# Environmental Governance in Handling Forest and Land Fires in Banjarbaru, South Kalimantan

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## Abstract

**Background** This study aims to analyze the effectiveness of environmental governance in handling forest and land fires (karhutla) in Banjarbaru City, South Kalimantan, during the 2023–2024 period. Forest and land fires in Banjarbaru continue to occur repeatedly despite the local government forming a task force, implementing hotspot monitoring technology, and implementing various mitigation policies.

**Methods** This study uses a descriptive qualitative method with a case study approach. Data were collected through analysis of policy documents, official government reports, hotspot data from relevant agencies, and relevant scientific literature. Data analysis was conducted thematically through the stages of data reduction, presentation, and conclusion drawing.

**Results** The results of the study indicate that environmental governance in handling forest and land fires in Banjarbaru has not been optimal due to institutional fragmentation, weak coordination between actors, limited budget and resource capacity, and low community participation in prevention efforts. In addition, supervision of peatland conversion remains weak, thereby increasing vulnerability to fires.

**Conclusions** This study concludes that strengthening inter-agency coordination, increasing institutional capacity, ensuring transparency of fire information, and adopting a community-based prevention approach are necessary to achieve more effective and sustainable forest and land fire governance.

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# Introduction

Forest and land fires (karhutla) are one of the most complex ecological problems in Indonesia, especially in the last two decades, with the increasing vulnerability of forest areas due to climate change, land degradation, and intensified land use. In addition to causing significant ecological losses, forest and land fires also have a broad impact on public health, carbon emissions, economic stability, and the legitimacy of environmental policies at the national and regional levels in Southeast Asia (Nejatiyanpour et al., 2024). This phenomenon shows that forest and land fires are not merely natural events, but reflect institutional capacity limitations, weak environmental governance, and an imbalance between economic development and ecological sustainability interests. Therefore, an environmental governance approach is important to understand how the interaction of public policy, institutional actors, and socio-economic factors contribute to the occurrence and prevention of forest and land fires, especially at the local level, such as in the city of Banjarbaru, South Kalimantan (Satispi & Rulandari, 2025).

South Kalimantan Province is one of the regions in Indonesia that consistently faces forest and land fires every year. Based on national data, as of December 4, 2024, there were 1,889 disaster events in Indonesia, with hydrometeorological disasters dominating at 98.84% and geological disasters at only 1.16%. Forest and land fires are one of the most dominant forms of hydrometeorological disasters, with a pattern of incidents that continues to increase from year to year. Spatial analysis shows that the distribution of hotspots in South Kalimantan fluctuated throughout the 2012–2023 period, with the area burned in 2023 reaching approximately 190,394 hectares, higher than the average of the previous five years. This condition confirms the high vulnerability to fires and the importance of risk mapping as a basis for mitigation (Waluyo, 2024a; Gambut & Efendi, 2023).

The city of Banjarbaru, as the administrative center of South Kalimantan Province, has ecological characteristics that are highly vulnerable to fires. This area is dominated by shallow peatlands, secondary forests, and wetlands that have undergone significant changes due to urbanization and development expansion. Banjarbaru, which is surrounded by peatlands, is highly vulnerable to fires, especially during long dry seasons such as those that occurred in 2023 and 2024 (Kumalawati et al., 2021). Data from the South Kalimantan Regional Disaster Management Agency (BPBD) shows that from June to August 2023, there were 164 hotspots in Banjarbaru City, with a total burned area of 464.94 hectares, making it the region with the highest rate of fires in the province. In addition, the SiPusnas application detected 127 hotspots in 2024, although only 40 hotspots were confirmed in a timely manner, raising doubts about the effectiveness of the environmental control system implemented by the city government (Ramdani & Mustalahti, 2023).

Previous studies have confirmed that forest and land fires in South Kalimantan are greatly influenced by a combination of biophysical factors and human activities. The spatial pattern of hotspots and fire-prone areas is closely related to the characteristics of highly flammable peatlands and the pressure of human activities such as land conversion (Saputraa et al., 2021). Hotspots almost always appear during the dry season and are closely related to the clearing of agricultural and plantation land, as well as a decrease in peatland moisture. In addition, more than 56.5% of the area around Banjarbaru is classified as highly vulnerable to forest and land fires due to a combination of anthropogenic pressures and physical land

conditions (Adni et al., 2024).

From an institutional perspective, various studies have identified weak risk communication, inter-agency coordination, and limited local government capacity as major obstacles to forest and land fire mitigation (Kumalawati et al., 2022). Changes in land cover and the intensity of human activities are also major drivers of fires, reflecting the continued weakness of supervision of land clearing practices (Farhana et al., 2025). In addition, climate variables such as rainfall and the ENSO phenomenon have been shown to affect the intensity of fires in Banjarbaru and its surrounding areas (Waluyo, 2024a). These findings confirm that the high incidence of forest and land fires is not solely due to natural factors, but rather the result of a complex interaction between changes in land use, human activities, and the institutional capacity of local governments (Arsianty, 2023).

The environmental governance approach views environmental governance as a multi-level interaction between the government, the community, civil organizations, and the private sector (Sihidi, Salahudin, et al., 2024). In the context of Banjarbaru, this interaction has not been optimal. Coordination between BPBD, the Environment Agency, Manggala Agni, the Indonesian National Armed Forces (TNI) and the Indonesian National Police (Polri), and the neighborhood/community associations (RT/RW) is still sectoral in nature and has not been effectively integrated (Alisyahbana et al., 2025). Limited institutional capacity in terms of budget, equipment, monitoring technology, and human resources further weakens policy effectiveness. In addition, small-scale land burning practices that are difficult to monitor and low community participation in fire preparedness programs indicate that policy implementation is not in line with field needs (Budiningsih et al., 2022).

Forest and land fires in Banjarbaru also reflect ecological political issues in the form of tensions between urban development and environmental protection. The push for economic growth is often not balanced with considerations of ecological carrying capacity, especially in areas with shallow peatlands that are highly susceptible to drying out. Forest and land fire management is still dominated by a reactive approach through firefighting, while preventive efforts such as mapping of vulnerable areas, peatland wetting, routine patrols, and law enforcement have not been optimal. Although Indonesia has a comprehensive national regulatory framework, its implementation at the local level is often not in line with local socio-ecological conditions (Unik et al., 2024; Waluyo, 2024b).

Although previous studies have generated important insights into forest and land fires in South Kalimantan, their focus remains largely fragmented. Several studies emphasize biophysical vulnerability and hotspot mapping (Saputraa et al., 2021; Kumalawati et al., 2022), while others examine climatic variability and fire risk patterns (Waluyo, 2024a). Institutional and technical studies tend to address risk communication, coordination challenges, community preparedness, or fire information systems in a largely descriptive manner (Budiningsih et al., 2022; Syaufina et al., 2024). In addition, policy and collaboration-oriented analyses are generally conducted at provincial or regional scales (Daryani, 2023; Alamsyah, 2019). However, these studies rarely provide systematic empirical evaluations of how environmental governance arrangements actually perform in reducing fire risks, particularly within urban administrative contexts. Consequently, the effectiveness of local governance systems at the municipal level, such as in Banjarbaru remains insufficiently examined. This gap underscores the need for a focused assessment of governance structures, institutional capacity, and socio-ecological dynamics to better

understand why fires continue to recur despite the presence of formal policies.

This research gap highlights the need for a more contextual and empirical examination of how environmental governance operates and performs at the municipal level, particularly in an urban–peatland setting such as Banjarbaru. Accordingly, this study applies an environmental governance framework that conceptualizes governance effectiveness as a multidimensional process shaped by institutional structures, actor relations, and socio-ecological outcomes. The analysis is organized into three interrelated dimensions: (1) governance structure and regulatory arrangements, which examine policy design, authority distribution, and coordination mechanisms; (2) institutional capacity and inter-actor dynamics, which assess resources, organizational capability, and power relations among stakeholders; and (3) political ecology dimensions, which analyze how development pressures, economic interests, and community vulnerability shape environmental risks. These dimensions guide the interpretation of findings to explain why forest and land fire management in Banjarbaru remains ineffective despite the existence of formal policies.

## Methods

This study employs a descriptive qualitative design with a case study approach to examine the effectiveness of environmental governance in managing forest and land fires (karhutla) in Banjarbaru during the 2023–2024 period. A qualitative approach is appropriate because it seeks to interpret social and institutional phenomena in their natural settings and to develop an in-depth understanding of governance processes, actor interactions, and policy practices rather than to test statistical relationships (Creswell, 2018). The unit of analysis focuses on the local governance system for forest and land fire management involving multiple actors, including the Regional Disaster Management Agency (BPBD), the Environmental Agency, Manggala Agni, and other relevant government institutions.

Data were obtained through documentation techniques using secondary sources, including policy and regulatory documents, official reports from local and provincial agencies, hotspot and fire incident data, and relevant scientific publications. These sources were used to map fire occurrence patterns, identify institutional arrangements, examine policy implementation processes, and assess governance responses. To enhance credibility, source triangulation was applied by comparing information across multiple documents and reports.

Data analysis was conducted thematically through data reduction, categorization, and interpretation, supported by process tracing to understand the sequence of prevention, response, and post-fire actions. Guided by an environmental governance framework, the analysis is organized into three interrelated dimensions: (1) governance structure and regulatory arrangements, (2) institutional capacity and inter-actor dynamics, and (3) political ecology and socio-ecological impacts. These dimensions serve as analytical lenses for evaluating how institutional design, actor relations, and development pressures influence the effectiveness of forest and land fire management and structure the results and discussion of this study.

## Results and Discussions

### The Anatomy of Environmental Governance Failure in Banjarbaru

The continuous forest and land fires in Banjarbaru during 2023–2024 show that this

problem is not only caused by biophysical factors such as drought or prolonged dry seasons, but also by systematic failures in environmental governance (Wang et al., 2022). Both the central and regional governments have actually created various policy instruments and institutional programs to prevent forest and land fires. However, the implementation of these policies has not been able to produce adequate results in the field. This situation illustrates a policy gap, poor coordination, and a lack of technical capacity in fire management. As a result, forest and land fires continue to recur every year and have become a routine environmental disaster (Rosalena & Department, 2019).

At the local level, the Banjarbaru City Government has several agencies that are directly responsible for managing forest and land fires, such as the Environmental Agency, the Regional Disaster Management Agency (BPBD), and the annual forest and land fire task force. The existence of these institutions should be the main foundation for fire prevention and control efforts. However, the existing institutional system has not been able to significantly reduce the risk or prevent fires (Roengtam, 2025). One of the main causes is the overlapping authority structure between the central ministry, the South Kalimantan provincial government, and the Banjarbaru city government. Many policies are difficult to implement because they require lengthy and multi-layered inter-agency approvals (Reddington et al., 2021).

As a result of this overlapping authority, preventive measures that should be carried out routinely are often delayed. This causes the forest and land fire management strategy in Banjarbaru to be more reactive than preventive. On the other hand, the issue of land use supervision is also a serious problem in environmental governance. Many ecologically vulnerable areas, especially shallow peatlands, have been converted into new settlements and informal business areas. This rapid land use change has altered the ecological structure of the area, increased drought levels, and increased the potential for fire spread.

Although various regulations have been established to protect peatlands, their implementation and monitoring are still ineffective (Pisau & Tengah, 2020). Rapid urban development is often considered a logical consequence of economic growth and space requirements. However, in practice, these changes in land use have created conditions that further trigger prolonged fires (Kirschner et al., 2024). Drainage and infrastructure development that do not take into account the characteristics of peatlands accelerate the drying process. As a result, the Banjarbaru region has become increasingly vulnerable to forest and land fires every dry season.

One of the main reasons for the weakness of environmental governance in Banjarbaru is budget constraints. The Banjarbaru City Government does not have enough budget to finance technical mitigation activities that require large investments (Suhardono et al., 2024). Activities such as the construction of canal barriers, periodic wetting of peatlands, the provision of environmental patrol facilities, and the expansion of the specialized firefighting fleet require enormous costs. However, budget constraints mean that most of these activities can only be carried out during the dry season. This condition makes the approach to forest and land fire management more oriented towards emergency firefighting than long-term prevention.

The firefighting approach is often chosen because it is considered cheaper in the short term than mitigation investments that require large resources (Kumalawati, 2023). Public

pressure and local political dynamics also influence these policy choices. When fires occur, the mobilization of BPBD officers and fire trucks can easily be used as evidence of government performance. Conversely, long-term prevention efforts do not always produce results that are immediately visible to the public. In situations like this, the logic of rapid response becomes more dominant than the logic of more systematic mitigation in Banjarbaru's environmental governance.

The problem becomes even more complex because the level of community participation in forest and land fire prevention is still low. Although the government has frequently held socialization and education programs on the dangers of fire, the community has not been truly involved in prevention efforts. Many residents consider forest and land fires to be seasonal events that cannot be avoided (Ekawati et al., 2024). In addition, community involvement is low due to the absence of sustainable community empowerment programs and incentives for residents who participate in environmental conservation. Without community support in early detection and monitoring of green spaces, the government will find it difficult to control vast and scattered fire-prone areas.

The structure of environmental governance failure in Banjarbaru is formed from a combination of weak regulations, limited institutional capacity, low public participation, and economic development pressure on the environment (Setyaningrum et al., 2024). These conditions cause forest and land fires to continue to recur as annual ecological disasters. In other words, this failure is the result of systemic weaknesses in local environmental management (Arsianty, 2023). Overlapping authorities between the central, provincial, and city governments further exacerbate the situation and lead to bureaucratic gridlock. Regulations such as Presidential Instruction No. 11/2022 on forest and land fires are often delayed in implementation due to differences in budget priorities between levels of government.

As shown by data from the Ministry of Environment and Forestry in 2024, poor coordination resulted in only 35% of the forest and land fire prevention targets being achieved in South Kalimantan, while the achievement in Banjarbaru was even lower, at only 22%. Law enforcement against illegal burning is also still very weak, as seen from the 89 forest and land fire reports received by the Banjarbaru Police during the 2023-2024 period, which only resulted in 12 administrative resolutions (Sukarni, 2025). On the other hand, property developers who convert peatland are often not strictly monitored due to local political connections. This condition allows land conversion practices to continue without decisive action, thereby exacerbating the cycle of recurring fires (Arsianty et al., 2021). In addition, the technical capacity of the Banjarbaru Regional Disaster Management Agency (BPBD) is still limited, with only 8 of its 45 staff members holding advanced KARHUTLA certificates, resulting in frequent delays in field responses with an average arrival time of 2.5 hours after the first report (Rozaki et al., 2022). Data from the Banjarbaru Transportation Agency shows that the 2023 fires caused losses of Rp45 billion, a 15% decline in local revenue, and an increase in cases of respiratory tract infections with treatment costs reaching Rp8 billion. Meanwhile, in 2024, the SiPusnas application detected 127 hotspots, but only 40% could be confirmed in a timely manner (Sitanggang et al., 2022).

Based on these findings, it can be concluded that the problem of forest and land fires in Banjarbaru is a manifestation of weak environmental governance that is structural and multidimensional. Failure of coordination between levels of government, limited

institutional capacity, minimal mitigation budgets, and low community participation interact and reinforce the annual fire cycle. Policy approaches that emphasize emergency firefighting over long-term prevention further deepen the ecological vulnerability of the region. Without more integrated, transparent, and public participation-based governance reforms, efforts to control forest and land fires in Banjarbaru will continue to face the same obstacles. Therefore, a paradigm shift in policy is needed from a reactive orientation to a more systematic and sustainable mitigation strategy.

**Institutional Dynamics and Power Relations in Local Forest Fire Management**

Forest fire management in Banjarbaru is highly dependent on the institutional dynamics and power relations that shape environmental policy. The ecological perspective of governance explains that political relations between actors and institutional structures have a major influence on the quality of environmental management. The power conflict between governments in the management of forest and land fires in Banjarbaru in 2023–2024 occurred due to overlapping authorities that hampered rapid response and effective prevention (Park et al., 2025). This overlap occurred between the central government, such as the Ministry of Environment and Forestry, the South Kalimantan provincial government, and the Banjarbaru city government. The city government often had to wait for instructions from higher levels to obtain resources, triggering bureaucratic gridlock and delays in policy implementation.

Delays in the implementation of strategic policies, including the Presidential Instruction on forest and land fires, often occur due to differences in budget priorities between levels of government. At the local level, coordination between agencies such as the Regional Disaster Management Agency (BPBD), the Environment Agency, the Agriculture Agency, and the sub-district offices is also not yet optimal. Each agency tends to work based on its own sectoral agenda, making it difficult to implement an integrated strategy. This situation was clearly evident during the 2023–2024 dry season in peatland areas, when prevention targets were very low due to weak coordination. Many forest and land fire reports were not resolved in a timely manner due to slow bureaucratic approval processes (Rahmaniah, 2024).

Local politics also play an important role in determining the direction of forest and land fire policy. After the dry season ends, political attention to fire prevention often declines, resulting in mitigation budgets being diverted to other development programs. The influence of property developers who convert land without supervision further exacerbates the situation. Although city governments are primarily responsible for field operations, they do not have full control over the necessary resources. Dependence on vertical coordination often delays action in the field, especially when fires spread rapidly in vulnerable peatland areas (Pengurus et al., 2023).

Within the government structure, the provincial government acts as a coordinator between districts and cities. However, the specific needs of Banjarbaru are not always in line with provincial policy priorities. On the other hand, central ministries develop general policy frameworks related to peat protection and forest and land fire control. However, these policies often do not fully understand the local conditions faced by Banjarbaru (Alvin Anggara, 2020). This discrepancy between the micro-level reality at the local level and macro-level policies at the central level creates gaps in environmental governance

implementation.

Power relations exist not only between central and local government institutions, but also between agencies at the city level. The Banjarbaru City Government has many agencies involved in environmental management, such as the Regional Disaster Management Agency (BPBD), the Environment Agency, the Agriculture Agency, and the sub-districts. Each agency has a different mandate and responsibility in monitoring forest and land fires. However, coordination between these agencies often fails because each is more focused on its own sectoral interests. As a result, it is difficult to effectively develop a comprehensive forest and land fire control strategy (Arifin et al., 2024).

Environmental policy in Banjarbaru is also greatly influenced by local political dynamics. When large-scale fires occur, forest and land fires usually become a major concern for the public and the government. However, after the dry season ends, political attention to this issue tends to decline dramatically. As a result, funding for prevention programs is often cut or even diverted to other sectors. The priorities of regional heads, electoral interests, and pressure from developers and business actors also influence the direction of land use policies in suburban areas (Adil Faisal Alwini1, 2018).

Local economic development often conflicts with ecological interests in land management (Sihidi et al., 2025). The expansion of new settlements in peatland areas shows a compromise between city governments and development pressures. Reasons such as increasing local revenue, investment, and employment make it difficult for the government to reject land use changes. However, these agreements create long-term ecological uncertainty that increases the risk of fires. Thus, economic development policies often weaken environmental governance (Fadli & Sarofah, 2021).

On the other hand, the position of the community in the power structure is still relatively weak, even though they have an important role in environmental governance. Community involvement generally only occurs at the socialization stage, not in the policy planning and monitoring processes. The community's local knowledge about environmental conditions is often not accommodated in the decision-making process. In addition, public access to environmental information such as fire risk maps and hotspot data is still very limited. The lack of transparency of this information has resulted in low community participation, so that fire management is mostly left to the government alone (Rochmayanto, 2023).

Overall, forest and land fire management in Banjarbaru has not been effective due to institutional imbalances and power relations, despite being supported by various formal policies. The normative framework has actually been regulated through Law Number 32 of 2009, Presidential Instruction Number 3 of 2020, and Government Regulation Number 71 of 2014 in conjunction with Government Regulation Number 57 of 2016 concerning the protection of peat ecosystems. At the local level, these policies are translated into local regulations, the formation of task forces, and the Community Fire Awareness program. However, policy implementation is often top-down, lacks inter-agency synergy, and fails to involve local communities, thus failing to change ecological conditions on the ground (Maharani & Nurlaili, 2019). In addition, recurring fires reflect a form of slow violence in the context of political ecology, which has the greatest impact on vulnerable groups such as the urban poor and small farmers (Aminah, 2020). Therefore, a paradigm shift in governance is needed towards an inclusive, transparent, and collaborative landscape

approach between the government, the business world, and the community (Butsic et al., 2019). The implementation of a strict incentive and disincentive system, including strong environmental law enforcement, is an important step to restore public trust and create a real preventive effect in controlling forest and land fires in Banjarbaru.

**The Political Ecology of Recurrent Forest Fire Governance in Banjarbaru**

In Banjarbaru, patterns of environmental vulnerability are formed through complex interactions between political, economic, and ecological factors that are directly related to forest and land fires. The political ecology approach helps explain how economic interests and power relations influence the framework of environmental governance. From this perspective, forest and land fires are no longer understood as merely a technical problem, but as the result of development policies that do not prioritize ecological sustainability. The ecological conditions in Banjarbaru are inherently vulnerable, but this vulnerability is exacerbated by development strategies that prioritize economic growth and housing expansion. Many peatlands that should function as ecological buffers have instead become fire-prone areas.

The construction of drainage infrastructure and canals that do not take into account the characteristics of peatlands causes the soil to dry out quickly and increases the risk of fire during the dry season (Soma Gantika, 2025). On the other hand, local communities often find themselves in a state of economic uncertainty, so some still use slash-and-burn practices to clear land. These practices continue because there are no safer and more sustainable economic alternatives available. Government policies have not been able to provide adequate incentives to encourage behavioral change among the community. This situation reflects a mutually reinforcing relationship between microeconomic pressures and increased ecological vulnerability at the local level.

The government's response to fires has tended to be technocratic and centralized. When fires occur, government officials and volunteers usually work hard to extinguish the fires in the field. However, these efforts are not followed by long-term mechanisms to repair ecological damage or build collective awareness at the community level. As a result, ecological conditions never fully recover after a fire. Because social structures are not strengthened and environmental rehabilitation is not prioritized, the cycle of fires continues to repeat itself year after year.

Without adequate ecological planning, rapid urban development in Banjarbaru has resulted in what is known as a "policy-induced disaster." Urban drainage systems have altered the soil structure, while urban forests are increasingly under pressure and green spaces are becoming more fragmented. Development that ignores the principles of political ecology only exacerbates social inequality and increases the potential for natural disasters. During the fire season, minor conflicts between residents over water distribution, land use, or suspected arson often occur (Asmawati, 2024). Fires not only damage the environment, but also weaken social bonds and reduce the quality of life of local communities.

Government initiatives to stop forest and land fires have so far been ceremonial in nature. Every year, socialization and prevention campaigns are carried out, but there is no system that truly guarantees a change in community behavior. Many residents do not feel they have a direct stake in fire prevention due to a lack of financial incentives and weak enforcement of regulations. Without a strong combination of environmental education, economic

incentives, and social control, behavioral change is difficult to achieve. This situation means that forest and land fire prevention programs are often only effective on paper.

The community also faces difficulties in acting as an early warning system because the disaster information system is not yet inclusive. Although the community is often the first to see signs of fire, the slow flow of information causes initial responses to be delayed. Post-fire policy evaluations are generally only administrative in nature, consisting of coordination meetings and report preparation. Ecological restoration efforts such as peat moistening, canal blocking, or planting buffer vegetation are rarely prioritized. This lack of synchronization between development, the government system, and ecological conditions is what causes forest and land fires to continue to recur in Banjarbaru (Arnowo, 2019).

From a political ecology perspective, recurring fires in Banjarbaru also reflect the dominance of property elites and developers in determining the direction of development. Land zoning policies are often influenced by these groups, resulting in the neglect of the natural hydrological functions of peatlands. This leads to an imbalance of power that marginalizes the voices of environmental groups and local communities. This pattern is similar to experiences in other regions such as Sumatra and Central Kalimantan, where a centralized governance approach has proven to be ineffective. Cross-regional lessons show that changes in policy based on political ecology are key to reducing the risk of recurring fires (Sabani, 2019).

To break the cycle of fires, environmental governance reform in Banjarbaru is an urgent necessity. The government needs to involve local communities as key partners through multiparty dialogue forums and the integration of indigenous knowledge into land planning. Community-based peat restoration, subsidies for agriculture without burning, and decentralization of prevention authority must be strategic priorities. The role of environmental NGOs and CSR organizations actually has great potential, but is still hampered by bureaucracy, as shown by the South Kalimantan WALHI report on more than 200 cases of illegal burning since 2020. On the other hand, the gender dimension is also important to consider, as data from the Regional Office for Population and Family Planning in 2023 shows that 60% of patients with respiratory tract infections (ISPA) due to smoke from fires are housewives, while women are rarely involved in decision-making on prevention (Mawardi & Khairullah, 2022). Furthermore, although the Regional Disaster Management Agency (BPBD) has utilized technologies such as drones and Landsat satellites, public access to real-time data remains limited, as evidenced by the 150 hotspots detected by the LAPAN FIRE application in 2024, which required up to 48 hours for verification. Without independent monitoring mechanisms, clear performance indicators, and annual audits by academics and NGOs, prevention policies will remain reactive and unable to promote sustainable ecological recovery.

Forest and land fires in Banjarbaru are a clear reflection of the failure of environmental governance, which is influenced by simultaneous political, economic, and ecological interactions. The dominance of development interests, weak community participation, and minimal ecological restoration after fires have created a cycle of vulnerability that continues to repeat itself. Reactive firefighting efforts without the support of long-term mitigation strategies have proven unable to solve the root of the problem. Therefore, ecological-political policy reform is a key prerequisite for building socio-ecological resilience in Banjarbaru. Without a paradigm shift towards more inclusive, transparent, and

environmentally-oriented governance, the risk of fires will remain a permanent threat to the city's sustainability.

## Conclusion

Forest and land fires in Banjarbaru during 2023–2024 show that the main problem of forest and land fires is caused more by weak environmental governance than by natural factors such as drought or climate change. Environmental governance in Banjarbaru still faces various fundamental challenges, particularly weak spatial planning supervision, institutional fragmentation, and an imbalance of authority between the city, provincial, and central governments. A reactive approach to fire management, budget constraints, and suboptimal inter-agency coordination further undermine the effectiveness of prevention. These conditions create recurring ecological vulnerabilities, resulting in fires occurring every year.

This study's analysis also confirms that the increased risk of fires is closely related to urban development patterns that do not take into account environmental carrying capacity, especially due to the conversion of peatlands for settlements and economic activities. The absence of peat restoration and fire-prone area rehabilitation programs as long-term policy priorities further increases the potential for forest and land fires. From a political ecology perspective, the fires in Banjarbaru are the result of interactions between economic interests, power structures, and poorly managed social dynamics within the community. Therefore, technical measures such as firefighting and law enforcement alone are not sufficient to solve the problem of forest and land fires in a sustainable manner. A more comprehensive environmental governance reform is needed through strengthening spatial planning, increasing the mitigation budget, more effective institutional coordination, and developing a community-based prevention system. However, this study is limited by its qualitative case study design and reliance on document-based data within a single municipal context, which may restrict the generalizability of the findings to other regions. Future research is recommended to employ comparative or mixed-method approaches across multiple localities and incorporate quantitative performance indicators to more rigorously evaluate the effectiveness of environmental governance interventions in reducing fire risks.

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