

Research Article

Ethnoecological Analysis for Implementation of Inter-organizational Networks in Forest and Land Fires Policy

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Abstract.

Forest fires are the most detrimental cause of forest destruction because in a short time, they can cause economic, ecological, aesthetic, and political losses. The purpose of this study is to analyze forms of biodiversity conservation carried out by local communities (ethnoecology) of people living in peat areas. This research was conducted in Riau Province, and the method used was qualitative. The unit of analysis in this study is the people who are considered to have knowledge about the implementation of inter-organizational networks in forest and land fire control in Riau Province. The results showed that forest and land fires that occurred in Riau Province were more common in company plantations and the rest occurred in community plantations. Implementation of inter-organizational networks in forest and land fire control in Riau province in the form of standards and objectives, resource policies, inter-organizational communication, and disposition (characteristics of implementing agencies). The recommendation from this research is to control forest and land fires in Riau Province starting from prevention and extinguishing to post-fire recovery, the local government massively socializing land clearing by burning to clear land without burning, as well as providing facilities and infrastructure for prevention, control, and repair after forest and land fires.

Keywords: peatland, policy Implementation, inter-organizational network ethnoecology, forest and land fires

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Published 6 March 2023

Publishing services provided by Knowledge E

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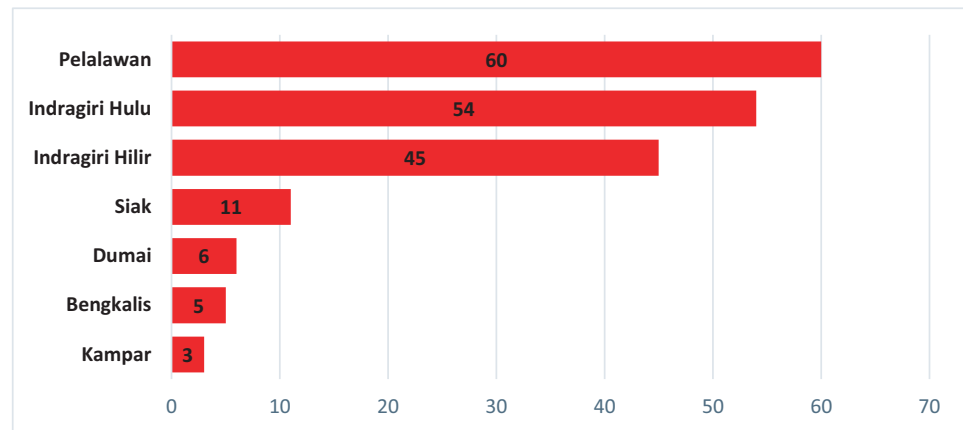
Selection and Peer-review under the responsibility of the IAPA 2022 Conference Committee.

1. Introduction

Based on data on forest damage in this country (Indonesia), the rate of forest decline or damage from year to year is increasing or increasing. The rate of permanent loss of forest area when viewed from data sourced from Baplan in the 1997-2000 period reached 2.83 million / year. Peatlands in this country are estimated to be in fourth place with an area of 20 million hectares, and Above Indonesia, there are countries such as the Soviet Union and America. Peatlands in Indonesia are mostly found on the islands of Papua, Sulawesi, Kalimantan and Sumatra.


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The meteorological and geophysical agency (BMKG) for Riau Province for 2020 explained that the most hotspots in Riau province were in Pelalawan Regency. As the graphic data below. Which illustrates that the Province of Riau with existing peatlands shows that it is highly flammable and fire data continues to occur every year and was the worst in 2015 and 2019.



Source: BMKG Pekanbaru Station, 2020

Figure 1: Number of Hotspots in Riau Province in 2020.

A series of forest and land fires in Indonesia in the last decade has captured the world's attention, including peat fires in most areas of Riau Province. Its strategic location not only makes Riau an economic node in the western region of Indonesia, but also becomes a source of jerebu in Southeast Asia. The use of peatlands in agricultural activities, especially for plantations in Riau Province, has been in the spotlight recently, due to the occurrence of peatland fires as the cause of the haze disaster in Indonesia. Peatlands are lands with water-saturated soil formed from deposits derived from the accumulation of plant remains with a thickness of 50 cm or more, and an organic carbon content of at least 12%. Ecosystems around peatlands are generally areas between two large rivers so that overflowing river water can inundate the area for a long period of time.

The results of previous studies, peatland ecosystems are very important in the hydrological system of the downstream area of a watershed because peat is able to absorb water up to 13 times its weight. Peat areas are also a very large store of carbon stocks, both above and below the ground surface (1). The government has issued a policy that the use of peatlands must be in line with sustainable development goals (2). Riau Province, which is about 56% covered with peatlands, is very vulnerable to haze disaster caused by peatland fires. Peatlands are fragile ecosystems formed over thousands of years by the accumulation of dense wet plant material (3).

This peatland located in Riau Province, approximately 2.30 hectares has been degraded. Even so, some of the peatlands can still be used by the local community, most of them use the land as a place for the cultivation of plantation crops, such as the cultivation of oil palm, pineapple and rubber which have good yields when sold. Not only that, they also use it for the cultivation of plants or food crops such as corn, sweet potatoes and others. Even so, there are still many peatlands that have not been used by the community, even though the land is very promising if it is used as agricultural land (4).

The use of peatlands will certainly affect the decline of the original biodiversity in the area. The value of biodiversity services is as a protector of the balance of the hydrological cycle as well as water management, the guardian of soil fertility, the marine environment through the supply of nutrients from forest litter; preventing erosion, abrasion and also controlling the microclimate (5). The benefits of biodiversity itself have a very high heritage value so it is very important to preserve biodiversity for future generations. Biodiversity is a value option that will be important in the future. The benefits of biodiversity are consumptive value to meet the needs of food, clothing and housing. Its productive value is related to local and national as well as international trade (6). However, forest and land fires that occur every year can certainly damage existing biodiversity.

Figure 2 below illustrates the extent of the distribution of fire hotspots in the forest and land fires that occurred in Riau province and in the end caused various diseases, one of which was infection in the respiratory tract of the community, especially in the elderly and children.

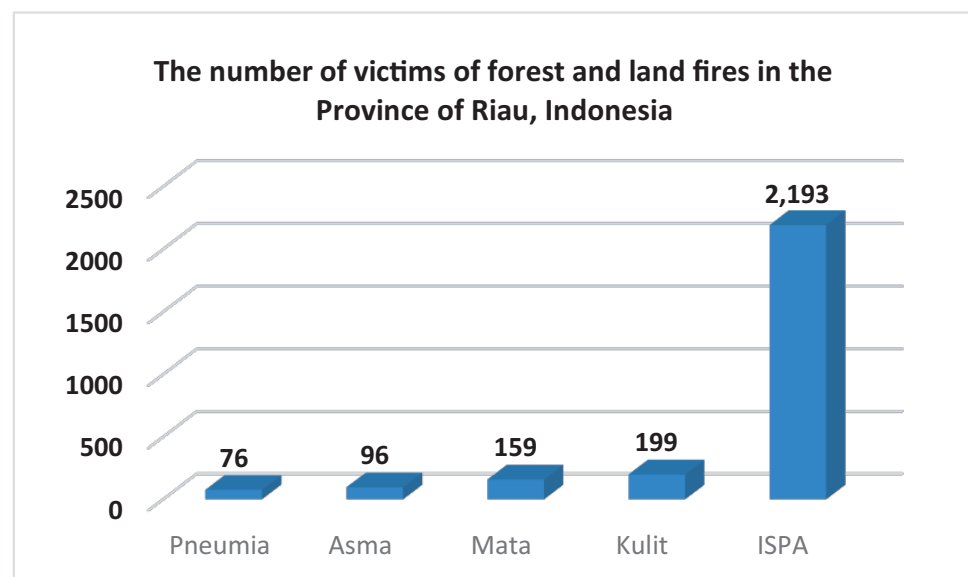


Figure 2: The number of victims of forest and land fires in the Province of Riau, Indonesia.

From the previous data and explanations it can be seen that there are several important identifications that occur in relation to the methods or strategies used in overcoming land and forest fires that use inter-organizational networks, this condition causes: (1) every year the number and area burned in The area of forest and land belonging to the state, companies and communities continues to increase. (2) not very good coordination between organizations involved in overcoming forest and land fires in Riau Province. (3). Hot spots and hot spots monitored by satellite are increasingly spread out and not just in certain areas. (4). Most of the people in the forest areas and land that were burned experienced health problems in the form of difficulty breathing, upper respiratory infections, especially for the elderly and toddlers and disruption of the learning process at school.

2. Theoretical framework

Land and forest fires are a problem for development and sustainable environmental management. Disasters that always occur in the dry season have caused ecological damage, decreased biodiversity, decreased economic value of forests and soil productivity, micro and global climate change, haze pollution which has an impact on public health, disruption of transportation both by land, rivers, lakes, seas and air. In addition, Setiawan (7) states that there are three main problems due to land and forest fires (Karlahut), namely (1) haze pollution, carbon emissions and other related impacts; (2) forest degradation, deforestation and loss of forest products; and (3) losses in the rural sector due to forest and land fires.

Organizational structure is a formal system of rules and duties as well as authority relations, how members of the organization relate, work together, and empower resources in order to achieve organizational goals. Inter-Organization Networks (Inter-Organization Network) in Local Government in Controlling Land and Forest Fires in Indonesia can be identified using the theory presented by Steve Leach (15). Where the network between organizations according to experts is strongly influenced by Organizational Structure, Organizational Coordination, Consistency of Program Goals. The Indonesian Government's planning and operational procedures for controlling forest and land fires have carried out the sections that serve as indicators for the network, although they have not been maximized so that there are still many forest and land fires in Indonesia. This is because there are determining factors that influence the occurrence of forest and land fires. And the determining factors for forest and land fire control: regulation,

political environment, social environment and culture, human resources, infrastructure and budget (funding).

The determinants of organizational network patterns in the belief system that underlies the relationship between actors (8) are external factors. And what includes external factors in a policy network pattern is a belief system formed from factors that are relatively easy to change. Includes legal authority (Regulation), number of supporters (political environment), cultural values (Socio-Cultural Environment), expertise (human resources), public opinion, technology (infrastructure), belief system and money/budget.

3. Method

Riau Province is an area with extensive peat hydrology and peat characteristics that are almost the same throughout Indonesia, so the research conducted in Riau Province can be said to be a representative study for Indonesia in the same study. The important and main point that was carried out in this study was to identify the factors that cause and drive forest and land fires which are described in: (1) The role and support in understanding peat areas and support in overcoming forest and land fires, especially in government blood through networks between organizations in forest and land fire prevention, as well as to companies that have operational areas in peat areas and also communities that depend on peatlands for their lives. (2). Implementation of policies in an effort to control forest and land fires through a network of organizations that are part of disaster management efforts in Riau Province.

In this study, informants included: the Riau Province Forestry Service, especially in the Forest and Land Fire Sector and also in the Forestry Licensing Sector; component of the Forestry Police in the forest area in the research location; elements of the Department of Agriculture and Food Crops; legislative members for the district and provincial levels; customary leaders; Companies operating in the plantation sector; NGOs concerned with forest and land fires; community components that are members of the Fire Care Society (MPA).

To collect research data, interviews with informants, observations, and surveys were carried out in areas where forest and land fires occurred. The units of analysis used in this study are the government, companies, communities concerned with fire and people who work as oil palm and pineapple farmers. The triangulation method is carried out by reducing data and then describing and explaining the results of the research and then drawing research conclusions.

4. Results and Discussion

The results showed that the network was defined by the exchange relationships formed between government groups and other organizations. The network analysis in this study focuses on the structure of the relationship between all groups and institutions. It is also a way to measure their collaborative abilities. To act effectively in times of disaster, networks require the sharing and effective use of information, which means collecting, compiling, analyzing and then disseminating it immediately and in a useful form (9). Once an effective disaster management network is established in all sectors, response and recovery tasks will be much more efficient and effective because it can increase the amount of resources needed to deal with various problems related to emergency management (10). How local government interacts with other organizations or stakeholders can be examined from an inter-organizational, citizen-to-organizational and organization-to-citizen perspective (11).

Riau Province is one of the provinces that has the largest peat soil in Indonesia. Peatland area of Prov. Riau reaches + 3,859,522 ha. Most of the peatlands have been used for various purposes such as plantations, industrial forest plantations, settlements and others. This is exacerbated by water management that has not been good so that the condition of the land becomes dry and the potential for forest and land fires is getting bigger.

Organizational structure is a formal system of rules and duties as well as authority relations for how members of the organization relate, cooperate, and utilize resources in order to achieve organizational goals. The results of the study show that the Inter-Organization Network in Local Governments in Controlling Land and Forest Fires in Riau Province is strongly influenced by the Organizational Structure, Organizational Coordination, Consistency of Program Targets, Planning and Operational Procedures in controlling forest and land fires by the Government that carries out the parts required. be an indicator of the network, although it cannot be maximized so that there are still many forest and land fires, this is due to the determining factors that influence the occurrence of forest and land fires, such as: Regulations, Political Environment, Social and Cultural Environment, Human Resources, Infrastructure and Budget (funding).

Organizational structure is a formal system of rules and duties as well as authority relations how members of the organization relate, cooperate, and empower resources in order to achieve organizational goals. The local government bureaucracy for forest and land fire control is still partially handled and tends to be sectoral according to the interests and interests of each agency. And some of the informants who were

interviewed by the researchers while in the field stated that many of them stated that at the time of the fire the organization structure was only incidental. The command post that handles forest and land fires consists of a combination of several agencies working together to extinguish the hotspots. So that the cooperation that exists and the planning carried out while in the field is less focused and cannot be maximized.

Weaknesses in organizing can be caused by a number of factors, including: (1) unclear roles in organizing; (2) the relationship between the organizations involved is not yet optimal; and (3) the ineffectiveness of the organizations involved. This concerns the level of management that shows the overall synchronization of the mechanism in the network.

Community involvement to restore peat ecosystems is also synchronized with various other government work programs such as Social Forestry. The provision of access to the community through Social Forestry has undergone a change in orientation from, by, and for the people (12). From the beginning of timber management to forest landscape management, or from the beginning of conventional forestry development oriented to wood extraction, to the era of post-timber forestry.

With five schemes namely Village Forest, Community Forest, Community Plantation Forest, Customary Forest, and Forestry Partnership, the allocation of land ownership for community groups has reached 4.42 million ha, with a total of 6,798 SK Permits/rights for approximately 895,800 families. This figure has roughly increased community ownership of forest land to 13-16%, an increase compared to before 2015 which was only 4%. The figure is believed to continue to rise in line with the social forestry target of 12.7 million ha. It is estimated that the number of 'fairness' fulfilling the mandate of the 1945 Constitution will reach the level of 30-35% for small groups of people at the end of the government period. This program is a symbol of the state's presence in forest communities, and also has an impact on increasing people's income (13), thus affecting the fair use of natural resources, including the sustainable use of peatlands.

Community involvement makes policy implementation more effective (14), in this case peat protection will be carried out collectively based on policy corrections that have been made by the government. In addition, the Peat Care Village program carries out integrated community empowerment by increasing financial capital, physical capital, human capital, institutional and natural resource management. The government through the Ministry of Environment and Forestry also provides other stimulus in the form of Social Forestry Development Assistance (Bang Pesona) which aims to improve the business capabilities of recipients.

Inter-Organizational Coordination, the obstacles faced; Coordination is only in the form of sharing information when a fire occurs and coordination between organizations has not yet reached the prevention and recovery stages after a fire. Next is Program Consistency, the obstacles faced: The forest and land fire control program has not been consistently implemented as a whole (prevention, suppression, and recovery). For Planning and Operational Strategies, constraints faced: Planning procedures are not clearly described because the forest and land fires committees Command Post is only incidental.

The results of research related to Inter-Organization Networks in Local Governments in Controlling Land and Forest Fires in Riau Province, which are seen the four indicators are: Organizational Structure, Organizational Coordination, Program Consistency, Planning and Operational Procedures. Where the results of research using these four indicators are the inter-organizational network in the Rokan Hilir Regency Government that has not been successfully implemented, causing an increase in the number of hotspots in 2020.

Organizations-in this case government organizations, are assumed to be institutions that are organized and run. This assumption puts emphasis on structure and process. In the context of traditional organizations, the assumptions on the structural aspect relate to the elements: (a) the need for a committee system, (b) division of work units (departmentalism), and (c) centralized control (centralization). While the process aspect (ways of working) contains a set of assumptions: (a) can stand alone (autonomy), (b) uniformity, (c) direct control, (d) professionalism, and (e) formal accountability (formalities of accountability).

Based on the condition of the organizational structure above, it can be seen that between the theories used by the researcher, namely Steve Leach (15) and those in the field, it has not been able to be shown thoroughly to the Riau Province government in preventing and controlling forest and land fires at this time. Although basically included in the category of Riau Province of government is an organization in a traditional context, but to meet the criteria or indicators of the organizational structure presented by Leach (15) has not been able to be realized which results in many problems of forest and land control and prevention.

The coordination that takes place in the context of government bureaucratic relations is characterized by: (1) hierarchical coordination, namely vertical coordination between leaders and members, and (2) functional coordination, coordination carried out by one official to another official or an agency with other agencies, which tasks are interrelated based on organizational functions with a tendency to hierarchical coordination. And

when viewed in terms of actors and the position of the coordinating parties, the type of coordination that takes place can be categorized into three types, namely: (a) Functional Coordination (horizontal/diagonal): between two or more Agencies that have related programs; (b) Institutional Coordination, against several Agencies that handle a particular business concerned; and (c) Territorial Coordination, towards two or more regions with certain programs.

Peat Restoration is an effort to restore degraded peat ecosystems so that their hydrological conditions, structures and functions are in a restored condition. Through peat restoration, the restoration of degraded peat ecosystems can restore hydrological conditions, structures and functions to a restored condition. The results of research by Syahza et al (2), the management and use of peatlands have contributed to the economy, even as the main source of livelihood for coastal communities. Utilization of peatland based on local wisdom can preserve the peat ecosystem.

The implementation of peat restoration activities can be carried out through 3 pillars, namely revegetation, rewetting, and revitalizing community livelihoods. Rewetting of dry peat material due to the lowering of the peat soil water level. Revegetation is one of the main pillars in peat restoration where its activities are focused on restoring or rehabilitating vegetation of a land after experiencing disturbance or damage. While revitalization is the economic empowerment of local communities to find ways to improve their standard of living through peatland processing, such as planting sago, rubber, jelutung, ramin, gaharu, and meranti. In addition, some crops such as coffee, pineapple, and coconut are also peat-friendly plants and have economic value for local communities.

The main causes of peatland degradation are human activities, whether intentional or not. Only a small part of the damage caused by nature

As much as possible, revegetation activities should involve stakeholders, especially the community in order to provide added value for them, and ensure the continuity of the program in the future. According to Syahza et al (2), the application of eco-hydro technology can be beneficial for biodiversity because it minimizes degradation, reduces carbon emissions, and prevents fires. Integrated peatland management can increase land productivity and contribute to the economy. Peatland management should be based on local wisdom (16). One of the problems faced in the use of peatlands is the low level of community participation in the development of peatland management policies. As a result, the implementation of these policies is still conflicting, prone to disputes and difficult to carry out (16).

Peatlands can be replanted (revegetated) with plants that do not interfere with the water cycle in the peat ecosystem. The vegetation process will maintain the sustainability of the peat ecosystem and also strengthen canal blocking, as well as protect peatlands from being eroded by the flow of canal water. According to Hasibuan et al (17), peatland maintenance can also be done with local fish farming to maintain peatland moisture and prevent fires.

Revegetation is an effort to restore land cover in peat ecosystems through planting native plant species in protection functions or with other types of plants that are adaptive to wetlands and have economic value in cultivation functions. Revegetation activities are different from other activities, revegetation has a more severe challenge because the ultimate goal of the activity is not how many plants are planted, but how many plants survive. On this basis, revegetation activities must be well planned and implemented seriously. The process in revegetation activities will determine the outcome of an activity

Biodiversity is all life on the surface of the earth, be it plants, animals, fungi and other microorganisms. However, in our research, we focus on preserving one of the biodiversity, namely plants that are cultivated on peatlands, namely oil palm and pineapple. Ethnoecology is a branch of science that examines the relationship between the people of an area and the surrounding environment. The community adapts and interacts with nature and then develops its culture so that processes of ecosystem change occur. The diversity of adaptation patterns and the area or environment that exists in Indonesian society is passed down from generation to generation from their ancestors and it is also a guide in utilizing natural resources and the surrounding environment, known as local wisdom in an area or community. From this local wisdom, the community can survive various crises, one of which is a cultural and economic crisis. Therefore, local wisdom is very important to be discussed and preserved in a society in order to maintain a balance with its environment while preserving the surrounding environment.

Biodiversity in Riau province has a lot of peat land that has not been used because many land owners are not local people and are left alone, so that it becomes a forest or bush that is vulnerable and often also burns. Although there is a lot of land that has not been used, there are some lands that have been used to grow ornamental plants, major vegetables, oil palm and pineapple and the majority of residents or farmers here cultivate pineapples.

The forms of inter-organizational networks in peat areas with regard to their ethnoecology are: 1. Inter-organizational networks, relations between central and local governments. 2. Citizen-to-organization networks, ie strong working relationships with

communities, local government and other institutions such as NGOs. 3. Organization-to-citizen network, in the form of community participation which includes the willingness of the community to express and provide input to the government as well as to be involved in local government programs; local governments, in turn, use all of these inputs in considering how to improve the quality of public services

5. Conclusion

The conclusions in this study are: Successful implementation of forest and land fire management policies requires high-level networking with other organizations and communities. At the same time, it must involve local culture, traditions and customs (ethnoecology). In other words, it is very important to consider the environmental context of the areas and areas affected by the disaster network. The strategic choice to include social capital and local cultural behavior, in aspects such as solidarity and tolerance, has an impact on accelerating aid distribution and requiring local governments to be more responsive to the needs of their citizens.

Forest and land fire prevention strategies through organizational networks in Riau Province are still not optimal. This is because: Regulations related to technical guidelines for handling / controlling forest and land fires have not been fully implemented. This is because: inter-organizational regulations and budgets have not been maximally integrated and the social and cultural environment; clearing new land by burning has become a tradition in the community. Another conclusion is due to the low quality of human resources who handle forest and land fire control. The infrastructure is insufficient to carry out renewal and periodic maintenance.

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