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PERSPECTIVES ON BURNED PEATLANDS AS POTENTIAL LOCATIONS FOR COMMUNITY-BASED AGROTOURISM DEVELOPMENT IN BANYUASIN REGENCY, INDONESIA

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ABSTRACT

Peatlands having undergone fires are often left alone and no longer managed by the community on the grounds of being less productive and efficient. This study examined how the community's perspective on the existence of burned land can be used as a location for developing agrotourism based on local wisdom. The location of the research was carried out on the people living around the area of Gelebak Dalam Village, Rambutan Subdistrict, Banyuasin District, considering that there was burned land which was used as a pilot model for agrotourism development sites in Banyuasin District. This study used analytical descriptive method. Data were collected using interview, observation and documentation techniques. The number of respondents was determined purposively as many as 30 people from the community living in Gelebak Dalam Village. The data analysis method used a Likert scale, through the submission of questions presented in the form of a questionnaire, and then the answers were given a score. The results of the study showed that the total score of the community's perspective measured from four indicators (mechanisms, benefits, rights and obligations) was 37.73 belonging to the good category. This shows that in principle, most of the community agrees and supports the use of burned peatland to be the location for agrotourism development in the Banyuasin District area. The mechanism indicator has the highest score in the sense that the mechanism being implemented was very good and easy for the community to understand. Meanwhile, the indicator of rights had the lowest score in the sense that some people still did not understand the rights obtained from the activities. However, it is necessary to conduct a feasibility study (FS) first in order to find out how big the economic prospects of this activity are in the future.

KEY WORDS

Benefits of burned peatlands, community perception, agrotourism.

Peatlands are ecosystems that occupy about 6% of the world's land surface [1]. In Southeast Asia, the peat has accumulated under forest swamps for thousands of years [2]. In Indonesia it is the largest in Southeast Asia and the fourth in the world [3]. Peatland fires occur almost every year, especially during the long dry season [4]. The fires can be from clearing agricultural land, throwing cigarette butts carelessly, the presence of flammable dry fuel/materials, sparks and due to natural factors [5]. In addition, it can be from logging, conversion to industrial plantations and drainage [6]. For 21 years, human-caused fires are three times longer than that of lightning-caused fires [7]. The ENSO-related land fires of 1994, 1997 and 2002 affected the peatlands of Sumatra, Kalimantan and West Papua [8]. Fires are also triggered by draining of agricultural land reserves [9]. Population growth has an effect on the incidence of land fires, especially from the aspect of land use [10]. Forest fires cause damage to forests and forest products resulting in physical-chemical, economic and environmental losses [11]. Burned soil will suffer from a decrease in the content of organic matter such as N, P, S and K, as well as microorganisms in the soil [12]. Fires affect ecosystems and soil properties due to heating and processes of erosion and soil degradation [13]. Burned ash affects the physical and chemical properties of the soil, such as soil color, texture, pH, P₂O₅, K₂O, and Fe₂ [14]. Losses due to the fires on peatlands amounted to approximately IDR 1,765,190,064 per hectare [15]. The six largest fires in Indonesia between



2004 and 2015 caused a total loss of US\$93.9 billion [16]. Furthermore, land evaluation actions are needed by classifying the land to avoid inappropriate land use [17].

Naturally, peatlands that have been burned (degraded) can still be used for the survival of human life, but the results are less than optimal. This is in line with the results of research [18] that fire caused the peat layer to be lost, infertile due to reduced types and populations of soil flora and fauna which function to fertilize the soil. Within one year after the fires, aspen trees were found growing on both the inside and the periphery of the peatlands [19]. Burned land can be used for cultivation of plantations, food crops, and vegetables [20]. In the case of Central Kalimantan, the peatlands were converted to agricultural land, but the project was discontinued because it failed to achieve its original goal of producing rice and the area underwent repeated fires, drainage and other socio-economic problems [21]. According to [22], the peatland restoration can be carried out with activities related to the 3R aspects, namely rewetting (wetting), revegetation (planting), and revitalization (efforts to maximize community economic resources). The conversion of burnt peat swamp forest to monocultures significantly reduces biodiversity [23]. The utilization of burnt peatlands for oil palm plantations contains only 23–31% of vertebrates and found 21–29% containing of invertebrates [24]. The utilization of degraded peatlands for monocultures has decreased in biodiversity and composition [25].

Peat land that has been burned will suffer a decrease in quality so that if it is only used for farming activities, especially food crops, the results will be less profitable. It is expected that the fire season will become more severe in the future and conventional fire management approaches may no longer be effective [26]. The alternative offered is by utilizing the peatland that was burned for the development of agrotourism based on community participation. In general, the community involvement activities are not easy, therefore it is necessary to conduct research related to public perceptions of the existence of burned land to be used as a location for agrotourism development. There are quite a lot of researches on public perceptions of a program or activity, but the perception of the existence of burned land to be used as a location for agrotourism development has never been investigated. This study aimed to analyze the public's perception of the existence of burned peatland as a location for agrotourism development by using four indicators, namely mechanisms, benefits, rights and obligations.

METHODS OF RESEARCH

The study was conducted on the people who live around the location of burned peatland which is used as a location for agrotourism development in Gelebak Dalam Village, Rambutan Subdistrict, Banyuasin District. This location was chosen purposively with the consideration that in that location there is burnt peatland that has been left untouched by the owner for a long time and is planned to be used as a location for agrotourism development in Banyuasin District.

The method used in this research was a survey method. The survey method was carried out to obtain data by distributing questionnaires, structured interviews and so on. The use of this method was intended to conduct direct and thorough observations. This method was applied by taking some samples from the population using questionnaires as a data collection instrument and direct interviews to respondents using the same list of questions to respondents. This method was used to obtain relevant information from a number of samples that represented a certain population.

The number of samples used the Slovin method with an error rate of 15% and obtained the number of samples as many as 30 people. The number of population of farmers was 100 people.

The collected data in this study were primary and secondary data. The primary data were obtained directly from the source while the secondary data were obtained from related agencies, literature studies related to this research in the form of thesis, and research journals.



The data obtained in the field through the results of direct interviews with respondents were then processed mathematically and statistically were presented in tabulation and then explained descriptively in the form of descriptions in the discussion.

Table 1 – Indicators and Statements for Assessment of public perception

Indicators	Statements (scoring)
Mechanism	Land restoration management regulations (1 – 5)
	Land management procedures (1 – 5)
	Socialization (1 – 5)
Benefits	Increase Income (1 – 5)
	Land Recovery (1 – 5)
Rights	Entitled to profit (1 – 5)
	Entitled to receive coaching and guidance (1 – 5)
Obligations	Obligation to form groups (1 – 5)
	Obligation to maintain plants (1 – 5)
	Obligation to maintain agrotourism facilities (1 – 5)

Source: Modification of Hariyadi's Research Results, 2018.

The data analysis method used a Likert scale, through the submission of questions presented in the form of a questionnaire, then the answers were given a score. According to Sugiyono in [27], the scale used to measure attitudes, opinions, and perceptions. The community's perception of the plan to use burned land for agrotourism development consisted of 4 indicators, namely mechanisms, benefits, rights and obligations [28].

To measure the class intervals, the following formula was used:

$$NR = NST - NSR$$

$$PI = NR : JIK$$

Where: NR = Value Range; NST = Highest Score; NSR = Lowest Score; JIK = Number of Class Intervals; PI = Interval Length.

The class interval total score used the following calculation:

$$NST = [10 \text{ statements} \times \text{highest weight (5)}] = 50$$

$$NSR = [10 \text{ statements} \times \text{lowest weight (1)}] = 10$$

$$JIK = 5, NR = NST - NSR \quad PI = NR : JIK = 8$$

For the class interval of each statement, the following calculations were used:

$$NST = [1 \text{ statements} \times \text{highest weight (5)}] = 5$$

$$NSR = [1 \text{ statements} \times \text{lowest weight (1)}] = 1$$

$$JIK = 5, NR = NST - NSR \quad PI = NR : JIK = 0,8$$

Based on the results of the calculations above, Table 2 shows the class interval values obtained for the total score and each statement.

Table 2 – Class Interval Values of Total Score Per Statement for public perception

No.	Class Interval (Per Indicator)	Class Interval (Per Statement)	Criteria
1	$10 \leq x \leq 18$	$1.0 \leq x \leq 1.8$	Very Poor
2	$19 \leq x \leq 26$	$1.9 \leq x \leq 2.6$	Poor
3	$27 \leq x \leq 34$	$2.7 \leq x \leq 3.4$	Fairly Good
4	$35 \leq x \leq 42$	$3.5 \leq x \leq 4.2$	Good
5	$43 \leq x \leq 50$	$4.3 \leq x \leq 5.0$	Very Good

For class intervals of each indicator of 5, the following calculations were used:

$$NST = [4 \text{ state} \times \text{highest weight (5)}] = 20$$

$$NSR = [4 \text{ state} \times \text{lowest weight (1)}] = 4$$

$$JIK = 5, NR = NST - NSR \quad PI = NR : JIK = 3,2$$



For class intervals of each indicator of 3, the following calculations were used:

$$\begin{aligned} \text{NST} &= [3 \text{ state} \times \text{highest weight (5)}] = 15 \\ \text{NSR} &= [3 \text{ state} \times \text{lowest weight (1)}] = 3 \\ \text{JIK} &= 5, \text{NR} = \text{NST} - \text{NSR} \text{ PI} = \text{NR} : \text{JIK} = 2,4 \end{aligned}$$

For class intervals of each indicator of 2, the following calculations were used:

$$\begin{aligned} \text{NST} &= [2 \text{ state} \times \text{highest weight (5)}] = 10 \\ \text{NSR} &= [2 \text{ state} \times \text{lowest weight (1)}] = 2 \\ \text{JIK} &= 5, \text{NR} = \text{NST} - \text{NSR} \text{ PI} = \text{NR} : \text{JIK} = 1,6 \end{aligned}$$

Based on the results of the above calculations, the class interval values were obtained to measure visitor ratings from the 4 indicators presented in Table 4 below.

Table 3 – Class Interval Values per Indicator for Public Perception

No.	Class Interval (Each Indicator of 3)	Class Interval (Each Indicator of 2)	Criteria
1	$3.0 \leq x \leq 5.4$	$2.0 \leq x \leq 3.6$	Very Poor
2	$5.5 \leq x \leq 7.8$	$3.7 \leq x \leq 5.2$	Poor
3	$7.9 \leq x \leq 10.2$	$5.3 \leq x \leq 6.8$	Fairly Good
4	$10.3 \leq x \leq 12.6$	$6.9 \leq x \leq 8.4$	Good
5	$12.7 \leq x \leq 15.0$	$8.5 \leq x \leq 10.0$	Very Good

RESULTS AND DISCUSSION

The assessment of the community's perspective on the use of burned land to be used as a location for agrotourism development in Gelebak Dalam Village, Rambutan Subdistrict, aims to find out the community perceptions or responses to the plan so that it can be taken into consideration for managers or the government in efforts to develop agrotourism in the Banyuasin District area. The assessment of community perceptions measured using four indicators, namely mechanisms, benefits, rights and obligations.

Table 4 – Total Score of Public Perception per Indicator

No.	Indicator	Score	Criteria
1	Mechanism	12.73	Very Good
2	Benefits	07.43	Good
3	Rights	06.33	Fairly Good
4	Obligations	11.23	Good
	Total	37.73	Good

Table 5 – Assessment Score of Community Perception on Mechanism Indicators

No.	Statements	Score	Criteria
1	Land restoration management regulations	4.53	Very Good
2	Land management procedures	4.53	Very Good
3	Socialization	3.67	Good
	Total	12.73	Very Good

Table 6 – Assessment of Public Perceptions on Rights Indicators

No.	Statements	Score	Criteria
1	Entitled to profit	3.03	Fairly Good
2	Entitled to receive coaching and guidance	3.30	Fairly Good
	Total	6.33	Fairly Good

The results of measuring people's perceptions of the existence of burned peatlands to be used as locations for agrotourism development were measured through four indicators, namely 37.73 with Good criteria (Table 4). Of the four indicators in the assessment of public



perception, it shows that the mechanism indicator has the highest score with very good criteria, while the Rights indicator has the lowest score with fairly good criteria.

This shows that in principle the community agrees and supports the plan to use their burned land to be used as a location for agrotourism development activities, rather than not being used. However, it needs clarity and definite guarantees related to the rights of the community later after the activity is carried out.

Table 7 – Score of Community Perception Assessment on Benefit Indicators

No.	Statements	Score	Criteria
1	Increase Income	3.87	Good
2	Land Recovery	3.57	Good
	Total	7.43	Good

Table 8 – Assessment of Public Perceptions of Obligation Indicators

No.	Statements	Score	Criteria
1	Obligation to form groups	3.63	Good
2	Obligation to maintain plants	3.77	Good
3	Obligation to maintain agrotourism facilities	3.83	Good
	Total	11.23	Good

The mechanism can be interpreted as a way to realize a goal or target that has been set, in this case the two parties between the government and the land owner, namely the community, have a goal of realizing the location of burned land to be used as one of the locations for agrotourism development in the Banyuasin Regency area. It is hoped that the mechanism of cooperation between the two parties can be carried out easily so that the implementation of activities can be realized immediately. The indicators of the cooperation mechanism were assessed from the three statements, namely regulations for land restoration management, land management procedures and socialization (Table 5).

The assessment of public perceptions of indicators of cooperation mechanisms in utilizing burned land to be used as locations for agrotourism development was judged from the three statements as having Very Good criteria. This shows that the mechanism implemented for the community is considered easy. However, there are several studies showing that the mechanism factor is still considered to be a constraint factor in every program implementation [29].

The assessment of the statement on land restoration management regulations has very good criteria. The research results showed that several communities or farmers admitted that the regulations related to the management of burnt land are very important to be used as a reference in managing burned land which will be used as a location for agrotourism development. This regulation needs to be guided and obeyed because if there is an error in managing the burned land, it is possible to violate the law. When referring to the applicable rules, it will help the success of the program so that its implementation can run smoothly. One of the regulations that can be used includes the Regional Regulation (*Perda*) Number 11 of 2012 concerning the Guidance of Swamp Control and Utilization. In addition, in the implementation, a written agreement will be made containing the commitment of both parties in managing agrotourism objects at the location of the activity.

The assessment of the statement regarding the procedures for managing fire-affected land has very good criteria. The information in the field states that most of the farmers have understood how to manage land on former peatlands, including the risks involved in farming on peatlands after fires. However, the community hopes that there will be some kind of coaching and guidance related to efforts to optimize the benefits of the existence of peatlands to improve the community's economy.

The assessment of statements about socialization activities carried out by the government or the initiator has good criteria. Based on the information in the field, it shows that the initiating party or the government, in this case the 044 Garuda Dempo Military Command, as the initiator and implementer, has attempted to carry out socialization activities



related to the planned activity to the community living around the area of Gelebak Dalam Village, Rambutan Subdistrict, Banyuasin District. The purpose of this socialization is to provide education as well as support and convince the community that this planned activity will later contribute to the community and local government, especially in advancing the tourism sector in Banyuasin Regency. However, according to some people, the socialization has not been able to run on a regular and scheduled basis so that there are still people who do not fully understand the plan.

Benefits refer to outputs and/or outcomes resulting from an activity that has a positive value. The idea of utilizing burned land to be used as a location for agrotourism development is expected to provide positive benefits for all parties involved. The benefit indicators were assessed with two statements, namely benefits in increasing income and benefits for recovering land after fires (Table 7).

The total score for assessing community perceptions of the benefits indicators for the planned use of burnt peatlands to serve as locations for agrotourism development, which is measured using two statements, has the criteria of Fairly Good. This shows that the benefits of this activity plan are considered by the community to be good. Likewise, the results of research [30], show the same thing that one of the high level of interests is due to the economic and ecological benefits that will be felt by the surrounding community.

The assessment of the statement on increasing income has good criteria. The community considers that the existence of a plan to use burned peatlands for agrotourism development locations will contribute to increasing income both for the local government and for the surrounding community. According to the results of the research in the field, it is stated that most of the respondents felt confident that this planned activity would have a positive impact on the economy, especially in terms of increasing the income of the surrounding community. The improvement in the community's economy will include job opportunities and business opportunities such as food stalls, parking services, motorcycle taxi services, tour guide services, and others.

The assessment of the statement on land restoration has good criteria. Some people think that the use of burned land as a location for agrotourism development, they will be able to restore land at the same time. It is conceivable that if the burnt land is left for too long then the land will become idle land that has no economic value. In addition to the economic benefits, with the existence of agrotourism activities, several types of plants will be planted which will certainly be beneficial for the restoration of the physical properties of the land. Planting with various types of plants or plants will have a direct impact on increasing soil fertility.

Rights can be interpreted as something that must be obtained by someone from an agreed commitment; in this case the community is entitled to a positive impact related to the construction of agrotourism facilities around their settlements. The public's perception of rights indicators can be seen from two statements, namely the statement that they are entitled to the profits earned and to receive guidance and guidance from third parties.

The total score of the assessment of community perceptions on indicators of community rights towards the existence of a plan to use burnt peatlands to serve as locations for agrotourism development as measured using two statements has the criteria of Good Enough. This shows that basically the community's right to cooperate to build and manage agrotourism is considered quite low. In principle, transparency and participation are important requirements for a community-based approach [31].

The assessment of statements related to the community entitled to profit results has fairly good criteria. This shows that the community quite understands the profit sharing that will be agreed upon. There are certain mechanisms to be applied, including using the profit-sharing method in the form of money or production results. In principle, the people who own the land do not object to the agreements and commitments made regarding the distribution of profits from the results of agrotourism activities in their area. Even though they have concerns or are not fully convinced that the community's rights to the profits can be fully accepted. This can happen if there is a lack of supervision, transparency, mistrust, or other conflicts.



The assessment of the statement regarding the right to receive coaching and guidance has fairly good criteria. The second statement is the right to receive coaching and guidance from certain parties, including the guidance from the field extension officers (*PPL*). This can be interpreted that in addition to obtaining benefits from the financial side and production results, the community, especially the farmers who own land, hope for coaching and guidance from other parties who will assist in advancing agrotourism objects in Gelebak Dalam Village, Rambutan Subdistrict, Banyuasin District.

Obligations can be interpreted as everything that must be carried out and in this case are obligations that must be carried out by the community in general, especially for the people who own burned land. The community's perception of the obligation indicators in this study can be measured by the three statements of attitudes from the respondents, namely the obligation to form groups, the obligation to maintain plants and the obligation to participate in maintaining agrotourism facilities (Table 8).

The total score for assessing community perceptions of the indicators of community obligations towards the planned use of burnt peatlands to serve as locations for agrotourism development measured by the three statements has Good criteria. This shows that the commitment of the community in the effort to maintain and maintain the existence of the agrotourism arena is good.

The first statement related to the obligations to form farmer groups has good criteria. This is based on the results of research that the community agrees and supports the formation of groups so that there is cooperation so that it will facilitate and help ease the work.

The second statement is related to the obligations to participate in maintaining the cultivated plants that have good criteria. Based on the findings in the field, most of the people stated that they were willing to participate in maintaining the plants that will be cultivated in the agrotourism area. Plant maintenance includes planting, fertilizing, controlling pests and diseases and participating in harvesting activities.

The third statement related to the community's obligation to be able to participate in maintaining all agrotourism facilities has good criteria. This can be interpreted that in principle, the community, especially the owners of the land after fires, are willing and have a strong commitment to jointly protect the facilities or infrastructure in the agrotourism area from disturbance and the ignorant hands of others. The plan is to technically maintain the location of agrotourism by dividing or making shift schedules consisting of several groups so that it is expected to lighten work and not interfere with the main work of the community.

CONCLUSION

The perspective on the use of burned land to be used as a location for community-based agrotourism development as a whole has good criteria. This shows that the majority of the community agrees and supports the planned activity so that it can be realized immediately considering that there is a need for certainty regarding the rights of the people involved in the activity. In the four indicators there are several differences in the assessment of each indicator, where the indicator of the cooperation mechanism is in the very good category, the benefit indicator is in the good category, the community rights indicator is in the fairly good category and the obligation indicator is in the good category. However, it is necessary to conduct a kind of feasibility study (FS) to find out the economic feasibility to run based on the objectives.

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