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**IMPLICATIONS OF INEFFECTIVE FOREST AND LAND FIRE MULTI-REGULATORY DISASTER MANAGEMENT POLICIES IN DISASTER RISK REDUCTION IN INDONESIA**

## 无效森林和林火多法规制灾害管理政策在印度尼西亚减轻灾害风险中的意义

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**Abstract**

This study aims to analyze the legislative and executive public officials' actions in establishing multi-regulatory policies regarding forest and land fire disaster management in Indonesia. The present study represents descriptive qualitative research. The theory of power and authority, public policy theory, and collaborative governance theory were utilized to sharpen the research results. The data was analyzed using an interactive analysis. The results of the analysis were based on ontology, epistemology, and sociology research. To empower the prevention of forest and land fires in Indonesia, a vision and mission of public policies related to forest and land fires are needed; building prevention and suppression facilities; providing information to companies and the community regarding regulations and sanctions if forest fires are carried out deliberately; and a balanced provision of good land management. Forest and land fires can also be reduced by proper forest management focused on reducing trees, bushes, and grass that are too dense in fire-prone areas because they are flammable and can facilitate bigger and longer fires. A forest with trees that are spaced out is a good preventive measure in fire management. The research result shows that public officials have made multi-regulations so that the implementation is not effective. The results of this research are to be able to revise regulations that public officials

have made. The researchers suggest that relevant state institutions as public officials in making regulations on forest and land fire management in Indonesia should conduct it in the form of one regulation and one institution, covering the holistic governance of disaster reduction.

**Keywords:** Public Policy, Disaster Management, Forest Fire, Land Fire, Collaborative Governance

## 摘要

这项研究旨在分析立法和行政公职人员在制定有关印度尼西亚森林和土地火灾管理的多重监管政策方面的行动。本研究代表描述性定性研究。权力和权威理论，公共政策理论和协作治理理论被用来增强研究成果。使用交互式分析来分析数据。分析的结果基于本体论，认识论和社会学研究。为了增强印度尼西亚预防森林和土地火灾的能力，需要与森林和土地火灾有关的公共政策的愿景和使命；建立预防和压制设施；如果故意进行森林大火，则向公司和社区提供有关法规和制裁的信息；平衡地提供良好的土地管理。也可以通过适当的森林管理来减少森林和土地火灾，森林管理的重点是减少易燃区域中太密的树木，灌木和草类，因为它们易燃并且可以助长大火。树木间隔开的森林是防火管理中的良好预防措施。研究结果表明，公职人员制定了多项法规，因此实施效果不佳。这项研究的结果是能够修改政府官员制定的法规。研究人员建议，有关国家机构作为政府官员，在制定印度尼西亚森林和土地火灾管理法规时应以一种法规和一种机构的形式进行，涵盖了减灾的整体治理。

**关键词:** 公共政策，灾难管理，森林火灾，土地火灾，合作治理

## I. INTRODUCTION

Forest and land fire disasters often occur in Indonesia. The main reason is the ineffective implementation of disaster risk reduction by the National Disaster Management Agency (NDMA).

This study aims to analyze the multi-regulatory public policies related to forest and land fire disaster management using the theoretical principles of ontology, epistemology, and sociology.

### A. Background

Public policy has been expressly argued as a necessity, and the public policy conducted by the government benefits both public and society [1]. The concept of the framework found many anomalies in the implementation of the structural policy package in a number of developing countries, including in Indonesia. In Indonesia, democratic actors brought up in corrupt political-economic systems can freely collaborate with business interests that are naturally driven by profit-oriented behavior. In an environment of democratization and market liberalization that has not been well-consolidated, the "affair" between the political power and economic power often creates a network of power that can easily change its face into an engine for state budget

dredging and exploitation of state resources on a massive scale. As a result, even though democracy is developing and markets are increasingly open, at the same time, corruption practices are also expanding to create their networks of power, creating systems of protection and legitimacy. Through that legitimacy, they can also enforce 'political order' within the structure of that power [2].

Power in Indonesia is in the hands of politicians who are the bureaucrats in the executive, legislative, and even the judiciary branches. They get that power through political party channels. The founders and administrators of the political parties act as a political broker. They tend to receive some funds to pass a prospective politician as an election candidate in the parliament. Or else, they get a strategic position in a state-owned enterprise to influence a regulatory policy that favors the political broker. Therefore, it can be stated that they commit corruption, collusion, and nepotism practices [3]. These practices create a conflict of interest for these public officials in making regulations for effective and efficient forest and land fire management in Indonesia.

In reality, the conflict of interest is correctly understood as a situation, not an action, and a public official may find him or herself in a conflict of interest without actually behaving

corruptly. However, conflict of interest has a close relationship with corruption acts committed by the culprit. Conflict of interest is a situation, such as a plan or desire, which is only known by a person and is not an act. In contrast, corruption is a concrete manifestation of the conflict of interest someone has. Thus, it can be said the difference between a conflict of interest and corruption is a thin line, and it cannot be separated, like a body and a soul. Corruption does not occur if the corruptor did not have a conflict of interest, and vice versa, conflict of interest is not achieved without corruption. Conflict of interest and corruption have similarities in violating the legal norms and rules and in the existence of a conflict of interest between personal interests/ groups with the public interest [4]. In this case, there is a conflict of interest on multi-regulatory policies by state institutions as public officials.

The first regulation is fire disaster management. A disaster is an event or series of events that threatens and disrupts the lives and livelihoods of those in the community. Disasters are caused by natural or non-natural factors as well as human factors, resulting in human casualties, environmental damages, property loss, and psychological impacts. The central government is responsible for implementing disaster management. The responsibilities of the government in implementing disaster management include disaster risk reduction and its integration with development programs. The responsibility of the government, as referred to in Article 5, shall be to establish a National Disaster Management Agency. The National Disaster Management Agency, as referred to in paragraph (1), is a non-departmental government institution at the ministerial level. The responsibility of the government, as referred to in Article 5, shall be to establish a Regional Disaster Management Agency. The Regional Disaster Management Agency, as referred to in paragraph (1), consists of a). an agency at the provincial level led by an official at a level below the governor or echelon level; and b). an agency at the district or city level led by an official at a level below the regent or public official positions in Indonesia. Based on the regulation concerning disaster management, including forest fire disaster, forest management has its own regulations and separate institutions or agencies.

The second regulation is a forest area, which is an integrated ecosystem in the form of a landscape containing biological natural resources dominated by trees that cannot be separated from one another in a natural environment. A forest

area is a certain area designated by the government to maintain its existence as a permanent forest. The utilization of protected forests can be in the form of area utilization, environmental service utilization, and non-timber forest products. This is carried out through the granting of area utilization business permits, environmental service utilization business permits, and non-timber forest product collection permits. The development of forest protection areas is an effort to prevent and limit damage to forests, forest areas, and forest products, which is caused by the actions of humans, livestock, fires, natural forces, pests, and diseases. Rights or permit holders are responsible for forest fires in their working areas. The government is obliged to supervise forest management, which is carried out by the regional government. The central government, regional government, and the community shall supervise the management and utilization of forests by third parties. Based on the ontology of article by-laws and regulations made by the legislative and executive as public officials, there are multiple policies on forest fire disaster management and forest monitoring. Also, in the event of a forest fire disaster, the responsibility for fire disaster management lies in the hands of rights holders. In this case, the holder of forest management rights is the business entity, an individual, or the state; in this case, the rights to the protected forest. Ontologically, if there is a forest fire management team which is responsible for handling the National Disaster Management Agency, in this case the implementation of disaster risk reduction of forest fires will not be effective.

Furthermore, in the third regulation, a forest is an integrated ecosystem of the landscape containing biological natural resources dominated by trees in its natural environment, which cannot be separated. A Forest and Land Rehabilitation, hereinafter abbreviated as RHL, is an effort to restore, maintain and improve the functions of forest and land in order to increase their carrying capacity, productivity and role in maintaining life support systems. Forest reclamation is an effort to repair or restore a damaged forest area so that it functions optimally in meeting its purposes. Forest reclamation is carried out as a result of a disaster in a forest area, where a disaster as referred to in paragraph (1) may occur due to a). natural factors, or b) negligence of concession rights holders, forest use permit holders, or forest lease-use permit holders. The relevant minister serves to administer government affairs in the

environmental and forestry sector. Based on the ontology of the description of regulations made by the executive in the form of Government Regulation of the Republic of Indonesia Number 26 of 2020 on Forest Rehabilitation and Reclamation, the maintenance of supervision, protection and forest restoration is not the power and authority of the National Disaster Management Agency, but the state agency of the Ministry Forestry and Ministry of Environment.

The description of the multi-regulatory policies in fire disaster management and forest land in Indonesia were made and established by the legislative and executives as public officials. However, at the ontological level, the implementation has a very significant problem with the disaster risk reduction of forest fires in Indonesia. Therefore, this issue is very interesting to study.

## **B. Research Objectives**

This research is useful for academics in adding knowledge of public policy concepts of forest fire disaster management. For the legislative and executive, as the power and authority or public officials, they should make regulations on forest and land fire disaster management.

## **C. Original Research**

Initially, government representatives managed environmental problems by enforcing strict rules and standards set out in legislation and treaties. However, with the rise of neoliberalism in the 1980s, governments began to shift attention away from this Westphalian vision of hierarchal state power. Instead, they began to curb environmental degradation via market-based approaches, voluntarism, and other “light-handed” policy initiatives such as partnerships and cooperation. Yet, by the end of the 1990s, with continuing ecological degradation and increasing complexity of social and environmental problems, a shift toward new environmental governance (NEG) emphasized collaboration, integration, participation, and deliberative decision-making, adaptation, and learning styles. As with many other issues discussed in this book, NEG may equally be described as polycentric governance. Governments, non-governmental organizations (NGOs), the private sector, and civil society form various decision-making and action centers that are formally independent of each other but can either function independently or constitute an interdependent system of relations. Although NEG is still an evolving concept, a growing

number of scholars and policymakers believe it can substantially improve the effectiveness, efficiency, and legitimacy of responses to environmental problems [5]. Previous research, as well as this study, constitute disaster management research. However, this study differs from previous research on environmental regulation and governance, which studied how the government and its agencies manage environmental problems by enforcing strict rules and standards set out in laws and treaties. Instead, this research analyzes multiple policies regarding fire and land disaster management in Indonesia.

The next researcher is Thomas Fischer, on Disaster and Risk Management: The Role of Environmental Assessment [6]. Environmental degradation frequently plays a key role in the occurrence as well as severity of disaster events. For example, deforestation can increase the risk of landslides and flash floods [34]. Also, wet land depletion can increase the risks posed by storm surges and tsunamis to coastal communities. Recognizing this relationship between environmental degradation and disaster events has led to environmental management instruments being seen as a key tool for reducing disaster risk. In this context, over recent years, an environmental assessment (EA) has gained much attention as a particularly suitable instrument for disaster and risk management, including both environmental impact assessment (EIA) of projects and strategic environmental assessment (SEA) of policies, plans, and programs. EA can help reduce the negative impacts of development activities on the environment and, in doing so, can help prevent the underlying causes of disaster risk. However, the role it is already playing in this context can be strengthened. Benson [6] and Gore and Fischer [6] suggested that this may include: (1) Incorporating explicit disaster risk considerations into development planning through EA, for example, by explicitly considering how deforestation associated with a proposed development project could reconfigure landslide or flood risk in a locality. (2) Preventing disaster recurrence and promoting sustainability by fully integrating EA into activities in the post-disaster period. Frequently, this is a time when EA considerations are sidelined in order to hasten disaster response or recovery interventions [6]. Simultaneously, the similarities between the previous research and this research are both disaster management research. The difference of previous research on environmental regulation and governance is that the government and its agencies manage

environmental problems by enforcing strict rules and standards set out in laws and treaties. At the same time, this study analyzes multi policies regarding fire and land disaster management in Indonesia.

The next researcher, Anthony J. Bebbington [7], characterizes Central America by an asymmetric forest transition in which net deforestation is a product of both forest loss and patches of forest resurgence. Forest loss is also associated with rights violations. We explore the extent to which extractive industry and infrastructure investments create pressure on forest resources, community rights, and livelihoods. Drivers of this investment are identified: constitutional, legislative, and regulatory reforms; energy policies; new financial flows; and ideas of development emphasizing the centrality of infrastructure in combining geographical integration and economic growth. We discuss forms of contentious action that have emerged in response to these pressures, asking how far and in what ways this contention has elicited changes in the policies that govern investment and extractive industry and how far such changes might reduce pressure on Central America's remaining forest cover. The paper develops a conceptual framework for analyzing relationships among contention, policy change, and the resilience of policy changes [7]. Simultaneously, the similarities between the previous research and this research are both disaster management research. The difference of previous research on environmental regulation and governance is that the government and its agencies manage environmental problems by enforcing strict rules and standards set out in laws and treaties. At the same time, this study analyzes multi policies regarding fire and land disaster management in Indonesia.

## II. RESEARCH METHODS

The research method used in this research is a qualitative approach. This approach produces descriptive data in the form of words or writings and behaviors observed from the subject itself. The qualitative approach was chosen because it is in accordance with the researcher's aims, where qualitative research is used to describe and analyze phenomena, events, social activities, attitudes, beliefs, perceptions of people individually or in groups.

The data collection techniques used in this study were literature review, interview, and documentation. The data analysis technique used in the study was data reduction (sorting out the

primary data), displaying the data (presenting the data), and verifying and concluding the data. Checking the validity of the data in this study was using triangulation, meaning that the researcher checks the validity of the data based on the observation, in-depth interview, and documentation to get valid and reliable data.

## III. LITERATURE REVIEW

### A. Review of Public Policy Theory

One of the early figures who tried to define public policy was Thomas Dye. Thomas Dye describes public policy as everything chosen by the government to do or not to do. The definition is deemed too narrow to describe public policy. Two meanings can be taken from Thomas Dye's definition. First, Dye argued that public policy could only be made by the government, not private organizations. Second, Dye reaffirmed that the public policy concerning the selection done or not done by the government [8]. Public policy as the government's social action turns into action that has legal implications, while public policy as a Government obligation is protected and regulated by legislation. James E. Anderson classifies the types of public policy into: a. Substantive and Procedural Policies b. Distributive, Redistributive, and Regulatory Policies; and c. Public Goods and Private Goods Policies [9].

William Jenkins defines public policy as a decision of various actors that are interconnected to achieve certain goals. The matter needs to be underlined. William emphasis more on the public policy in the policy-making process, unlike Thomas Dye, who only defines public policy as a choice made by the government. Besides, James Anderson defines public policy as the policy established by agencies and government officials, although actors and external factors can influence these policies. In making policy, the government must make choices between objectives and alternatives, and the choice always involves the will. The government policies are generally not standing alone but consist of a coordinated set of policies to achieve a goal [10]. Easton defines public policy as an authoritative allocation of values for the whole society. Laswell and Kaplan also define it as a projected program of goals, values, and practices. Pressman and Widavsky define public policy as hypothetical containing initial conditions and predictable effects. Wolls Lisan states that public policy is several government activities to solve society's problems, either directly or through various institutions that affect people's lives [11].

There are three qualifications in defining the public policy: (i) an idea involving a series of expected actions included in the decision making does not make any specific steps. (ii) the actions taken by the government as an institution or government officials must be accompanied by legal or customary sanctions acceptable by the parties for the public officials often take action outside of public policy such as receiving bribes or acted beyond its authority; (iii) laws or regulations should not be mistaken for overall public policies, and the law or legislation must not conflict with the public policy goals. The law makers are to establish policies and consider implementation, interpretation, enforcement, and impact of laws and the regulation, as everything is a part of the public policy. The central government can issue the public policy to local government, with its various types [12]. In making policy, the government must choose between goals and alternatives, and choices always involve the will. A government policy is generally not independent but generally consists of a series of coordinated policies to achieve a goal.

Based on the epistemological and sociological description of several definitions of public policy theory as a refinement of this research, it can be stated that the making of multi-policies on forest and land fire disaster management that often occurs in Indonesia is part of public policy theory.

## **B. Review of Collaborative Governance**

Over the last two decades, a new strategy of governing called "collaborative governance" has developed. This governance model brings multiple stakeholders together in common forums with public agencies to engage in consensus-oriented decision-making. In this article, we conduct a meta-analytical study of the existing literature on collaborative governance to elaborate a general model of collaborative governance. The ultimate goal is to develop a contingency approach to collaboration that can highlight conditions under which collaborative governance will be more or less effective as an approach to policy-making and public management. In conducting this meta-analytic study, we adopted a strategy called "successive approximation". We used a sample of the literature to develop a common language for analyzing collaborative governance and then successfully "tested" this language against additional cases, refining and elaborating our collaborative governance model as we evaluated additional cases [13].

Definition collaborative governance is as follows. It is a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets. This definition stresses six important criteria: (1) the forum is initiated by public agencies or institutions, (2) participants in the forum include non-state actors, (3) participants engage directly in decision-making and are not merely "consulted" by public agencies, (4) the forum is formally organized and meets collectively, (5) the forum aims to make decisions by consensus (even if consensus is not achieved in practice), and (6) the focus of the collaboration is on public policy or public management. This is a more restrictive definition than is sometimes found in the literature. However, the wide-ranging use of the term has, as Imperial notes, been a barrier to theory building. Since our goal is to compare apples to apples (to the extent possible), we have defined the term restrictively to increase our cases' comparability [14].

One critical component of the term collaborative governance is "governance." Many research pieces have been devoted to establishing a workable definition of governance that is bounded and falsifiable, yet comprehensive. For instance, Lynn, Heinrich, and Hill [15] construe governance broadly as "regimes of laws, rules, judicial decisions, and administrative practices that constrain, prescribe, and enable the provision of publicly supported goods and services." This definition provides room for traditional governmental structures and emerging forms of public/private decision-making bodies. On the other hand, Stoker argues: As a baseline definition, it can be taken that governance refers to the rules and forms that guide collective decision-making. That the focus is on decision-making in the collective implies that governance is not about one individual making a decision but rather about groups of individuals or organizations or systems of organizations making decisions[15].

Although there are many forms of collaboration involving strictly non-state actors, our definition stipulates a specific role for public agencies. Using the term "public agency," we intend to include public institutions such as bureaucracies, courts, legislative bodies, and other governmental bodies at the local, state, or federal levels. However, the typical public institution among our cases is, in fact, an

executive branch agency, and therefore, the term “public agency” is apt. Such public agencies may initiate collaborative forums to fulfill their purposes or comply with a mandate, including court orders, legislation, or rules governing federal funds allocation. For example, the Workforce Investment Act of 1998 stipulates that all states and localities receiving federal workforce development funds must convene a workforce investment board that comprises public and private actors to develop and oversee policies at the state and local level concerning job training, under-, and unemployment. According to our definition, these workforce investment boards are mandated to engage in collaborative governance [16].

We use the term “stakeholder” to refer to citizens' participation as individuals and the participation of organized groups. For convenience, we will also hereafter use the term “stakeholder” to refer to both public agencies and non-state stakeholders. However, we believe that public agencies have a distinctive leadership role in collaborative governance. Our definition of collaborative governance also sets standards for the type of participation of non-state stakeholders. We believe that collaborative governance is never merely consultative. Collaboration implies two-way communication and influence between agencies and stakeholders and opportunities for stakeholders to talk with each other. Agencies and stakeholders must meet together in a deliberative and multilateral process. In other words, as described above, the process must be collective. Consultative techniques, such as stakeholder surveys or focus groups, although possibly very useful management tools, are not collaborative in a sense implied here because they do not permit two-way flows of communication or multilateral deliberation [17].

Collaboration also implies that non-state stakeholders will have a real responsibility for policy outcomes. Therefore, we impose the condition that stakeholders must be directly engaged in decision-making. This criterion is implicit in much collaborative governance literature. Freeman, for example, argues that stakeholders participate “in all stages of the decision-making process.” The watershed partnerships, studied by Leach, Pelkey, and Sabatier, make policy and implementation decisions on a range of ongoing water management issues regarding streams, rivers, and watersheds. Ultimate authority may lie on the public agency (as with regulatory negotiation), but stakeholders must directly participate in the

decision-making process. Thus, advisory committees may be a form of collaborative governance if their advice is closely linked to decision-making outcomes. However, in practice (and by design), advisory committees are often far removed from actual decision-making [18].

We impose formal collaboration criteria to distinguish collaborative governance from more simple and conventional agency-interest group interaction forms. For example, the term collaborative governance might be considered to describe the informal relationships that agencies and interest groups have always cultivated. Surely, interest groups and public agencies have always engaged in two-way flows of influence. The difference between our definition of collaborative governance and conventional interest group influence is that the former implies an explicit and public strategy of organizing this influence. For example, Walter and Petr describe collaborative governance as a formal activity that “involves joint activities, joint structures, and shared resources,” and Padilla and Daigle prescribe the development of a “structured arrangement.” This formal arrangement implies organization and structure [19].

Based on the epistemological and sociological description of several concept definitions, it defines collaborative governance as a refinement of this research. It can be stated that the making of multi-policies of forest and land fire disaster management that often occurs in Indonesia can use the concept of collaborative governance.

#### **IV. DISCUSSION AND ANALYSIS**

According to Agus Wibowo, Head of the Center for Disaster Data, Information and Communication at the National Disaster Management Agency, forest, and land fires occurred on peatland and mineral land [20]. The Ministry of Environment and Forestry (KLHK) noted that the area of burned land throughout Indonesia reached 857,000 hectares identified from January to September 2019 [21]. With details of 630,451 hectares of mineral land and 227,304 hectares of a peat. T. The data from the Ministry of Environment and Forestry notes that the area of burned peat has reached 227,000 hectares of Forest and Land Fires. On peatland, the largest fire is in Central Kalimantan, with an area of 76,000 hectares [22]. For mineral land, it occurs in East Nusa Tenggara, an area of 119,000 hectares. Fire on mineral land occurs in all provinces in Indonesia, with the smallest affected area in Banten Province with 9 hectares [23].



Figure 1. Forest fires in Palangkaraya, 2015 [24]

According to Agus Wibowo, there are forest and land fires every year, both on mineral land and peatland in several Indonesian provinces. The area of burned land in Central Kalimantan Province is 134,227 hectares, West Kalimantan 127,462 hectares, South Kalimantan 113,454 hectares, Riau 75,871 hectares, South Sumatra 52,716 hectares, and Jambi 39,638 hectares [25]. Based on data from the Ministry of Environment of the Republic of Indonesia, the total area of burned land per September 2019 is greater than the area of forest and land fires in the last three years. The area of forest and land fires in 2018 was 510,000 hectares, while in 2016, it was 438,000 hectares. Meanwhile, based on data from the National Disaster Management Agency of the Republic of Indonesia, it is noted that forest and land fires are still occurring in several regions in Indonesia. Hot spots were identified in six provinces of South Sumatra with 153 points, Central Kalimantan 44 points, South Kalimantan 23 points, West Kalimantan 5 points, and Jambi 2 points. Forest and land fires in Indonesia have an impact on public health due to air pollution. The following is a breakdown of air quality measured by PM 2.5 in six provinces: South Sumatra (unhealthy) air pollution 136, Jambi unhealthy 102, Central Kalimantan unhealthy 101, South Kalimantan unhealthy 60, Riau moderate air pollution 27. Only West Kalimantan air quality shows a good level despite five hotspots [26].

Ontological, epistemological, and sociological analysis by the researchers, based on data from the National Disaster Management Agency of the Republic of Indonesia and the Ministry of Environment of the Republic of Indonesia (the two state institutions are public officials), is in this case in line with public policy theory. The state already has the power and authority for fire and land disaster management in Indonesia, as regulated in Law of the Republic of Indonesia Number 24 of 2007 concerning Disaster Management and Law Number 32 of 2009 concerning Environmental Protection and

Management. The researchers suggest that stakeholders should make a collaborative regulation in line with the concept of Collaborative Governance.

Forest and land fires in Indonesia have become regional and global disasters. This is because the smog and combustion gases (such as CO<sub>2</sub>) emitted into the atmosphere from forest and land fires spreads to the countries bordering Indonesia. Forest and land fires occur almost every year, especially during the dry season. Last year, forest and land fires occurred in West Kalimantan, Central Kalimantan, South Kalimantan, Balikpapan, Jambi, and South Sumatra [27]. President Joko Widodo implemented an emergency alert status in these six provinces due to the smoke haze that was produced. The National Disaster Management Agency noted that the burned area consisted of 328,724 hectares (ha) with 2,719 hotspots from January to August 2019 [28]. Based on these data, the largest fire impact occurred in Balikpapan, reaching 49,266 ha, followed by Central Kalimantan (44,769 ha,) West Kalimantan (25,900 ha), South Sumatra (11,426 ha), and Jambi (11,022 ha). The impact has been continuously felt across the nation and in adjacent countries since 1998, resulting in social, economic, and ecological environmental losses [29].



Figure 2. Impact of forest and land fires on the road in Tumbang Nusa, Central Kalimantan, in 2015

Forest and land fires have negative impacts on various aspects of life, including the disruption of access to transportation, increased incidences of health-related issues, and the cessation of community social activities. Moreover, other countries, especially Singapore and Malaysia, have accused Indonesia of being a smog exporter, thus disturbing bilateral relations between neighboring countries. According to the 2016 Land and Forest Fire Task Force report, forest and land fires are caused by a variety of factors. One factor is that agricultural land is still cleared using the burning method. A second factor is that some types of land are being neglected, especially peat areas that are not cultivated and are not maintained. Fires are also triggered by

long periods of drought induced by high temperatures. The dryness of the swamps, especially peat swamps, whether deliberately or not, also contribute to these types of fires. Moreover, illegal logging practices are still widespread. Non-technical problems, such as coordination between agencies that are not optimal and mental attitudes that are not committed to environmental sustainability, can also cause these types of fires. Likewise, policies that are not firm and clear in protecting water catchment areas, including law enforcement efforts, are often unbalanced and inconsistent [30].



Figure 3. Map of Indonesia's land and forest fires [31]

According to Kusumasari [32], some of the disaster management obstacles or problems faced by local governments can be divided into four stages: mitigation, preparedness, response, and recovery. First, disaster mitigation is a series of efforts to reduce the risk of a disaster, by constructing physical buildings and enhancing awareness of the risks and also by increasing the ability to face the threat of a disaster. As noted in Article 44c, mitigation is carried out to reduce the risk of disaster for people living in disaster-prone areas [32].

Based on the literature review data presented above and the researcher's ontologically, epistemological, and sociological analyses, the coordination between agencies is not optimal and they are not committed to environmental sustainability. This also has an impact on the disaster risk for a given area. Risk is also impacted by the issue of policies that are not firm and clear in protecting water catchment areas, including law enforcement efforts that are often lame and inconsistent. In this case, the coordination is between agencies and state institutions, such as the Ministry of Agriculture of the Republic of Indonesia, the Ministry of Forestry of the Republic of Indonesia, the Ministry of Environment of the Republic of Indonesia, and the National Disaster Management Agency as well as the Regional Disaster Management Agency of East Kalimantan Province. This is in line with public

policy theory. Likewise, some of the institutions mentioned have the power and authority to oversee fire and land disaster management in Indonesia as regulated in multiple disaster management policies. The above-mentioned literature review research suggests that stakeholders should collaborate to create regulations in line with the concept of collaborative governance.

In 2020, executives as public officials have issued several regulations regarding forest and land fire disaster management in the form of Government Regulation Number 26 of 2020 concerning Forest Rehabilitation & Reclamation. Article 33 and Articles 40 to 43 explicitly state that forest fires are categorized as natural disasters. As stated in Article 41, paragraph 2, Forest Reclamation in disaster areas due to natural factors, as referred to in Article 40, paragraph 2, letter a, is the responsibility of the central government and regional governments in accordance with their respective power. Through Presidential Instruction of the Republic of Indonesia Number 3 of 2020 on Handling Forest and Land Fires, the President of the Republic of Indonesia has instructed as many as 28 provincial, regional, and municipal government institutions to collaborate with existing government agencies in order not to overlap the roles or functions of each of these state institutions in reducing the risk of forest and land fires in Indonesia. The Central Kalimantan Provincial Government has been effective in preventing forest and land fire disasters as seen in Regional Regulation No. 5 of 2003 on the Control of Karhutla and in Governor Regulation No. 24 of 2017 on the Implementation of Emergency Management of Forest and Land Fires in the Central Kalimantan Province.

The researcher's ontological, epistemological, and sociological analyses were conducted in a holistic manner. To facilitate the prevention of forest and land fires in Indonesia, public policies are needed to strengthen institutional and non-institutional visions and missions related to monitoring forest and land fires. This can be accomplished by utilizing prevention and suppression equipment, providing counseling to companies and the community regarding regulations and sanctions if they are burning forests intentionally, and implementing the good land management policies. Moreover, forest and land fires can also be minimized by modifying the composition of forests by reducing easy forest fires due to the abundance of dry trees. Therefore, to decrease the risk of fire, the source of fuel that ignites it must be reduced. This will

produce forests in which there is ample space among the trees, which will slow the rate of fire.



Figure 4. Members of the Pulang Pisau Regency Community Fire department (MPA) extinguish forest and land fires in the village of Tanjung Taruna, Pulang Pisau Regency, Central Kalimantan, on Thursday, August 15, 2019

Based on data from the National Disaster Management Agency (BNPB) in Central Kalimantan, 92 hotspots were observed as a result of which the air quality in Palangkaraya city was not healthy [33].

In addition to preventive efforts, there are, indeed, preventive actions to overcome fires, such as empowering and equipping fire posts and mobilizing all resources from the community, companies, and government. Countermeasures in environmental and health aspects to reduce the impact of smog are performed by extinguishing the source and implementing artificial rain projects. In the legal and institutional aspects, severe and firm legal sanctions are carried out in accordance with regulations in the form of disclosures or statements to various mass media regarding forest damage caused by perpetrators of environmental crimes.

## V. CONCLUSION

Based on the analysis of the research results above, it can be concluded that the legislative and executive branches, as public officials, make multiple policies regarding forest and land fire management. The number of state institutions involved in this case implies that these policies are not effective in disaster management in Indonesia. They are both inefficient and a waste of state money due to the many institutions involved.

The researchers suggested that relevant state institutions, such as public officials, in making regulations for forest and land fire management in Indonesia should conduct a campaign in the form of a single set of regulations involving just one institution, covering the holistic governance of disaster reduction.

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