

# Forest fires in Kalimantan: study case Central Kalimantan

NETHANYA FRIGIANT SULUH ADJI<sup>1\*</sup>

<sup>1</sup> Environmental Engineering Study Program, Faculty of Engineering, President University, Bekasi, 17550, Indonesia;

\*Correspondence: nethanyafrigia@gmail.com

Received Date: December 27, 2024

Accepted Date: February 12, 2024

## ABSTRACT

**Background:** Forest fires are a serious problem that occurs frequently in Indonesia, particularly in the Kalimantan region. These fires not only damage forest ecosystems, but also disrupt public health and economic activities. This study aims to identify the main sources of forest fires in Central Kalimantan and to evaluate the effectiveness of law enforcement on forest fires. **Methods:** A qualitative approach was used in this research with two main data collection methods: literature review and case study. The literature review was conducted to understand the context of forest fires and existing regulations, while the case study was conducted in the Mawas region of Central Kalimantan to gather empirical data from local communities' experiences of fire causes and law enforcement. **Results:** Based on the data collected, the main source of forest fires in Central Kalimantan is the activities of field farmers and fishermen. The table shows the percentage of respondents in the five villages who identified different sources of fires, with smallholder farmers and fishermen being the largest contributors. Although there are regulations governing the use of fire, law enforcement is still very weak, as evidenced by the lack of legal action against violators. **Conclusion:** Forest fires in Central Kalimantan are mostly caused by human activities, especially by farmers and fishermen. Although there are regulations in place, enforcement of the laws has not proven effective in preventing forest fires. The government needs to make more determined and systematic efforts to raise public awareness and improve compliance and strengthen law enforcement to reduce the frequency of forest fires in the future.

**KEYWORDS:** environmental law; environmental; fire; forest; law.

## 1. Introduction

According to Law number 41 of 1999 concerning forestry, forest is an ecosystem unit in the form of a stretch of land containing biological natural resources which is dominated by trees in the natural environment, which cannot be separated from one another (Rahmawaty & Pertanian, 2004). Based on this definition, it is redefined that the forest has several elements, namely an ecosystem unit, in the form of a stretch of land, containing biological natural resources and their natural environment that cannot be separated from one another and are able to provide sustainable benefits so that the existence of forests as a global sub-ecosystem places fish in the position of important as the lungs of the world (Zain, 1996). As a component of the country's natural resources, forests are significant for a variety of social and environmental development purposes. International consensus has been reached that forests, which are vital to life as we know it, ought to be supported and shielded from activities that devastate ecosystems. Forests have various benefits for life. The benefits of the forest are obtained if the existence of the forest is guaranteed so that it can function optimally. The ecological, economic and social

### Cite This Article:

Adji, N. F. S. (2024). Forest fires in Kalimantan: study case Central Kalimantan. *Mangrove Watch*, 1(1), 1-6.  
<https://doi.org/10.61511/mangrove.v1i1.2024.655>

**Copyright:** © 2024 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).



functions of forests will provide a real role if the management of natural resources in the form of forests is in line with conservation efforts in order to realize sustainable development. Forests in Indonesia, especially West Kalimantan, are also currently widely used as protected forests. The participation of managers in a sporting, open and law-based manner is very important to uphold the law's mandate by carrying out forest management based on environmental protection and management, prioritizing the prosperity of the people by paying attention to environmental sustainability (Putra, 2020).

Forest fires are a phenomenon that often occurs in Indonesia (Agustiar, et al., 2020). Forest and land fires occur due to 2 (two) main factors, namely natural factors and uncontrolled human activities. El Nino's influence is one of the natural processes that results in a lengthy drought that dries out the plants. If sparks from coal that appears on the surface or from other burnings, whether deliberate or accidental, come into contact with dried plants, they could become potential fuels. This causes ground fires and surface fires (Rasyid, F. 2014). The biggest factor that plays a major role or the main key in forest destruction in Indonesia is the political, legal and economic system in Indonesia which is very weak, so that many still think that forest resources are a source of income that can be exploited for political and personal gain. Supposedly, based on the reason that Indonesia is one of the owners of the largest remaining tropical rain forests on this earth, then Indonesia should be diplomatically challenged to be able to prevent illegal logging and forest burning (Lestari, et al., 2015). Making bonfires in the forest and leaving the embers unattended are examples of human activities that contribute to forest and land fires. the existence of unregulated slash-slash-and-burn land clearing operations, mostly done by HTI businesses and temporary or permanent growers. purposeful burning to create a hunting or grazing area, irresponsibly discarding lit cigarette butts, and using machinery or equipment that sparks fires (Gellert, 1998). The participation of the government to continuously monitor and provide legal protection for forests is very much needed to deal with elements who act arbitrarily and are not environmentally friendly, such as burning in the forest land clearing method. This is considered detrimental because impacts such as smoke and various other impacts make the people of Kalimantan often complain because their environmental forest land continues to decrease and the granting of Forest Tenure Rights (HPH) granted by the authorities to companies is sometimes even misused so that this is precisely what happened. become the core of the problem (Saputro, et al., 2021).

Forest fires are not new, in Kalimantan forest fires have occurred since the 17th century (Baber & Schweithelm, 2000), (Bowen, et al., 2001). The most visible impacts of forest fires are disturbing the health and transportation systems of land, sea and air (Cahyono, et al., 2015), damage to forest land and vegetation (Liew, et al., 1998), changes in the composition of forest ecosystems (Chuvieco, et al., 2009), and plant physiology (Tacconi, L., 2003). Based on the main impacts that have been mentioned, law enforcement must also be carried out in such a way because it is related to the applicable laws and regulations. Constitutionally, it is contained in Article 28 letter h paragraph 1 which reads "everyone lives in physical and spiritual prosperity, has a place to live and has a good and healthy living environment and obtains health services" and Article 33 paragraph 3 which reads "Earth and water and wealth The nature contained therein is controlled by the state and used for the greatest prosperity of the people". Article 28 states that every citizen has the right to a good and healthy environment, environmental law enforcement is an instrument to create a good and healthy environment. With this forest fire, the government is obliged to enforce the law as much as possible because it robs the people of a good and healthy living environment in accordance with the mandate of the 1945 Constitution. In addition, Law Number 32 of 2009 concerning Environmental Protection and Management regulates sanctions to parties those proven to have violated the law enforcement in the environmental field can be classified into 3 (three) categories, namely: 1). Enforcement of Environmental law in relation to Administrative Law / State Administration, 2). Enforcement of Environmental Law in relation to Civil Law, 3). Enforcement of Environmental Law in relation to Criminal Law (Pasai, M., 2020).

The purpose of this literature review is to inform readers that there are problems regarding forests, namely fires that often occur on the island of Kalimantan. Besides that, you can also learn from where the source of the fire that caused the fire was as well as the response of the local government regarding law enforcement

## 2. Methods

In this study using qualitative research. Qualitative research is a kind of study that collects descriptive data from people in the form of written or spoken words, as well as observed behavior, to provide a complete picture of the subject from a human perspective. Qualitative research deals with an individual's thoughts, perceptions, attitudes or beliefs, which cannot be assessed in any way. Accuracy and accuracy of the data is needed in the data collection approach so that further research becomes quality research and can be accounted for for its validity (Kasiram, 2008). There are two data collection approaches used in this study:

### 2.1 Literature review

The process of gathering data usually begins with gathering information on the research problem. A review of the relevant literature and conversation with specialists can provide this knowledge. Through these efforts, the researcher strives to grasp the research problem, as well as the roles, concepts, and variables employed by other researchers in previous studies of similar topics, as well as the hypotheses that have been tested.

### 2.2 Case studies

In the data presented, one source of the causes of fires and the response of the community in the context of controlling peat forest fires is in the Mawas Area of Central Kalimantan. The data presented are in the form of sources of land fires and community experiences regarding fire law enforcement.

## 3. Results and Discussion

Sources of fire that occur must have a source, as in the table below where there are fires originating from various sources such as field farmers, fish catchers, woodworkers, gold miners, rattan farmers, boat craftsmen, NTFP seekers, freelancers and smokers. The average results of fire sources in the 5 regions have been summarized in table 1.

Table 1. Average results of fire sources in 5 regions

No	Source of fire	Number of respondents (%) in 5 villages				
		Mantangai hilir	Kutunjung	Lawang kajang	Madara	Batampang
1	Farmer of the field	100	95.8	100	100	56.2
2	Fisherman	56.2	66.7	62.5	52.1	82.2
3	Woodworker	0	0	4.2	0	10.4
4	Gold panners	0	0	4.2	0	0
5	Rattan farmer	0	4.2	0	0	37.5
6	Boat craftsmen	4.2	0	0	0	4.2
7	HHBK seeker	10.4	4.2	0	0	8.7

8	Free-range livestock farmer	0	0	0	0	0
9	Smokers	4.79	0	0	0	0

This statement is the result of the experiences they experienced firsthand while living in their village. Fishermen or fish fishermen generate a source of fire when they clean beje ponds and often use fire to cook the caught fish. In the dry season when the swamp water recedes, the cleaning activities of the beje are almost routine. Efforts to facilitate the search for beje-beje usually fish seekers clean the vegetation of grass and shrubs by burning. And fire is usually used to clear land after it is cut. Most of the burning actions are carried out when new fields are cleared from the rest of the forest or shrubs. The average population is disciplined in terms of burning, but there are also those who are still often negligent, causing wild fires. The local wisdom of land clearing that is applied by some residents is that the plants are cut first, which are then laid down and collected in the middle of the field, cleaned of firebreaks, and then burned. After burning, it is continued with controlling and extinguishing the residual fire. Thus for the last resort there will be no wildfire.

Based on the rotation system, after the field is cleared from the thickets, the field can only be used between 3-4 years. Then after that they moved to other places that were still thick and fertile and fields that had long been planted with rubber (*Hevea Braziliensis*). This behavior has similarities with rotational shifting cultivation in dry land in NTT (Foenay, 1999), the difference is only in the type of land, cultivators in NTT do it on sloping land.

4. Conclusions

Based on the literature review that has been carried out in the form of this journal, it can be concluded that forest fires in Kalimantan, especially in the Central Kalimantan area, have several main sources of fire and the highest is sourced from the activities of field farmers and fishing. The government itself already has a legal basis for people who already know about the regulation but still violate it. However, law enforcement regarding forest fires is still very weak, as evidenced by the fact that no one has been arrested or advised when caught committing such violations.

Acknowledgement

I would like to say thank you so much for God almighty for his blessings and help so I can finished this journal. I also want to thank all of people behind this journal especially Ma'am Yunita Ismail Masjid that have become our advisor and also our lecturer on this subject for always give me advice and suggestion to make this journal. Last word, this journal far from perfect things, but hopefully this journal can give a benefit for all of you.

Author Contribution

All authors fully contributed to the writing of this article

Funding

This research does not use external funding.

Ethical Review Board Statement

Not applicable.

**Informed Consent Statement**

Not applicable.

**Data Availability Statement**

Not applicable.

**Conflicts of Interest**

The authors declare no conflict of interest.

**Open Access**

©2024. The author(s). This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The images or other third-party material in this article are included in the article's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit: <http://creativecommons.org/licenses/by/4.0/>

**References**

- Karakteristik penelitian kuantitatif adalah sebagai berikut (Nana Sudjana dan Ibrahim, 2001: 6-7; Suharsimi Arikunto, 2002 : 11; Johnson, 2005; dan Kasiram 2008: 149-150)
- Rahmawaty, S., & Pertanian, M. F. (2004). Hutan: Fungsi dan peranannya bagi masyarakat. Program Ilmu Kehutanan. Universitas Sumatera Utara.
- Zain, AS. 1996. Hukum lingkungan Konservasi Hutan. Penerbit Rineka Cipta. Jakarta.
- Putra, R. A., & Waluyo, W. (2020). Efektivitas Balai Kesatuan Pengelolaan Hutan Dalam Pemanfaatan Wisata Pada Hutan Lindung. *Jurnal Discretie*, 1(3), 179-192. <https://doi.org/10.20961/jd.v1i3.50264>
- Rasyid, F. (2014). Permasalahan dan dampak kebakaran hutan. *Jurnal Lingkar Widyaiswara*, 1(4), 47-59.
- Lestari, S., Kotani, K., & Kakinaka, M. (2015). Enhancing voluntary participation in community collaborative forest management: A case of Central Java, Indonesia. *Journal of Environmental Management*, 150, 299-309. <http://dx.doi.org/10.1016/j.jenvman.2014.10.009>
- Gellert, P.K. 1998. A brief history and analysis of Indonesia's forest fire crisis. Southeast Asia Program Publications at Cornell University. Indonesia, vol 65: 63—85
- Agustiar, A. B., Mustajib, M., Amin, F., & Hidayatullah, A. F. (2020). Kebakaran hutan dan lahan perspektif etika lingkungan. *Profetika: Jurnal Studi Islam*, 20(2), 124-132. <http://dx.doi.org/10.23917/profetika.v20i2.9949>
- Saputro, J. G. J., Handayani, I. G. A. K. R., & Najicha, F. U. (2021). Analisis Upaya Penegakan Hukum Dan Pengawasan Mengenai Kebakaran Hutan Di Kalimantan Barat. *Jurnal Manajemen Bencana (JMB)*, 7(1). <https://doi.org/10.33172/jmb.v7i1.692>
- Barber, C.V dan Schweithelm, J. 2000. Trial by fire: forest fires and forestry policy in Indonesias era of crisis and reform. World Resources Institute. Washington. 76 hal
- Bowen, M.R., Bompard, J.M., Anderson, I.P., Guizol, P., Gouyon, A. 2001. Anthropogenic fires in Indonesia: a view from Sumatra. Dalam Peter, E., Radojevic, M. (Eds.), *Forest fires and*

- regional haze in Southeast Asia. Nova Science Publishers, Huntington, New York, pp. 41–66.
- Cahyono, S. A., Warsito, S. P., Andayani, W., & Darwanto, D. H. (2015). Faktor-faktor yang mempengaruhi kebakaran hutan di Indonesia dan implikasi kebijakannya. *Jurnal Sylva Lestari*, 3(1), 103-112. <http://dx.doi.org/10.23960/jsl13103-112>
- Liew SC, Lim OK, Kwoh LK, Lim H. 1998. A study of the 1997 forest fire in South East Asia using SPOT quicklook mosaics. *Geoscience and Remote Sensing Symposium Proceedings. IEEE International*. 2:879-881.
- Chuvieco E, Aguado I, Yebra M., Nieto H, Salas J, Martin MP, Vilar L, Martinez J, Martin S, Ibarra P, Riva JDL, Baeza J, Rodriguez F, Molina RJ, Herrera MA, Zamora R. 2009. Development of a framework for fire risk assessment using remote sensing and geographic information system technologies. *Ecological Modelling*. 221(2010):46-58. <https://doi.org/10.1016/j.ecolmodel.2008.11.017>
- Undang-Undang Dasar 1945
- Undang-undang Nomor 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup
- Tacconi, L. (2003). Kebakaran hutan di Indonesia: penyebab, biaya dan implikasi kebijakan.
- Pasai, M. (2020). Dampak kebakaran hutan dan penegakan hukum. *Jurnal Pahlawan*, 3(1), 36-46. [23] Qodriyatun, S. N. (2014). Kebijakan penanganan kebakaran hutan dan lahan. *Pengolahan Data dan Informasi (P3DI) Setjen DPR RI*. Jakarta.

### Biographies of Author(s)

**NETHANYA FRIGIANT SULUH ADJI**, Environmental Engineering Study Program, Faculty of Engineering, President University

- Email: nethanyafrigia@gmail.com
- ORCID:
- Web of Science ResearcherID:
- Scopus Author ID:
- Homepage: