensive plan in which the community in Pangkalan Jambu District hopes to achieve predetermined goals, which in the end is to realize the objectives of the development of lowland rice farming. Referring to the problems to be examined, the objectives of this study are as follows : Analyze the strengths, weaknesses, opportunities and threats of developing lowland rice farming on the former mining land in in

Pangkalan Jambu District Merangin Regency, Jambi Province.

2. RESEARCH METHODS

The research was conducted using a survey method. The research was conducted in August 2020 - November 2020, located in Pangkalan Jambu village. The research location was determined purposively on the grounds that the development of rice farming on ex-PETI is one of the concepts of farming development on Ex-PETI in Pangkalan Jambu District. The sample used in the study were 40 people who developed ex-PETI rice farming in Pangkalan Jambu. were selected purposively based on the consideration that the research sample respondents had influence towards the development of lowland rice farming on ex-PETI. Another consideration used is that the respondent must understand the contents of the questionnaire. The data used in this study are primary data obtained from interviews with reference to the questionnaire that has been compiled, as well as secondary data obtained from related offices /agencies regarding the research topic. Data collection techniques are carried out by interviews, observation, and literature

study of journal/knowledge books. The data analysis used in this study is [5]:

1. Qualitative descriptive analysis.
2. Matrix Analysis of IFE (Internal Factor Evaluation) and EFE (External Factor Evaluation).
3. Matrix Analysis SWOT (Strengths, Weaknesses, Opportunities, and Threats).
4. Analysis of the QSPM (Quantitative Strategic Planning Matrix).

3. RESULTS AND DISCUSSION

Internal Factors (Strengths and Weaknesses) Based on the results of research on the internal environment of lowland rice farmers in Pangkalan Jambu village, the internal strategy factors are obtained in the form of strengths and weaknesses. The internal strategy factors are as follows:

3.1. Strengths

1. The ex-crate excavated land does not contain substances that are harmful to plants so that lowland rice cultivation can still be attempted.
2. Has its own production area.
3. Easy to get input.
4. Rice is a basic need.
5. Availability of large enough land.
6. Human resources who are skilled in cultivating lowland rice cultivation.
7. The large number of people who want to cultivate ex-PETI into lowland rice farming land.
8. Wide open market share.

3.2. Weaknesses

1. Still using simple technology.
2. It takes a long time to convince the community that rice farming is more promising than illegal gold mining.
3. People still compare the yields of rice farming with gold.

4. The limited number of farm laborers will result in a decrease in the number of farm workers' performance.

External Factors (Opportunities and Threats) Based on the results of external environmental research on lowland rice farming in the community of Pangkalan Jambu District, several strategic factors are obtained in the form of opportunities and threats. The external strategic factors are as follows:

3.3. Opportunities

1. The community started cultivating lowland rice on ex-PETI.
2. The government, through the Agriculture and Plantation Agency, is helping to get the land to be planted with paddy rice again
3. Rice is a staple food ingredient
4. Market opportunities are open.

3.4. Threats

1. The return of the community to become illegal gold miners.
2. Lack of cooperation between extension agents and farmers.
3. The price of gold is higher than the price of rice.

Shows what internal strategic factors are the main or major strengths and weaknesses (major) for the development of lowland rice farming in Pangkalan Jambu district. The major strength (major) for the Development of Rice Business in ex-PETI when seen in table 2 is that the research village community has an average of land for cultivation of lowland rice which was formerly an ex-PETI with an average weight score of 0.245.

Overall the total average score calculated from the IFE matrix is 2,948. Which indicates that the internal conditions of lowland rice farming development in ex-PETI are around the average (2.0-2.99) or moderate. of the whole internal force. Can be seen in Table 2.

IFE (Internal Factor Evaluation) Matrix Analysis

Table 2. The Results of Matrix IFE Analysis of Rice Farming in Ex-Peti Land, Pangkalan Jambi District, Merangin Regency, 2020

Internal Strategic Factors	Average Weight	Rating Average	Weighted Average Score
Strengths			
a. The ex-crate excavated land does not contain substances that are harmful to plants so that lowland rice cultivation can still be attempted	0.083	3,6	0.299
b Has its own production area	0.087	3,9	0.310
c Easy to get input	0.088	3,3	0.260
d Rice is a basic need	0.088	3,6	0.300
e Availability of large enough land	0.083	3.8	0.320
f Human resources skilled in cultivating lowland rice	0.086	3,4	0.293

g	Many people cultivate ex-crates land into lowland rice farming land	0.086	3.8	0.321
h	Market share that is wide open	0.083	3.8	0.330
Strengths Score				2,433
Weakness				
a	Still using simple technology	0.080	1.6	0.131
b	It took a long time to convince the public that rice farming was more promising than illegal gold mining	0.086	1.6	0.140
c	People still compare the yields of rice farming with gold	0.075	1.7	0.124
d	The limited number of farm laborers will result in a decrease in the number of farm workers' performance	0.084	1.4	0.120
Weakness Score				0.515

Shows the external strategic factors that are opportunities and threats for the people of Pangkalan Jambu District,

Merangin Regency to cultivate lowland rice farming on ex-PETI. (Table 3).

EFE (External Factor Evaluation) Matrix Analysis

Table 3. The Results of Matrix EFE Analysis of Rice Farming in Ex-Peti Land, Pangkalan Jambi District, Merangin Regency, 2020

Internal Strategic Factors	Average Weight	Rating Average	Weighted Average Score
Opportunity			
a. The community started cultivating lowland rice on ex-PETI	0.061	3.8	0.227
b. The government, through the Agriculture and Plantation Agency, is helping to get the land to be planted with paddy rice again	0.071	3,6	0.259
c. Rice is a staple food ingredient	0.074	3.34	0.251
d. Market opportunities are open	0.074	3,6	0.267
e. Availability of large enough land	0.070	3,9	0.273
Opportunity Score			1,277
a. The return of the community to become illegal gold miners	0.058	1.9	0.121
b. Lack of cooperation between extension agents and farmers	0.064	2.0	0.161
c. The price of gold is higher than the price of rice	0.071	2.1	0.150
Threats Score			0.432

The main opportunity for lowland rice cultivation business on ex-PETI is the variable that has the largest average score weight, namely the availability of ex-PETI which the average community has so that there is a great opportunity in developing lowland rice cultivation on ex-PETI with the weighted average score average of 1.277. The main threat to the development of lowland rice farming on ex-PETI is the variable that has a weighted score. The main threat to the development of lowland rice farming on ex-PETI is the variable that has the smallest average score weight. namely the return of the community to become gold miners in the ex-PETI. The total weighted average score of the EFE matrix is 1.685 which indicates that the development of lowland rice farming on the ex-PETI is around the average (1.00-2.00) which has an external position that is in its efforts to carry

out strategies that take advantage of opportunities and avoid threats

3.5. Development Strategy

Alternative strategies that can be applied to the development of lowland rice farming in ex-crates are formulated through the SWOT matrix. Explained that the SWOT matrix produced several alternative combinations of SO, WO, ST and WT strategies which were formulated based on internal and external variables in the development of lowland rice farming on ex-PETI. Based on the results of the research, the researcher has recommended several things that need to be done in developing lowland rice farming on ex-PETI based on the results of the SO, WO, ST and WT strategy formulations. The research recommendations can be seen in Table 4.

Table 4 Alternative Strategies

Alternative Strategies	Research Recommendations	
SO	1	Vegetable farming and plantations
	2	Empower the community to actively replant ex-crates land into more environmentally friendly farming lands
WO	1	Looking for partners who can accommodate the farm products of the community who have carried out farming on expeti-land
	2	Take advantage of government assistance through input production assistance to farming communities to increase production and productivity
ST	1	Strive for more productive farming that can be excellent, adapted to ex-PETI
	2	Provide opportunities for partnerships in marketing the results
WT	1	Increase the Use of Alsintan
	2	Creating an attractive and environmentally friendly post-harvest technology

Table 4, the results of the SWOT matrix formulation produce four strategies that can be used for the development of lowland rice farming on ex-PETI, namely the SO strategy which is carried out by developing not only rice farming but also planting vegetables and plantation crops, and Empowering the community to actively replant ex-PETI. become more environmentally friendly farming land. In accordance with the discussion in Figure 3, farming development on ex-PETI is in a strong internal and external position so that the SO strategy is an appropriate strategy to be implemented. The development of farming is not only for rice but also for planting vegetables and plantation crops. This will create additional income for the community on ex-PETI.

The results of the analysis of strengths, weaknesses, opportunities, threats to internal and external factors that use all existing strengths to take advantage of opportunities in the development of former mining lowland rice farming in Pangkalan Jambu District, Merangin Regency, Jambi Province, the choice of strategy resulted in farming development is a strategy. Strengths and Opportunities (SOP), namely developing paddy field farming with standard operational procedures, implementing a quality assurance system for healthy food products and improving the quality of resources and institutions for farmers and farmer families to be independent through education and training on entrepreneurial spirit.

Table 5. SWOT Matrix of Rice Farming Development Strategy

Analysis Internal	<p>Strengths</p> <ol style="list-style-type: none"> The area of land for farming development is relatively large Good lowland rice cultivation techniques There are skilled farmers and extension officers available Guidelines are available on lowland rice farming according to standard operating procedures It has been a long time since a lowland rice farmer group was formed 	<p>Weaknesses</p> <ol style="list-style-type: none"> Lowland rice farming management is not good The quality of rice production has not been consistent Farmers have limited capital The use of uncertified seeds The available facilities and infrastructure are still limited
Analysis External	<p>Strategi SO</p> <ol style="list-style-type: none"> Developing a sustainable rice field area (S1, S2, S4,01,02) Implementing quality standards for food products in general and especially rice (S4, O2,) Improve the quality of human resources of farmers and 	<p>Strategi WO</p> <ol style="list-style-type: none"> Fostering agricultural business actors through training, counseling and education in the aspects of cultivation and agricultural business (W1, W2, O1, O4)
<p>Opportunities</p> <ol style="list-style-type: none"> There is a sustainable rice farming development program The demand for semi-organic and organic rice is increasing The development of production technology, quality information, quantity and price 		

of rice production is getting better and growing. 4. Increased consumer awareness of healthy food	farmer business institutions (S3, O4)	2. Business actors form a partnership pattern (W2,W3,W5,O4) 3. Availability of online and off line data that farmers need at any time (W4,W5,O4)
Threats 1. There is price competition both at the farmer level and at the consumer level 2. There is a change in the function of land (rice) from food to plantations 3. The existence of pest and disease attacks 4. Commodity development programs compete for land use 5. Financing institutions that are not affordable to farmers	Strategi ST 1. Improve quality, price, quality of products and produce efficiently (S2, S3, T1, T4) 2. Optimal use of resources with maximum results (S1, S2, S3, T3, T4)	Strategi WT 1. Facilitating supporting facilities and infrastructure in ex-mining locations (W4,T1,T3,T4) 2. Farmers and farmer families are guided to be independent (W1,W2, W3,T1)

4. CONCLUSIONS

The development of lowland rice farming on ex-PETI has a strong internal and external position because it is in quadrant I so it needs to be maintained. An alternative strategy that can be applied according to the current conditions of ex-PETI is the SO strategy, which means that the farming community and the government can use their strengths as an effort to develop lowland rice farming on peatlands. Strategies that can be carried out are the development of farming apart from lowland rice as alternative farming that can be developed, namely vegetables and plantations and empowering the community to actively replant ex-PETI to become more environmentally friendly farming land.

In addition, support from the government is realized by providing input and agricultural machinery assistance to increase and increase production and productivity of lowland rice farming on ex-PETI. Suggestions that can be given for further research planning are to conduct an evaluation study of the success of the strategy that has been applied to the development of alternative farming on ex-PETI in the future, as well as to conduct research again related to the formulation of development strategies with other analytical tools / methods to then select the most suitable strategy for development. lowland rice farming in ex-PETI.

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