

The Role of Community in Land Fire Prevention Efforts in Liang Anggang District, Banjarbaru City

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ABSTRACT

This study aims to determine the role of the community in preventing land fires in Liang Anggang District. This research uses a quantitative descriptive method. The population in this study were all people in Liang Anggang District, Banjarbaru City, based on the total number of heads of families, namely 11599 people. The sample used in this study is random sampling. The sample calculation using the Krejcie and Morgan formula obtained a sample of 371 household heads. Data processing is done by editing, scoring and tabulation which will be analyzed using percentages. The role of the community in efforts to prevent land fires which is mostly carried out is cleaning the triggering fire on the surface land, namely 36.33%, paying attention to the burning time of 35.33%, firebreaking 29.67%, and controlled burning 6%.

Keywords: Community participation, prevention efforts, land fire.

1. INTRODUCTION

Forest and land fires often occur in Indonesia, including in South Kalimantan. Forest and land fires that occurred in South Kalimantan were quite large due to the existing condition of the area, most of which were forest and peatland areas that were flammable [1]. The area in South

Kalimantan Province where fires often occur is Banjarbaru City, which is also there Syamsudin Noor International Airport, located on the Ulin Runway, Banjarbaru City, South Kalimantan is the main airport located between peatlands with several hotspots of fires. Distribution of hotspots in Banjarbaru are presented in Table 1.

Table 1 Distribution Point Hotspot in Banjarbaru Year 2015-2018

No	Banjarbaru	Titik Panas (Hotspot)				Total
		2015	2016	2017	2018	
1	Banjarbaru Selatan	1	1	0	0	2
2	Banjarbaru Utara	2	2	2	1	7
3	Cempaka	7	0	0	5	12
4	Landasan Ulin	34	0	1	36	71
5	Liang Anggang	77	0	11	44	132
Total		121	3	14	86	224

Source: BMKG, 2015-2018, Secondary Data Processing, Results, 2018

Based on table 1 most hotspots are located in Liang Anggang District compared to other Districts. Liang Anggang District is an area prone to fire disasters in South Kalimantan. The existing condition of the area, which is mostly forest and peatland areas that are flammable [2]. Liang Anggang District is also a sub-district which is located close to the Syamsudin Noor airport however smoke from land or forest fires can disrupt and endanger flights and navigation.

Land fires in Liang Anggang District occur during the dry season. Land fires cause various losses, so community participation is needed in fire prevention efforts to reduce or avoid land fires. Researchers are interested in conducting

research on community participation in efforts to prevent land fires in Liang Anggang District. The causes of forest and land fires are agricultural activities, road access and climate. The closer to the road network, the greater the intensity or number of fire occurrences, and the tendency of forest and land fires to be random from time to time due to the clearing of new lands for agricultural purposes [3]. The impact of smoke on the environment can vary from being local, that is, blocking the view to allowing global climate warming. The bad impacts that occur due to land fires cover various sectors of life, ranging from disruption of people's daily lives, transportation barriers, ecological damage, decreased levels of tourism visits, and health problems [4].

Based on Zulkifli [5] research, efforts made for fire prevention include preventive, early suppression, extension by involving the community and providing warning boards about fire hazards in locations prone to fire. So, this study aims to determine the role of the community in preventing land fires in Liang Anggang District

2. RESEARCH LOCATION

The location area is in Liang Anggang District, administratively located in the City of Banjarbaru, South Kalimantan Province. The astronomical location of Liang Anggang District is between 30 27 '5 "South Latitude and 1140 45' 0" East Longitude. The geographic location of

Liang Anggang District is administratively bordered by the following areas:

- 1) North : Banjar Regency
- 2) South : Tanah Laut Regency
- 3) West : Banjar Regency
- 4) East : Landasan Ulin District.

Land use in the Liang Anggang District area consists of 11 land uses, namely forest, industrial, mixed gardens, settlements, mining, animal husbandry, shrubs and reeds, grass and swamps, vacant land, moor and fields, and water bodies. Land uses that often occur in fires are forest, moor, and vacant land. Land use in Liang Anggang District is presented in the following table and figure.

Table 2 Landuse in Liang Anggang

No	Land Use	Large (ha)	Percentage (%)
1	forest	1376,93	14,64
2	Industrial	125,3180461	1,33
3	mixed gardens	25,71836925	0,27
4	settlements	423,9318039	4,50
5	mining	191,8965032	2,04
6	animal husbandry	0,755218022	0,08
7	shrubs and reeds	594,6478584	6,32
8	grass and swamps	5051,659227	53,72
9	vacant land	910,5404256	9,68
10	moor and fields	635,4902026	6,75
11	Water bodies	66,48848135	0,70
Jumlah		9403,376135	100

Source: Results of Land Use Map Processing and Analysis in Bappeda, 2019

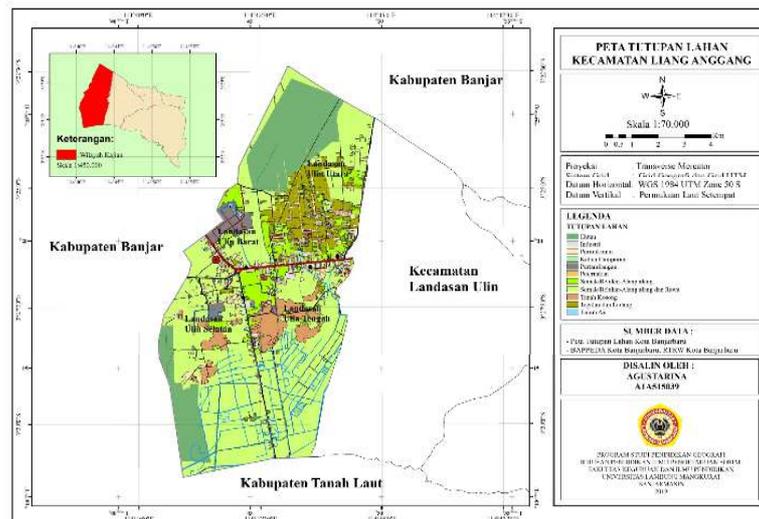


Figure 1 Map of Land Use In Liang Anggang

3. METHOD

The method uses quantitative descriptive. The population in this study were all people in Liang Anggang Subdistrict, Banjarbaru City, based on the total number of family heads, namely 11599 people. The sample used in this study is random sampling technique. The sample calculation using the Krejcie and Morgan formula obtained a sample of 371 household heads. Data processing is done by editing, scoring and tabulation which will be analyzed using percentages.

4. RESULTS AND DISCUSSION

Community participation in efforts to prevent fires in the District Liang Anggang Banjarbaru City are as follows:

4.1 Insulation Fuel

Fuelbreaks is a track prevention / planting spreading of fire in the event of forest fires. The purpose of making firebreaks is to prevent / block fires from spreading more widely to fuel/other areas [6].

Firebreaks are one way to prevent the spread of a wider fire. The number of respondents who made firebreaks in Liang Anggang District are as follows:

Table 3 Making Firebreaks Burning

No	Breakers	Number of Respondents	Yes		No	
			Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	Making Green Line Burn Block	371	74	20	297	80
2	Making Yellow Line Firebreaks	371	102	28	269	72
3	Firebreaks Can Prevent Fire Spread	371	151	41	220	59
Total				89		211
Average				29.67		70.33

Respondents who make firebreaks as an effort to prevent land fires are 29.67%. Respondents who make firebreaks are respondents who work as farmers, with the aim of securing agricultural land or plantations if at any time there is a fire, igniting the fire does not spread to agricultural and plantation areas.

The firebreaks made by the respondents were the green line firebreaks and the yellow line firebreaks. The green line firebreaks made by the respondents are refractory plants such as bananas. Yellow line firebreaks are lines or ditches made in a simple way.

4.2 Cleaning Fuel (Fire Triggers) on the Surface of the Stand / Land

Cleaning fuel aims to reduce the number of triggers for fires, so that when a forest fire occurs, the size of the flames, the speed of propagation and the duration of the fire can be reduced. The fuels that are normally reduced such as surface fuels which include light fuels, in the form of understorey, litter and felling.

The fuel comes from various components of vegetation, both living and dead. These components are shrubs, grass, trees or stands, and remains of exploitation or wood waste [7].

Litter is dead material, lies above the soil surface and undergoes decomposition and mineralization, which includes litter components such as leaves, twigs, small branches, bark, flowers and fruit. Cleaning fuel (trigger fires) on the surface of stands / land in Liang Anggang District as follows:

Table 4 Cleaning Fuel

No	Trigger) on Stand / Land Surface Cleaning Fuel (Fire Trigger) on Stand / Land Surface	Number of Respondents	Yes		No	
			Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	Weed eradication	371	211	57	160	43
2	Cleaning litter	371	90	24	281	76
3	Routine cleaning of land	371	105	28	266	72
Total				109		191
Average				36.33		63.67

Respondents who clean up fuel (trigger fires) on the surface of the stands / land are 36.33%. Respondents who clean up fuel (trigger fires) are mainly respondents who own land. The cleaning of fuel (fire triggers) carried out by the community is by cleaning weeds which can trigger fires, cleaning litter in the form of dry leaves or twigs. People who often do land clearing are people who own land for the purpose of clearing the garden.

4.3 Controlled Controlled

Burning is carried out to reduce the high level of fuel on the forest floor due to the slow decomposition of litter [8]. Controlled combustion is carried out with the intention of cleaning up waste or fuel that is slow to decompose. Controlled burning carried out by the community in Liang Anggang District can be seen in Table 5.

Table 5 Controlled Burning

No	Burning	Number of Respondents	Yes		No	
			Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	Controlled Burning	371	22	6	349	94
2	Burning was carried out until the fire was completely extinguished	371	22	6	349	94
3	Burning is carried out on a small scale	371	22	6	349	94
Total				18		282
Average				6		94

Controlled burning carried out by respondents is limited to cleaning up rubbish that is difficult to decompose on a small scale and burning until the fire is really it's gone. The number of respondents who performed controlled burning was 6%. Controlled burning was carried out by respondents who owned agricultural land and gardens with the aim of clearing the land.

4.4 Paying attention to the burning

Time choosing the time of burning is seeing the environmental conditions when burning. The timing of combustion is to see the environmental conditions at the time of burning. Land burning is not carried out during the dry season because it will have the potential to cause land / forest fires. Burning the land should be done in the morning or evening. Usually during the day it is hotter and the fire is easily spread with the stronger the wind [9]. Paying attention to the burning time carried out by the people of Liang Anggang District as follows:

Table 6 Noting Burning Time

No	Noting Burning Time	Number of Respondents	Yes		No	
			Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	Do not burn land during the dry season	371	371	100	0	0
2	The burning was carried out in the morning	371	5	1	366	99
3	The burning was carried out in the afternoon	371	17	5	254	95
Total				106		194
Average				35.33		64.67

Percentage of respondents' answers Paying attention to burning time 35.33%. Land burning is not carried out during the dry season because it will have the potential to cause land / forest fires. All respondents answered no to the question of not burning land during the dry season (see Table 6). Land burning during the dry season is not carried out because there is already a prohibition against burning land, especially during the dry season. Respondents who burned land in the morning and evening were cleaning the garden and burning was also done on a

small scale and could not cause fires because they were given good attention.

The role of the community is in addition to the four roles studied, namely forming a fire-care community (MPA) and processing vacant land into agricultural areas. The people who care about fire in Liang Anggang District are still not fully functioning because the number of people who are members of the community groups who care about fire is small. The community cultivates empty land into agricultural land. The area that was originally an area where

land fires often occurred was reduced when it was managed by the community as agricultural land.

5. CONCLUSION AND SUGGESTIONS

Community participation in efforts to prevent land fires in Liang Anggang District is mostly done by cleaning the fuel (which triggers fire) on the surface of the stands/land, namely 36.33%, Paying attention to burning time 35.33%, fire breaking 29.67%, 6% controlled combustion.

The role of the community is in addition to the four roles studied, namely forming a fire-care community (MPA) and processing vacant land into agricultural areas. The community that cares about fire in Liang Anggang District is still not fully functioning because the number of people who are members of the community who care about fire is small. There needs to be special attention to the surrounding environment, especially during the dry season and socialization and cooperation between the government and the community must be well established to foster awareness of the surrounding environment. Collaboration can be carried out by jointly clearing land prone to fire and protecting the surrounding environment.

REFERENCES

- [1] Muhammad Ainul Haris et al, "Identification of Vulnerability Factors to Forest and Land Fires in Cintapuri Darussalam District, Banjar Regency," *JPG (Journal Geogr. Educ., 2017.*
- [2] R. N. Latifah, "Identification of Vulnerability Factors to Forest and Land Fire Disaster in Liang Anggang District, Banjarbaru City," *Tech. J.*, vol. 2, no. 2, 2013.
- [3] M. Aryadi, T. Satriadi, and Syam'ani, "Kecenderungan Kebakaran Hutan dan Lahan dan Alternatif Pengendalian Berbasis Kemitraan di PT. Inhutani II Kotabaru," *J. Hutan Trop.*, vol. 5, no. 3, pp. 222–235, 2017, [Online]. Available: <http://nasional>.
- [4] Erwan HH, *Persepsi dan Peran Serta Masyarakat dalam penanggulangan kebakaran hutan dan lahan*. Yogyakarta: Fakultas Kehutanan, Universitas Gadjah Mada, 2011.
- [5] Zulkifli, Ismail, and L. Kamarubayana, "Studi Pengendalian Kebakaran Hutan Di Wilayah Kelurahan Merdeka Kecamatan Samboja Kalimantan Timur," *Agrifor*, vol. 16, no. 1, pp. 141–150, 2017.
- [6] Laula Syaufina et al, "Potential of *Jathropa curcas* Linn as a fuel barrier in terms of speed of decomposition," *J. Trop. Silv.*, vol. 2, no. 1, pp. 1–4, 2011.
- [7] B. Purbowaseso, *Forest Fire Control An Introduction*. Jakarta: Rineka Cipta, 2004.
- [8] B. H. Saharjo, "Alternatif dalam Pencegahan Kebakaran Hutan di Hutan Tanaman Acacia mangium Prescribed Burning as an Alternative Method for Preventing Forest Fire in Acacia mangium forest plantation," *J. Manaj. Hutan Trop.*, vol. 5, no. 1, pp. 67–75, 1999.
- [9] N. Rachmawati, "Community Efforts to Prevent Fire During Land Clearing in Gunung Sari Village, Pulau Laut Utara District, Kotabaru Regency," *Enviro Sci.*, 2012.