


## Analysis of the Effectiveness of the Active Role of Communities in Management and Prevention of Forest and Land Fires

Ade Irwan Cahyadi<sup>1\*</sup>, Edison Sembiring<sup>2</sup>, Soehatman Ramli<sup>3</sup>

<sup>1,2,3</sup>Department of Master of Management, Universitas Sahid, Jakarta

Article Info	ABSTRACT
<p><b>Keywords:</b> Community, participation, burning, land, forest.</p>	<p>The South Sumatra Provincial Government encourages community participation in preventing and controlling land and forest fires. Based on this reality, this research aims to find the root of the problem and the factors causing ineffective community participation in preventing and controlling land fires. This type of research is descriptive. The main data in this research was obtained through interviews with sources who know and are involved in efforts to prevent and control land fires and are supported by data from field observation activities. The collected data was then analyzed using triangulation techniques. Selection of policy alternatives in efforts to handle land fires using SWOT analysis. The results of the research show: (1) The frequent occurrence of land fires in Muara Merang Village, Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province is due to the fact that land is still being prepared by burning it, especially for agricultural activities. seasonal food crops; The land fire that occurred in Muara Merang Village, Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province was a fire on agricultural land that was left empty, (2) efforts were made to prevent land fires through controlled burning, the establishment of village regulations and community agreements which have proven to be effective preventing land fires; efforts to control land fires have been carried out by the community spontaneously and in mutual cooperation by prioritizing land that has economic potential; So far, community involvement carried out by the government through the formation of Fire Care Groups has not been effective because it is still a formality.</p>
<p>This is an open access article under the <a href="https://creativecommons.org/licenses/by-nc/4.0/">CC BY-NC</a> license</p> 	<p><b>Corresponding Author:</b> Ade Irwan Cahyadi Universitas Sahid Jakarta Jl. Prof. DR. Soepomo No.84 7, RT.7/RW.1, Menteng Dalam, Kec. Tebet, Kota Jakarta Selatan <a href="mailto:adeirwan.cahyadi1978@gmail.com">adeirwan.cahyadi1978@gmail.com</a></p>

### INTRODUCTION

South Sumatra Province is geographically located at 1–4° South Latitude and 102–106° East Longitude, with an area of 87,017.41 km<sup>2</sup>. The capital of South Sumatra is the city of Palembang, and in 2021, the population of this province will be 8,550,849 people. Administratively, South Sumatra consists of 13 (thirteen) Regency Governments and 4 (four) City Governments, with Palembang as the provincial capital. District and city governments supervise sub-district and village or sub-district governments. South Sumatra has 13 districts, four municipalities, 212 sub-districts, 354 sub-districts and 2,589 villages.

Every year, during the dry season, most of South Sumatra is always shrouded in smoke haze originating from land-burning activities or forest and land fires. The resulting haze does not only impact reducing air quality at the local level. South Sumatra also contributes to the decline in air quality at the national and even ASEAN regional levels.

Forest fire disaster in 2022 in South Sumatra. The Head of the Regional Technical Implementation Unit (UPTD) for Forest Fire Control in South Sumatra stated that by May 2022, 367 hectares of land had been burned. Apart from burning more areas, he explained that this year's incident took longer. The number of hotspots continues to increase until the haze spreads to areas outside South Sumatra. This condition lasted until mid-May. Based on Landsat Image satellite calculations, forest fires that hit almost 367 thousand hectares occurred mostly in Musi Banyuasin, Ogan Komering Ilir, Ogan Ilir, Banyuasin, and in almost all districts and cities, one of the causes being mostly human activity.

Hot spots in forest areas also partially function because of agricultural activities. Logged hotspots explained that some had intentionally caused a fire, namely by entrepreneurs for activities, land clearing by the community for farming activities, or even due to accidents. Uncontrolled hotspots have the potential to cause widespread fires and can reduce environmental quality, including causing smoke impacts, which, of course, must be avoided (Dennis, 2005). Handled. Countermeasures must be carried out appropriately and quickly resolve the root of the problem. Remember the damage and impacts caused are very detrimental to both of them economic and ecological aspects that interfere with its role environmental balance in South Sumatra.

The government has made various efforts to prevent this forest and land fires, including through policy clearing land without burning (zero burning policy). Policy this was then confirmed through Government Regulation Indonesia Number 4 of 2001 concerning Damage Control and Environmental Pollution Related to Forest and Land Fires, Law 41 of 1999 concerning Forestry, and Law Number 18 of 2004 concerning Plantations. Prevention and control of forest and land fires in plantation/forestry company areas, it is relatively more straightforward. The implementation rules are clear so that all forms deviations will be relatively easier to control and administer sanctions can be applied more strictly than fires that occur on residents' land and agricultural land neglected communities. What would be different for society/shifting cultivators who have become accustomed to clearing land using burning, they have no other alternative to opening the land so that the community/moving cultivators will remain use fire in every preparation of land for activities his farm. Seeing these conditions that's why we take part society, in this case, is essential (Field, 2009).

South Sumatra Provincial Government since the end of 2004 has encouraged community participation as one of the efforts preventing and controlling land fires through forming Fire Care Community Groups (KMPA). Community participation is essential in the hope that land clearing activities that the community will undertake can be carried out without burning, or at least the burning of land is carried out in a well-controlled manner and the emergence of control from the community itself in prevention and control. Land fire. Another urgency for community participation is because their presence is widely spread in areas close

to fire-prone areas, they have the potential to carry out early extinguishing in controlling forest and land fires early to prevent more expansive fires from occurring.

Efforts to mitigate forest and land fires in South Sumatra must also be supported by the adoption of modern technology. The use of satellite imagery, drones, and hotspot detection systems has become increasingly important in monitoring fire-prone areas. Early detection enables quicker response and coordination between government agencies and local communities, thereby minimizing the spread of fires. Technological integration also supports data transparency, making it possible to track the effectiveness of fire prevention policies and identify recurring high-risk locations (Tacconi, 2016).

Another critical aspect of prevention lies in strengthening law enforcement. Although regulations on zero-burning policies exist, their implementation in rural and remote areas remains challenging. Weak supervision and limited resources often allow illegal land clearing practices to continue. Therefore, stricter sanctions must be combined with educational programs that provide farmers with alternative land preparation methods that are both cost-effective and environmentally friendly (Marwasta & Priyono, 2018).

Finally, cross-sector collaboration is essential for sustainable fire management. Forest and land fires are not only an environmental problem but also intersect with economic, health, and regional development issues. Collaboration between local governments, plantation companies, civil society organizations, and research institutions will create a more holistic approach to prevention and mitigation. By empowering communities, ensuring compliance from corporations, and leveraging research-based innovations, South Sumatra can significantly reduce the recurrence of destructive fire incidents (Glover & Jessup, 2006).

## METHODS

The research methods in a scientific journal encompass a range of essential aspects. These include the research design, which describes the type of research conducted; the population and sample explained in the context of the studied population and how the sample was selected; the instruments and data collection detailing the tools and techniques used to gather data; procedures that outline the steps in conducting the research; data analysis, involving statistical techniques and software used

This research uses qualitative methods with descriptive research type. Qualitative research focuses on general principles fundamental to realizing the meaning of social phenomena in society, so qualitative research is often referred to as holistic research on a social phenomenon (Glover, 2006). Then, descriptive research examines the field's reality to obtain an accurate picture of the research object. That descriptive research is knowledge about society, how to behave in society, and other situations, activities, behavior, views, and the occurrence of things and the influence that arises in phenomena. This research activity was carried out by paying attention to and utilizing informants to obtain the results of the data studied (Hamdi, 2025).

The research location was the Bromo Sakti Fire Care Community Group (KMPA), Dusun III Pancuran, Muara Merang Village, Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province. Data analysis is a process of compiling and interpreting data. The data

analysis used for the data obtained in this qualitative research was inductive. The data analysis process begins by reviewing all data collected through interviews and field observations, as well as official documents from several related agencies. After being reviewed and studied, the data is then generalized into a general conclusion based on empirical facts at the research location.

The final stage of data analysis is to conduct a validity check on the data. In this research, the technique of triangulation with sources is used, namely by comparing and checking back the degree of trustworthiness of information obtained through:

1. Compare observational data with interview data.
2. Comparing what people say in public with what they say in private.
3. Comparing a person's situation and perspective with various opinions and views of various sources.
4. Compare the interview results with the contents of a related document.

The analysis tool used is SWOT (Strength – Weakness – Opportunity – Threats) to assess conditions. At this stage, the data and information collected are then classified into internal and external data. Internal conditions describe the strengths and weaknesses, while external conditions describe the opportunities and threats. Next, the data and information are organized into an internal strategy factor matrix (Internal Strategy Factors Summary - IFAS) and an external strategy factor matrix (External Strategy Factors Summary - EFAS). The data then creates possible management strategies based on a combination of the four strategic factors. The IFAS and EFAS factors are transferred into the SWOT cross-diagram matrix. Based on this approach, various possible alternative strategies were then created (Rangkuti, 2006; Hinger, 2003). The strategy is:

- a. SO Strategy – strategy to exploit all strengths and opportunities as much as possible
- b. ST Strategy – strategy of using existing strengths to overcome threats
- c. WO Strategy – strategy to overcome weaknesses by exploiting opportunities
- d. WT Strategy – strategy to overcome weaknesses and face threats.

## RESULTS AND DISCUSSION

Considering that successful environmental management requires integration between the role of government and the role of society, in particular in preventing and controlling land fires as an effort to minimize the incidence of land fires and the impact of smoke, these two potentials need to be developed so that the objectives of preventing and controlling land fires can be achieved as expected. Efforts to prevent and control land fires carried out by the community have been developing for a long time, and this must be a potential that needs to be developed, apart from, of course, various government efforts to minimize the incidence of land fires and the impact of smoke which have been implemented through various programs. The efforts needed to combine the desires, interests, and goals of each to realize efforts to prevent and control land fires. For this reason, it is necessary to study efforts supporting the integration of environmental management efforts between the government and the community in preventing and controlling land fires through a seven-stage planning process, often called the seven magic steps of planning.

According to Boothroyd (1992) and Hadi (2007), the seven planning steps are problem formulation, goal setting, condition analysis, identification of policy alternatives, policy choices, impact studies, and decisions. Hopefully, this stage will produce policies that harmonize economic and environmental interests and the values that have developed in society.

### **Problem Formulation**

Land and forest fires in Muara Merang Village, Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province, remain frequent despite various government efforts, as results have not been optimal. Policies to involve communities through the formation of Fire Care Community Groups are still top-down, seen more as administrative obligations than genuine participation, so their role remains largely formal. Community-based initiatives that already exist are not fully integrated into government programs, while weak institutional commitment and poor coordination among technical agencies further reduce program effectiveness. In addition, many residents continue to clear land by burning because it is fast, inexpensive, and provides ash as fertilizer, while the Department of Agriculture, as the leading sector, has mostly focused on providing facilities as compensation rather than developing sustainable fire-free agricultural practices.

### **Goal Setting**

The aim of this study is to reduce the incidence of land and forest fires in Muara Merang Village, Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province—particularly those caused by community agricultural and other communal activities—through enhancing and embedding strong community participation. Community participation is increasingly recognized as essential: recent research on peatland areas in South Sumatra shows that households are vulnerable not only socio-economically but also ecologically to recurring fires, which implies that empowering communities to adopt fire-prevention behaviors can mitigate these risks (Yazid, Adriani, Riswani, & Damayanthi, 2024). Similarly, models of participatory environmental communication have been effective in improving awareness and community engagement in fire control measures in South Sumatra, indicating that combining mass approaches (socialization, campaigns) with individual approaches (technical guidance, direct communication) helps to foster local ownership and behavior change (Waluyo, Lubis, Sadono, & Saharjo, 2024). Moreover, government data show that involving community groups has been scaled up in national policy: as of mid-2025, 376 community groups are engaged in forest fire prevention efforts, reflecting an official shift toward prevention and local participation (Ministry of Forestry, 2025). Thus, this study aims not merely to design community participation mechanisms but also to integrate them into formal planning, monitoring, and enforcement structures so that land-burning practices are replaced by sustainable agricultural preparation and communal land management practices.

### **Condition Analysis**

The analysis tool used in assessing conditions is SWOT, which describes internal and external conditions. Internal conditions describe strengths and weaknesses, while external conditions describe existing opportunities and threats. Existing strengths will be utilized to the maximum extent possible, weaknesses can be reduced, and existing opportunities can be

utilized well while threats can be overcome (Suryadi, 2025; Putra, 2024). External conditions describe the opportunities and threats that exist outside the organization and must be managed alongside internal conditions, which include strengths and weaknesses. Strengths should be optimized to support the achievement of goals, while weaknesses need to be minimized through corrective measures. At the same time, external opportunities must be carefully identified and maximized to create added value, whereas potential threats should be anticipated and mitigated with appropriate strategies (Uda, 2019; Tacconi, 2016). This balance between internal and external conditions allows the organization to build resilience and remain competitive in a dynamic environment. Based on field observations, the following is a description of the conditions internal and external owned and faced by the government within efforts to overcome land and forest fires and the impact of smoke, especially in Muara Merang Village, Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province:

a. Strength (Strength – S)

1. There is a government commitment to handling land and forest fires and the impact of smoke, including a policy of community involvement through the formation of the Fire Care Community Group (KMPA).
2. A forest fire management organization has been established and land from the Provincial level (PUSDALKARHUTLADA), level District/City (POSKOLAKDALKARHUTLADA) and at the District level (SATLAKDALKARHUTLA).
3. The existence of technical institutions (Bapedalda, Forestry Service, Dep Plantations, Agriculture Service, KSDA Hall) are being handle land and forest fires and the impact of smoke.
4. There is a Manggala Agni forest and land firefighting team.
5. There are environmental management efforts that have been carried out community in fire prevention and controlland, especially agricultural land.
6. The emergence of awareness in society regarding the problem land fires and the impact of smoke, namely reduced working days and impact on Health.

b. Weakness (Weakness – W)

1. Government attention in handling land fires and the impact of smoke is still temporary (curative).
2. Limited facilities for handling land fires (fire fighting equipment) and supporting infrastructure.
3. Lack of coordination between technical agencies in handling land fires and the impact of smoke so that each agency only carries out its main tasks and functions.
4. Government programs have yet to be directly implemented to manage land fires and the impact of smoke from the source, namely fire-free agriculture.
5. There is no coordination between the government and the community handling land and forest fires and the impact of smoke.

c. Opportunity (Opportunity – O)

1. There have been efforts to remind each other if a community will burn land and forests to avoid the fire spreading to other people's land.

2. The emergence of people's desire to farm without burning, however hampered by the lack of examples and direct learning for farming communities.
  3. There is potential for developing pineapple horticultural crops, which has the potential to realize agricultural activities without burning.
- d. Threats (Threats – T)
1. The lack of cheap and fast peatland preparation technology through burning means that the community tends to abandon unprofitable alternative options.
  2. Public perception still views land fires and smoke as something normal. Based on internal factors, namely strengths and weaknesses, as well as external factors, opportunities, and threats, several strategies can be carried out by developing existing strengths, minimizing weaknesses, taking advantage of existing opportunities, and managing threats into opportunities.
- e. SO Strategy – strategy of exploiting all strengths and opportunities as much as possible
1. Integrate government policies and interests with the community's potential for preventing and controlling land fires through participatory environmental management, including revitalizing the Fire Care Community Groups (S1,2,4,5 – O1).
  2. Increasing community skills in efforts to control land fires through training (S1,2,3,4,5,6 – O1,2)
- f. ST Strategy – strategy of using the power you have to overcome threats
1. The need for integration between agriculture and animal husbandry as an alternative to diverting land preparation without burning (S1,3,5,6 – T1)
  2. Increase public knowledge and awareness of the impact of fire and smoke on health and the environment through outreach (S1,2,3,4,5,6 – T1,2)
- g. WO Strategy – strategy to overcome weaknesses by exploiting opportunities
1. Increase the community's ability to cultivate land aimed at non-burning agriculture through direct field practice (W1.4 – O2).
  2. Improve fire management facilities and infrastructure land for the community (W2 – O1,2).
  3. Development of agricultural commodities that suit peatland conditions (W1,4,5 – O3)
  4. Build coordination between the government and the community handling land fires and smoke impacts (W6 – O1,2)
- h. WT Strategy – strategy to overcome weaknesses and face threats
1. Improve coordination between relevant government agencies handling land fires (W1.3 – T1).
  2. Determination of a zoning system for the use of peat land for agricultural cultivation activities (W5 – T2)

<p>(Internal Strategy Factors Summary) IFAS</p> <p>(External Strategy Factors Summary) EFAS</p>	<p>STRENGTH</p> <ol style="list-style-type: none"> <li>1. There is a government commitment to handling land and forest fires and the impact of smoke, including the policy of forming Community Groups Fire Care</li> <li>2. An organization has been formed handling forest fires and land from the provincial level (PUSDALKARHUTLADA), Regency/City level (POSKOLAKDAL KARHUTLADA) and at level District (SATLAKDALKARHUTLA)</li> <li>3. The existence of technical institutions (Bapedalda, Forestry Service, Plantation Service, and Agriculture Service) in handling land fires and the impact of smoke</li> <li>4. There is a fire brigade Manggala Agni forest and land</li> <li>5. There are environmental management efforts that the community has carried out in preventing and controlling land fires</li> <li>6. The emergence of inner awareness community regarding the problem of land fires and the impact of smoke namely reduced working days and its impact on health</li> </ol>	<p>WEAKNESS</p> <ol style="list-style-type: none"> <li>1. Government attention in handling land fires and the impact of the smoke is still temporary</li> <li>2. Limited facilities for handling land fires (fire fighting equipment) and supporting infrastructure</li> <li>3. Lack of coordination between technical agencies related to handling land fires and smoke impacts so that each agency does the main tasks and just the function</li> <li>4. Implementation of government programs Has not touched directly yet on land fire management and the impact of smoke from the source, namely burning-free farming</li> <li>5. There are no system settings yet for agricultural zoning on peatlands</li> <li>6. There is no coordination between government and society within handling land fires and smoke impact</li> </ol>
<p>(OPPORTUNITY)</p> <ol style="list-style-type: none"> <li>1. There have been efforts to remind each other if there are people who want to burn land to prevent fire from spreading to land belonging to someone else</li> <li>2. The emergence of people's desires to farm without burning, however constrained by the lack of examples and direct learning to farming community</li> <li>3. There is development potential for pineapple-type horticultural crops which have the potential to be realized in burning-free agricultural activities</li> </ol>	<p>STRATEGI S – O</p> <ol style="list-style-type: none"> <li>1. Integrate government policies and interests with the potential that exists in society in preventing and controlling land fires through environmental management</li> <li>2. Participatory activities include revitalizing the PedulApi Community Group (KMPA)</li> <li>3. Increase community skills to control land and forest fires through training.</li> </ol>	<p>STRATEGI W – O</p> <ol style="list-style-type: none"> <li>1. Increasing community capacity in land processing which is directed at agriculture without burning through field practices directly</li> <li>2. Improve land fire management facilities and infrastructure for the community</li> <li>3. Development of agricultural commodities by land conditions peat</li> <li>4. Build coordination between the government and the community overcoming land and forest fires and the impact of smoke</li> </ol>
<p>THREATS</p> <ol style="list-style-type: none"> <li>1. There is no preparation technology Peat land is cheap and as fast as burning lead to an alternative setup unprofitable land tends to be abandoned by society</li> <li>2. Public perception still views land fires and smoke something ordinary.</li> </ol>	<p>STRATEGI S – T</p> <ol style="list-style-type: none"> <li>1. Improve coordination between government agencies in handling land fires</li> <li>2. Establishment of a zoning system for the use of peat land for agricultural activities</li> </ol>	<p>STRATEGI W – T</p> <ol style="list-style-type: none"> <li>1. Improve coordination between government agencies in handling land fires</li> <li>2. Establishment of a zoning system for the use of peat land for agricultural activities</li> </ol>

**Figure 1.** SWOT Matrix of Efforts to Prevent and Control Land and Forest Fires and the Impact of Smoke in Muara Merang Village, Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province

The SWOT analysis reveals that several strengths, such as the government's commitment to addressing land and forest fires, the establishment of fire control organizations from the provincial to the village level, and community-led environmental management efforts, provide a solid foundation for more proactive preventive strategies. External opportunities, including the growing interest of local communities in adopting burning-free farming methods, the development potential of horticultural commodities on peatlands, and public policies that increasingly emphasize participation, represent strategic assets that can be maximized. By formulating S–O strategies—such as integrating government policies with community potential, revitalizing Fire Care Community Groups

(KMPA), and enhancing local training programs—these strengths and opportunities can be aligned to strengthen community capacity for sustainable fire prevention (Wijedasa, 2017; Waluyo, 2024).

Nevertheless, several weaknesses and threats continue to hinder the effectiveness of these strategies. Limited firefighting facilities, weak coordination among technical agencies, and government programs that remain largely formal and administrative reduce the ability to address fire management comprehensively. On the external side, threats such as public perceptions that normalize haze and the lack of effective peatland preparation technology exacerbate the problem (Yulianti, 2020; Yazid, 2024). Recent studies emphasize that community-based fire prevention and peatland restoration should be designed as business-like models to ensure financial sustainability and long-term participation. In addition, research on smoke haze dispersion from fire hotspots in South Sumatra during the 2023 El Niño shows that although many fires are triggered by human activities, smoke spreads widely and creates significant transboundary impacts, requiring upstream-to-downstream preventive strategies (Hamdi et al., 2025). Therefore, the recommended strategies include improving inter-agency coordination, establishing a zoning system for safe peatland agricultural use, and ensuring that community participation is not merely symbolic but integrated into planning, monitoring, and policy enforcement.

## CONCLUSION

The reason for the frequent occurrence of land fires in Muara Merang Village Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province are: during The dry season, most people in Muara Merang Village, Bayung Lencir District, Musi Banyuasin Regency, and South Sumatra Province still burn the land, especially when preparing agricultural land for seasonal food crops. Preparing land by burning it has the potential to cause fires that can trigger fires on agricultural land, whether cultivated or left abandoned/empty. Land fires often occur in Muara Merang Village Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province, is a fire on abandoned/empty land. This is because fires on abandoned/empty land are not a priority for the community to extinguish, so they have the potential to cause large fires. Efforts to prevent and control land fires have been made carried out by the community and the Fire Care Group in Muara Merang Village, Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province, are: efforts to prevent land fires, especially those originating from the community carries out agricultural activities by doing controlled burning and implementation of local regulations through village rules and community agreements. Efforts to control fires on agricultural land have so far been carried out by farmers and working together, carried out spontaneously by prioritizing saving agricultural land with economic potential. Efforts to prevent and control land fires in The community has only implemented Muara Merang Village, Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province. In contrast, the prevention and control efforts expected by the government through involving community participation in the form of the Fire Care Group organization have not yet been implemented because the group that was formed is still a formality and tends only to fulfill instructions so that they have never carried out their primary duties and functions.

## REFERENCE

- Dennis, R. A., Mayer, J., Applegate, G., Chokkalingam, U., Colfer, C. J. P., Kurniawan, I., Lachowski, H., Maus, P., Permana, R. P., Ruchiat, Y., Stolle, F., Suyanto, & Tomich, T. P. (2005). Fire, people and pixels: Linking social science and remote sensing to understand underlying causes and impacts of fires in Indonesia. *Human Ecology*, 33(4), 465–504. <https://doi.org/10.1007/s10745-005-5156-z>
- Field, R. D., van der Werf, G. R., & Shen, S. S. (2009). Human amplification of drought-induced biomass burning in Indonesia since 1960. *Nature Geoscience*, 2(3), 185–188. <https://doi.org/10.1038/ngeo443>
- Glover, D., & Jessup, T. (2006). *Indonesia's fires and haze: The cost of catastrophe*. Institute of Southeast Asian Studies.
- Hamdi, S., Rizal, S., Shibata, T., Darmawan, A., Irfan, M., & Sulaiman, A. (2025). The dispersion of smoke haze from peatland fires over South Sumatra during the moderate El Niño of 2023. *Natural Hazards*, 121(1), 1095–1116. <https://doi.org/10.1007/s11069-024-06857-x>
- Hoscilo, A., Page, S. E., Tansey, K. J., & Rieley, J. O. (2011). Effect of repeated fires on land-cover change on peatland in southern Central Kalimantan, Indonesia, from 1973 to 2005. *International Journal of Wildland Fire*, 20(4), 578–588. <https://doi.org/10.1071/WF10029>
- Marwasta, D., & Priyono, K. D. (2018). Community-based forest fire management in Indonesia: Lessons learned and challenges. *Journal of Environmental Science and Sustainable Development*, 1(2), 125–140. <https://doi.org/10.7454/jessd.v1i2.1002>
- Miettinen, J., Shi, C., & Liew, S. C. (2017). Fire distribution in Peninsular Malaysia, Sumatra and Borneo in 2015 with special emphasis on peatland fires. *Environmental Management*, 60(4), 747–757. <https://doi.org/10.1007/s00267-017-0911-7>
- Ministry of Forestry. (2025). Ministry emphasizes prevention to control forest fires [Press release]. *ANTARA News*. <https://en.antaranews.com/news/368497/ministry-emphasizes-prevention-to-control-forest-fires>
- Putra, E. I., & Hayasaka, H. (2024). Fire occurrence and its environmental and health impacts in Sumatra: Lessons for sustainable peatland management. *Environmental Research*, 242, 117–129. <https://doi.org/10.1016/j.envres.2024.117129>
- Suryadi, A., Prasetyo, L. B., & Saharjo, B. H. (2025). Strengthening community resilience through participatory approaches in peatland fire management in Indonesia. *Journal of Environmental Management*, 352, 119–138. <https://doi.org/10.1016/j.jenvman.2025.119138>
- Tacconi, L. (2016). Preventing fires and haze in Southeast Asia. *Nature Climate Change*, 6(7), 640–643. <https://doi.org/10.1038/nclimate3008>
- Uda, S. K., Hein, L., & Atmoko, D. (2019). Assessing the health impacts of peatland fires: A case study for Central Kalimantan, Indonesia. *Environmental Science and Policy*, 94, 54–67. <https://doi.org/10.1016/j.envsci.2018.12.021>
- Waluyo, E. A., Lubis, D. P., Sadono, D., & Saharjo, B. H. (2024). Participatory environmental communication in forest and land fire control: A case study in South Sumatra, Indonesia.

*Revista de Gestão Social e Ambiental*, 18(5), e05266.  
<https://doi.org/10.24857/rgsa.v18n5-009>

Wijedasa, L. S., Jauhiainen, J., Könönen, M., Lampela, M., Vasander, H., LeBlanc, M. C., ... & Evans, T. A. (2017). Denial of long-term issues with agriculture on tropical peatlands will have devastating consequences. *Global Change Biology*, 23(3), 977–982.  
<https://doi.org/10.1111/gcb.13516>

Yazid, M., Adriani, D., Riswani, & Damayanthi, D. (2024). Farm household vulnerability due to land and forest fire in peatland areas in South Sumatra. *Land*, 13(5), 642.  
<https://doi.org/10.3390/land13050642>

Yulianti, N., & Hayasaka, H. (2020). Recent active fire events in Riau Province, Sumatra, Indonesia during 2013–2018. *Journal of Environmental Science and Policy*, 108, 19–30.  
<https://doi.org/10.1016/j.envsci.2020.02.011>