# BUDGET ANALYSIS OF FOREST AND LAND FIRE CONTROL IN RIAU PROVINCIAL GOVERNMENT, INDONESIA

A Master Thesis

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# Abstract

There is widespread air pollution surrounding Southeast Asia, mainly in Indonesia, Singapore, and Malaysia, resulting from Riau Province, where forest and land fires have occurred heavily. Budget analysis is needed to ascertain whether forest and land fire control activities are within Riau Provincial Government's budget structure. This research aims to identify gaps in the provincial government's budget in implementing fire control measures. The perspective of this research used the conceptual framework model in the Punctuated Equilibrium Theory (PET) to analyze the relationship between the dependent variable, namely the budget, and its changes, and the independent variables are positive and negative feedback, especially forest and land fires as triggering events or shocks. With PET, researcher can analyze how forest and land fires as a shock can change the budget allocation. This research used a mixed method: a quantitative method for analyzing government budgets and qualitative methods for analyzing interviews and other desk research data.

The results show that the transboundary haze makes forest and land fires a national issue; thus, the central government intervenes in control of forest and land fires. Nevertheless, a particular budget is affected by significant fires, namely the firefighting budget. This proves Riau Provincial Government expand its attention in the event of extensive forest and land fires. In addition, this research describes how Riau Provincial Government responds to forest and land fires as shocks by facilitating all input from stakeholders in the status quo by the government with still accommodating the shock or triggering events that can change budget allocations.

This research suggests policy monopoly on PET become neutral feedback that does not have to be negative; it depends on other variables or condition. Recommendations for Riau Provincial Government are early detection, monitoring, and evaluation of industrial compliance and law enforcement.

*Keywords: budget, forest and land fire control, punctuated equilibrium theory, shock, triggering event.*

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# List of Abbreviation

| | |
|---|---|
| APBD | Anggaran Pendapatan dan Belanja Daerah (Local Government Revenue and Expenditure Budget/Budget Allocation) |
| Bappeda | Badan Perencanaan Pembangunan Daerah (Development Planning Agency) |
| BNPB | Badan Nasional Penanggulangan Bencana (The National Disaster Management Agency) |
| BPBD | Badan Penanggulangan Bencana Daerah (Disaster Management Agency) |
| BPKAD | Badan Pengelola Keuangan dan Aset Daerah (Financial and Asset Management Agency) |
| BTT | Belanja Tidak Terduga (Unexpected Expenditure) |
| DBH-DR | Dana Bagi Hasil Dana Reboisasi (Forest Resource Sharing Fund and Reforestation Fund) |
| DLHK | Dinas Lingkungan Hidup dan Kehutanan (Environment and Forestry Agency) |
| DM Law | Disaster Management Law |
| DPR | Dewan Perwakilan Rakyat (The House of Representatives) |
| DPRD | Dewan Perwakilan Rakyat Daerah (The Provincial House of Representatives) |
| FGD | Focus Group Discussions |
| GAPKI | Gabungan Pengusaha Kelapa Sawit Indonesia (Indonesian Palm Oil Association) |
| GRDP | Gross Regional Domestic Product |
| KLHK | Kementerian Lingkungan Hidup dan Kehutanan (Ministry of Environment and Forestry) |
| KUA | Kebijakan Umum Anggaran (The General Budgeting Policy) |
| OECD | Organization for Economic Co-operation and Development |
| PET | Punctuated Equilibrium Theory |
| PPAS | Prioritas dan Plafon Anggaran Sementara (Tentative Budget Priority and Ceiling) |
| RKA | Rencana Kerja Anggaran (work plans and budgets) |
| RKPD | Rencana Kerja Pembangunan Daerah (The Provincial Government Work Plan) |
| RPJMD | Rencana Pembangunan Jangka Menengah Daerah (The Provincial Government Medium-Term Development Plan) |
| TAPD | Tim Anggaran Pemerintah Daerah (The Provincial Government Budgeting Team) |

# Chapter 1
# Introduction

## 1.1 Background

In Southeast Asia, according to Greenstone & Fan (2019), during the 1997 and 2015 El Nino drought years, there was widespread air pollution, affecting health and air travel in Indonesia and Singapore, Malaysia, and beyond. Southeast Asia is an area that includes Indochina Mainland (Myanmar, Laos, Thailand, Cambodia, and Vietnam), the Malay Peninsula (Malaysia), and the surrounding maritime islands (Indonesia, Philippines, Singapore, Brunei, East Timor, and East Malaysia). Greenstone & Fan (2019) mention that the air pollution resulted from forest and land fires that have occurred so heavily in Indonesian territory. The fires occur in forests or areas on mineral or peat soil used as productive or non-productive (conservation) land. The CO2 emitted per day from fires in Indonesia is higher than emitted CO2 in the European Union, which creates a cloud of smog that spreads to neighbouring Southeast Asian countries (Greenstone & Fan, 2019). The Global Environment Centre, based on Malaysia's research results, as described by Varkkey (2013), proves that peatland fires caused 90% of haze in southern Southeast Asia.

In 2015, Riau Province was the region in Indonesia with 65.3% of hotspots (a particularly active part of a fire) detected on peatlands in the three main fire areas in Southeast Asia, Peninsular Malaysia, Sumatra Island, and Kalimantan Island. In addition, Riau Province also has 44.8% of peatland area consisting of the central peat dome among the three main areas of forest and land fires (Miettinen et al., 2017). This makes the largest peatland area in Riau Province.

Furthermore, in Indonesia, the Health Crisis Centre of the Ministry of Health shows that the death toll from the forest and land fires in Riau Province in 2015 was eight people, and in 2019 three people. In addition, 81,514 people experienced acute respiratory infection (ARI) in 2015 and 309,883 people in 2019 due to forest and land fires (Ministry of Health, 2015 & 2019).

One of the government's goals is to avoid and control the transboundary haze disaster from these fires in Southeast Asia. The transboundary haze disaster felt by two major cities in Southeast Asia, Singapore and Kuala Lumpur, is one of the consequences of forest and land fires in Riau Province. Riau Province is a province on the island of Sumatra, which is the closest place for forest and land fires to the two megacities.


**Figure 1.** Riau Province Location

According to Phaup and Kirschner (2010), there are ways of budgeting for disasters that can potentially mitigate the risk of losses. For example, the early warning system, if the government provides this system with funds in the budget, the impact of a disaster on communities and the environment can be reduced. Forest and land fire control is part of public services, making the Riau Provincial Government's role significant. The Riau government's role, as reflected in its budget, is expected to be a practical tool for risk mitigation and control of forest and land fires. These indications can be argued because the budget is the single most crucial government policy document, in which policy objectives are reconciled and implemented concretely (OECD, 2002).

## 1.2 Problem Statement

The Ministry of Environment and Forestry notes that Indonesia has a consistent record of annual forest and land fires. According to ministry data, the fires started in the early 1980s. The areas burned include natural forests, afforestation forests, plantations, and reforested land; especially in Riau Province, forests and land are generally burned to establish new oil palm plantations (Krah, 2020).

The environmental loss like transboundary haze and peatland degradation due to forest and land fires is enormous. Riau Province is the province in Indonesia with the largest oil palm area, reaching 2.81 million hectares or almost one-fifth of oil palm land in Indonesia, achieving 14.72 million hectares (Ministry of Agriculture, 2019). The prominent role of oil palm plantations in

Indonesia, especially in Riau Province, has attracted the Ministry of Environment and Forestry (KLHK) and the Indonesian Palm Oil Association (GAPKI). Both have discussed strategies to prevent forest and land fires, especially in peatlands concession areas for oil palm plantations. To increase awareness of forest and land fire control actors, the Ministry encourages GAPKI to guide plantation concession holders to improve peat management in their concession areas by developing a peat ecosystem restoration plan and implementing it. (Ministry of Environment and Forestry, 2020).

Before the approach taken by the Ministry, in 2014, a Joint Audit Team conducted a compliance audit consisting of representatives from government agencies and experts in preventing forest and land fires in Riau Province. The objects of the compliance audit are the local governments at the district level under the Riau Province Government and the agro-industrial companies in Riau Province.

The compliance audit results are as follows (Compliance Audit Team, 2014).

a. All companies carry out cultivating activities on Inner Peat which is prone to fire.
b. No company fulfils the minimum obligations (97 for plantations and 122 for forestry) to prevent forest and land fires. The details are as follows.
    1) Plantation Companies: Of the five plantation companies, one is very non-compliant (The company carried out 18.5% of the total 97 obligations), and four are non-compliant (23% - 48% of 97 obligations).
    2) Forestry Companies: Of the 12 plantation companies, one is classified as very non-compliant (The company carried out 7.22% of the total 122 obligations), ten is classified as non-compliant (26.19% - 47.54% of 122 obligations), and one is classified as less compliant (52.38% of 122 obligations).
c. District governments have not fully fulfilled the minimum obligations. Of the six districts/cities, one is classified as compliant (92.74% of 67 obligations), one is classified as moderately compliant (82.86% of 67 obligations), and four are classified as less compliant (56.64% - 67.38% of 67 obligations).

The audit result shows that three actors, plantation companies, forestry companies, and district governments, had significant roles in forest and land fire control. However, the provincial government's role is vital due to forest and land fires occurring in more than one city/district and transboundary haze are province government affairs. Thus, provincial government should

accompany district government in informing the industries with information campaigns and compliance monitoring to ensure the industries notice comprehensibly and obey the regulation.

Regarding the findings on district governments in Riau Province, one of the leading causes is the lack of funding support. The specific budget to support the prevention of forest and land fires is not sufficient. The district governments include this budget in other budget allocations (Compliance Audit Team, 2014). As an entity that oversees district governments, Riau Province Government accepts and acknowledges the audit results. This can be seen in the Governor of Riau Regulation Number 5 of 2015 concerning implementing the Action Plan for the Prevention of Forest and Land Fires in Riau Province. The regulation states that Riau Provincial Government wants to ensure the implementation of the recommendations from the audit and the availability of adequate budget allocations related to forest and land fire prevention in the Local Government Revenue and Expenditure Budget (APBD).

Budgeting is the process of planning and directing the program to be implemented, along with an estimate of the funds needed to ensure that the relevant department or organization can implement the program (Fahlevi et al., 2019). On the other hand, a significant problem faced by decision-makers in government ranks is allocating scarce resources to various objectives to be achieved with the availability of a budget (Joiner & Drake, 1983).

The central government considers this lack of resources a severe problem for Provincial governments. Moreover, forest and land fires in Riau Province are also an international issue in Southeast Asia because of transboundary haze. Thus, the central government provides financial support by transferring funds to provincial governments vulnerable to forest and land fires, namely the Forest Resource Sharing Fund and Reforestation Fund (DBH-DR). However, this fund's transfer, DBH-DR, cannot be forced by the central government on how the local government uses the fund. The fund is given based on the Minister of Finance Regulation Number 230/PMK.07/2017 (replaced with 216/PMK.07/2021), Letter of the Minister of Environment and Forestry Number S.112/Menlhk/Ppi.4/ 3/2018, and the Letter of the Minister of Environment and Forestry Number S.214/Menlhk/PPI/Ren.0/4/2019, which discusses potential sources of funding for forest and land fire control budget. However, the central government cannot force provinces due to Law Number 23 2014 concerning Local Government at Provincial and District levels. Provincial government has autonomous regions' rights, powers, and obligations to regulate and manage their government affairs and the local community's interests.

According to Fahlevi et al. (2019), the central and local governments do not yet have a cost-sharing plan for an inclusive and integrated disaster management program that incorporates the central government's contribution and that of disaster-prone regions in Indonesia. They argued that even though Disaster Management (DM) Law Number 24 2007 calls for a joint responsibility between central and local governments to allocate DM funds, the law only emphasizes emergency response funds for the central government board at the national level, namely BNPB (National Board for Disaster Management). Moreover, Fahlevi et al. (2019) also argue that local governments in Indonesia do not have sufficient capacity to respond to disasters and reduce disaster risks.

Thus, although the laws and regulations on land and forest fire control funding have been arranged between the central government and local governments, the actual condition of how Riau Province Government manages its budget is unclear yet. A budget analysis is needed to confirm if forest and land fire control activities are within the budget structure of Riau Provincial Government. In addition, budget analysis can ensure the budget is embedded into a general disaster risk management strategy. This analysis can answer whether Riau Provincial Government has budgeted according to applicable regulations, whether the provincial governments use the budget, and how all of the above changed over time. The analysis results are expected to be used to identify gaps in provincial government budgeting and prioritization and suggest ways to improve budget allocation of fire control measures.

## 1.3 Context

The context of this research consists of two circumstances that form the background or idea of this research.

### 1.3.1 Forest and Land Fire

Facilitation access to resources (peatlands) and land clearing for fields and plantations causes ignition events (Vayda, 2010). The need for land for oil palm cultivation impacts the clearing of peat forests. The process of clearing peatlands requires no small cost. According to Simorangkir (2006), land clearing techniques by burning are more profitable than techniques without burning. The comparison results show that the main advantage of burning is lower land clearing and preparation costs, so the burning method is cheaper than using heavy equipment to clear the land.

Data from the Ministry of environment and forestry in 2019 shows that almost 70% of forest and land fires are on peatland. Moreover, Poernomo et al. (2019) calculate hotspots from satellite imagery as a reference for detecting fires. According to the findings, logging concessions, oil palm plantations, and wood plantations have the highest incidence of hotspots (47%), followed by conservation areas (31%) and community lands (22%). This acknowledgment illustrates how human activity can cause fires to develop (Krah, 2020).

### 1.3.2 Riau Provincial Government Budget

Budgeting is part of the planning process. The budget is a document that can direct the program or activity to be implemented and the amount of expenditure required by the Ministry, agency, or other government organization. The certainty or occurrence that the program or activity will be implemented and supported financially can be seen from the budget document. Fahlavi et al. (2019) argue that the budgeting approach in local government in Indonesia is still traditional; local governments use the incremental method where budgeted expenditures and programs are closely linked to the previous year's budget.

In Addition, According to the Performance Audit Result on the Effectiveness of Governance in Local Planning and Budgeting at Riau Provincial Government in 2016, the priority scale of Riau Provincial Government is not in sync with the central government. Budgeting documents do not generally contain program priorities for each affair that are synchronized with the national priorities and programs listed in the annual Central Government Planning.

## 1.4 Research objective

Overall, this research aims to identify gaps in the provincial government's budget in implementing fire control measures. The results of this research are expected to be one of the solutions so that Riau Province Government can optimize forest and land fire control. In addition, this research aims to:

a. To identify and decipher priority budget issues in forest and land fire control in Riau Province.
b. To develop recommendations for solving forest and land fire budget problems.
c. To increase scientific knowledge in budgeting and public policy in general, specifically on budgeting for forest and land fire control.

## 1.5 Research Question

This research tries to answer the main descriptive question.

***How do major transboundary haze events cause by forest and land fires impact significant budgetary changes in fire control activities?***

The main research question requires several derivative questions to address the underlying elements. The research sub-questions are as follows.

a. What are Indonesia's prevailing laws and regulations related to budgeting for controlling forest and land fires?
b. What is the budget composition for forest and land fire control in the Riau Provincial Government, and how does it change over the years?
c. When have major forest and land fire events happened that caused transboundary haze in the past in Riau Province?
d. What lessons can be learned about future budget adaptations toward greater resilience to forest and land fires?

## 1.6 Thesis Outline

This thesis will consist of five chapters.

a. Chapter 1 is an introduction, where this chapter will explain the background of the research, the context, research objectives, and research questions.
b. Chapter 2 discusses the theoretical framework of the research in this thesis, namely PET, and a description of budgeting in provincial government in Indonesia.
c. Chapter 3 is the methodology used to conduct the research.
d. Chapter 4 presents the results and findings under the framework of the PET theory.
e. Chapter 5 provides conclusions and recommendations for future research.

# Chapter 2
# Theories of Policy Change in the Budgeting Process

This chapter describes the theory choice by researcher that can logically connect research data considered essential in budgeting as one of the public policies relevant to achieving research objectives.

## 2.1 The Policy Cycle

Like a product, a public policy also has its cycle. However, unlike products in general, public policy is an action by the government in response to phenomena that exist in public, which is not solely the desire of the government or policymakers. In order to analyze policymaking and break it down into its constituent parts in order to better understand how policy is formed, the policy cycle can be identified.

According to Dye, T. R. (2017), the policy cycle consists of six stages as follows:

a. Problem Identification, identifying policy problems through public demands for government action.
b. Agenda Setting, directing public officials' and the media's emphasis on particular issues facing the public.
c. Policy Formulation, proposing the initiation and development of policy proposals by policy-planning organizations, interest groups, and government bureaucracies.
d. Policy Legitimation, determining policy through political actions by the executive authority and/or legislative embodiment
e. Policy Implementation, executing the policy through the work of executive agencies, public spending, and structured bureaucracies
f. Policy Evaluation, determining whether the policy is effective through information obtained from government organizations, external consultancies, the media, and the general public. Policy evaluation can eventually lead to policy termination caused by undesired impacts of policies on target and non-target groups.

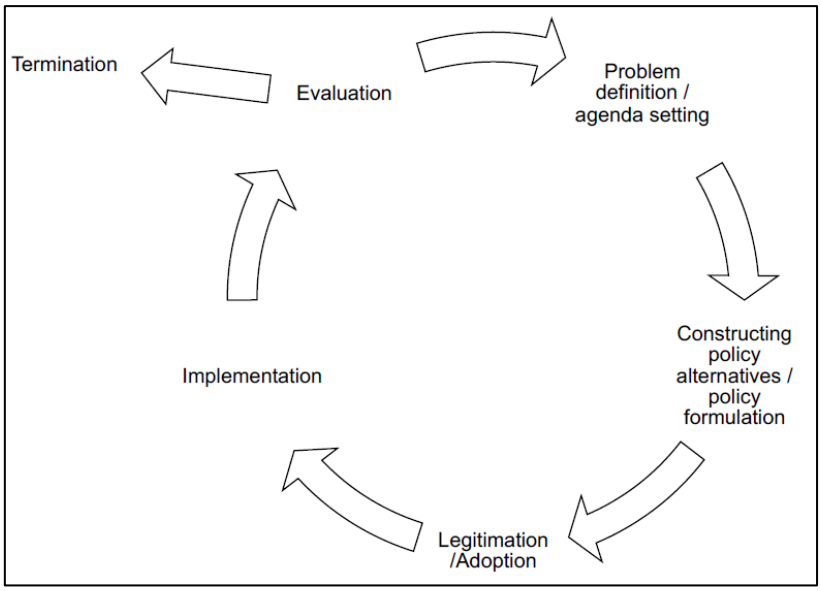



**Figure 2.** The policy cycle model of the policy process
*Source:* Florence Metz (2021).

While analyzing policymaking as a series of processes may be useful, these cycles do not often occur in a neat sequence of steps in the real world. Instead, these processes often happen simultaneously, sometimes colliding with other stages (Dye, T. R., 2017).

## 2.2 Agenda Setting

Indeed, policymaking by the government is not always as neat as the process model. However, it is crucial to understand why the policy is created. Public policy is what governments choose to do or not do, why they do it or not, and what difference it makes (Dye, T. R., 2017). Policymaking presupposes that there is a problem to be solved. Dye, T. R. (2017) states that deciding what will be the problems is even more crucial than determining the solutions. To interpret a problem as a public problem to be taken into account, agenda-setting is needed. Agenda setting is a strategic phase in which the reality of public policy is formed.

Sometimes agenda-setting process is logical and rational. Nevertheless, in reality, the process is more political than logistical, and some scholars argue that the process sounds sensible rather than purely reasonable (Dye, T. R., 2017). The agenda-setting stage considers several key actors of the political-administrative system of various requests for action made by social groups or even mass media, making agenda-setting a complicated process.

According to Thomas R. Dey, (2017), three types of agenda-setting are as follows:

a. Agenda setting from the Bottom Up, this "democratic pluralist" model assumes that individuals or groups can identify any problem.

b. Agenda setting from the Top Down, this elitist agenda-setting model focuses on leaders' roles.
c. Agenda setting from the Mass Media, the media are both players and referees in the game of politics.

Those are in line with the opinion of Baumgartner and Jones, (1993), which state that research on agenda setting is best considered in the context of a community or policy subsystem. This is because of the inherent impact of the community or policy subsystem on the policy change cycle. According to Jones & Baumgartner, (2012), most policy changes are explained by punctuation, not incrementalism. Punctuation occurs caused by shock and how communities and policymakers in the subsystem respond to the shock.

## 2.3 The Effect of Shocks on Policy Processes

As explained earlier, setting the agenda by policymakers is assumed to begin with the emergence of public problems. This problem is a sudden change where policymakers tend to stutter and do not know about the sudden change. This change is a shock, a condition where the current situation stability (status quo) is disturbed by sudden and rapid change.

Although unexpected or unpredictable, external shocks in policy formation theory are necessary factors for policy change. This is because significant disturbances have extensive forms, such as natural disasters, pandemics, wars, economic crises, ruler changes, or other entities' output. According to Sabatier (1999), these external shocks have the potential to get public attention, then attract the attention of decision-making authorities, and ultimately change the government's agenda. In addition, according to Sabatier, the redistribution of policy processing resources or the emergence of opportunities to open or close alternative policymaking institutions are the most critical effects of external shocks.

To overcome these shocks, first, policymakers will use these shocks as the background for setting the agenda for further public policymaking. Thus the new policy is expected to be a solution to solving public problems (shock) to stabilize the situation.

According to Birkland (1998), social scientists claim that sudden and shocking events are essential in public policymaking because they could reasonably be defined as dangerous or revealing the possibility of more significant potential harm in the future. Birkland (1998) states that these events are often known as focusing or triggering events. These focusing events

heavily influence the issues on the agenda that will serve as potential triggers for policy change (Birkland, 1998).

Birkland, (1998) states the harms posed by public problems are usually concentrated in a particular geographic area; Evidence of damage caused by an event in a specific zone will usually be more apparent than the impact distributed across a region, a country, or a global area. Therefore "local" events can attract national and international attention. Then new groups or coalitions will emerge that try to include them in the agenda-setting process to be included in policies for handling issues that may affect other communities (Birkland, 1998). The forest and land fires in Riau Province surprised the central government as they caused a transboundary haze to travel to other countries. Thus, many policymaking communities are involved in bringing forest and land fires onto the public agenda. Policy changes require models with complex feedback features.

## 2.4 Punctuated Equilibrium Theory

Since forest and land fire involve the policy communities and affect agenda-setting in the policy process, it puts the punctuated equilibrium right in a complex system approach such as the budgeting process (Jones & Baumgartner, 2012). Originally Punctuated Equilibrium Theory (PET) comes from the biological sciences, which identify the evolution of living things due to rapid changes. The change event disrupts the condition of a species. However, the debate in biology about whether evolutionary mechanisms can support rapid punctuations continues, not social and political evolutionary mechanisms. PET is also capable of explaining significant social and political changes. For example, PET can describe the development of the financial economy and its complex system (Jones & Baumgartner, 2012). Baumgartner and Jones' punctuated equilibrium theory seeks to explain these prolonged times of policymaking stability and continuity punctuated by brief but intense periods of instability and change. Thus, PET can be a framework that aids in understanding historically radical changes in policy adoption. This theory also highlights the power of politics and how institutions often maintain the status quo (Michaud, 2019).

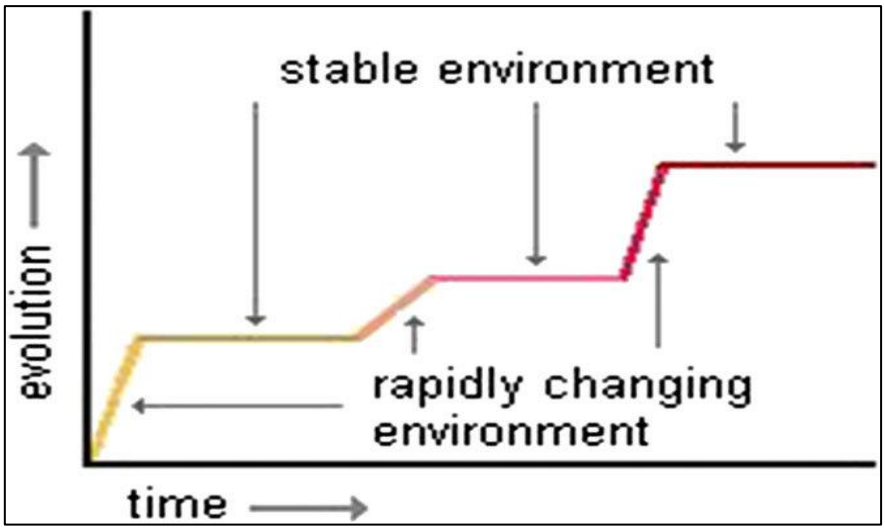



**Figure 3**. PET long periods of stability and short episodes of change
*Source:* O'Neil (2012).

The PET graph above illustrates the evolution or development of policies over time. The graph's horizontal line represents a future stable policy due to rapid and radical events (diagonal lines) that change past stability. In simple terms, PET combines two elements in studying public policy: the policy community and agenda-setting. According to Cairney, (2011), two mechanisms act as supporters of the status quo or radical change, namely negative and positive feedback. The factors that weaken or strengthen the two aspects of policy change can explain how policy monopolies (status quo) can be created and destroyed.

### 2.4.1 Negative Feedback

Status quo based on negative feedback dampens down pressures for change activities. The negative feedbacks are:

a. Bounded rationality causes disproportionate attention

   As policymakers, the government cannot always consider all problems and solutions. This is because the government has too much information to process. Thus, the government's success depends on the government's ability to prioritize informational signals from the environment as part of the information processing challenge. For example, government agencies can only pay attention to a small amount of the problems they are responsible for because they can only pay attention to some problems at a time in succession (serial processing). They prioritize a few issues while ignoring the majority (Cairney, 2011).

b. Policy monopolies

   In public policy, equilibrium or stability results from a policy monopoly where the existing majority group enjoys an 'understanding monopoly'. It happens when policymakers

institutionalize this monopoly by making rules and resource restrictions. In other words, the status quo equilibrium view can survive for two reasons: first, the establishment of institutions, like the policy communities, to support policy monopolies, and second, maintaining that monopoly by inhibiting marginalized groups (Cairney, 2011).

c. Political systems

The political system can influence the level of 'friction' or costs associated with coordination between policymakers, ranging from lower at the beginning to big group at the end of the policy cycle. For example, it may be easier for a special committee in a representative agency to come together to focus on new issues than for a sizeable inter-ministerial meeting to change their budgets to promote new priorities (Cairney, 2011).

### 2.4.2 Positive Feedback

Positive feedback occurs when a modification event, sometimes a relatively simple one, causes changes that happen in the future to be more rapid and effective. The positive feedbacks are:

a. Framing the issues or reframing the policy images

Groups that want to compete with policy monopolies will try to influence how an issue is described and categorized. Thus the issues that have been framed can be resolved by policymakers. The framing of policymakers' concerns might make them appear 'technical' and important to experts. The issue can also be linked to broader social values that many audiences will consider (Cairney, 2011).

b. Venue shopping

Challenging a monopoly in one place or type of organization at a certain level will be very difficult because of the status quo of the place or the policymaking organization. Groups seeking change may seek hearings elsewhere, such as courts, higher organizations, or representative institutions.

In addition to involving or appealing to a different level or type of government agency, pro-change groups can broaden the size of their interested audience by promoting the issue directly to the public. When more participants are involved, there are more ways to look at the issue for policy change. The issue has the potential to reach the 'top' of the broader political agenda and be processed differently (Cairney, 2011).

c. Triggering or focusing event

A triggering or focusing event is when an unavoidable problem arises at a specific time. Punctuation often appears preceded by a triggering event in response to a crisis. The triggering event started the beginning of a revolutionary period of change that would create the basis for the next period of stability. This event can lead to the movement of groups that want change. A triggering event can be used as momentum to expand public or stakeholder attention actively. Thus, many trigger events can become dominant issues in the domain of the policy agenda.

One of the crucial factors in policymaking is agenda-setting. In general, the problem in policymaking is that policymakers do not want to focus on specific issues for pragmatic reasons where the issue or concern is not populist, such as employment or the price of people's necessities. They also cannot focus on one problem because it can mean they will ignore the other 99 problems. Focusing the attention of the public, media, and government on a particular event can promote issues to reduce monopoly policy. Thus the event acts as a 'dramatic symbol of the problem at hand'. On the other hand, trigger events also depend on the general belief that a problem arises because something is wrong (Cairney, 2011).

In other words, the more specific the nature and harm caused by the triggering event, the more growing public attention, and the greater the influence on the agenda of public policymakers. Therefore, this research will focus on the implementation or operation of PET on event triggering elements.

PET emphasizes the complex interaction between positive and negative feedback that causes punctuation in public policy. Thus, "PET can be a useful framework due to the historically radical shifts in policy adoption" (Michaud, 2019).

## 2.5 Governmental Budgeting in Indonesia

According to the OECD (2002), the budget is the primary document of public policy, which shows the priorities and objectives of a particular year or period of a government. As an instrument of public policy, the budget has a strategic function of realizing plans for solving public problems. The formation of a public policy will inevitably give rise to the rights and obligations of the government in every series of processes. In the context of the government as an economic entity, these rights and responsibilities must be valued in money that needs to be managed in a state financial management system. This is because the budget is a contract

between citizens and the state, which shows how resources are pooled and allocated to deliver public services and address public problems.

In Indonesia, the budget is an integral part of the political system because the budget is a consideration in every public policy decision-making. The Indonesian constitution requires people's political investment, from involvement in development planning deliberation to determining the budget by the people's representative institutions and executive powers. Therefore, the budget is a form of citizen trust in the government. People believe that the government listens to their problems, plans to achieve the state's goals, and uses available resources effectively, efficiently, and sustainably (OECD, 2014).

Based on Law 17 of 2003, the executive leadership (President or Governor) and the House of Representatives (DPR or DPRD) discuss and agree on the government's work plan, general budgeting policies, and budget allocation priorities based on the agenda offered by the leader that is promised to the people before being elected. After that, the head of the agency or Ministry prepares an organizational work plan based on the general government's work plan and the agreed general budget policy. Then the organization's work plan is compiled and verified by the chief financial officer (minister of finance or head of financial agency) before it is determined to be an agreed budget.

## 2.6 Provincial Budgeting in Indonesia

Generally, the concepts and procedures of budgeting in Indonesia according to Law 17 2003 have been discussed. The governance of the provincial government in planning and budgeting can be seen in figure 4.

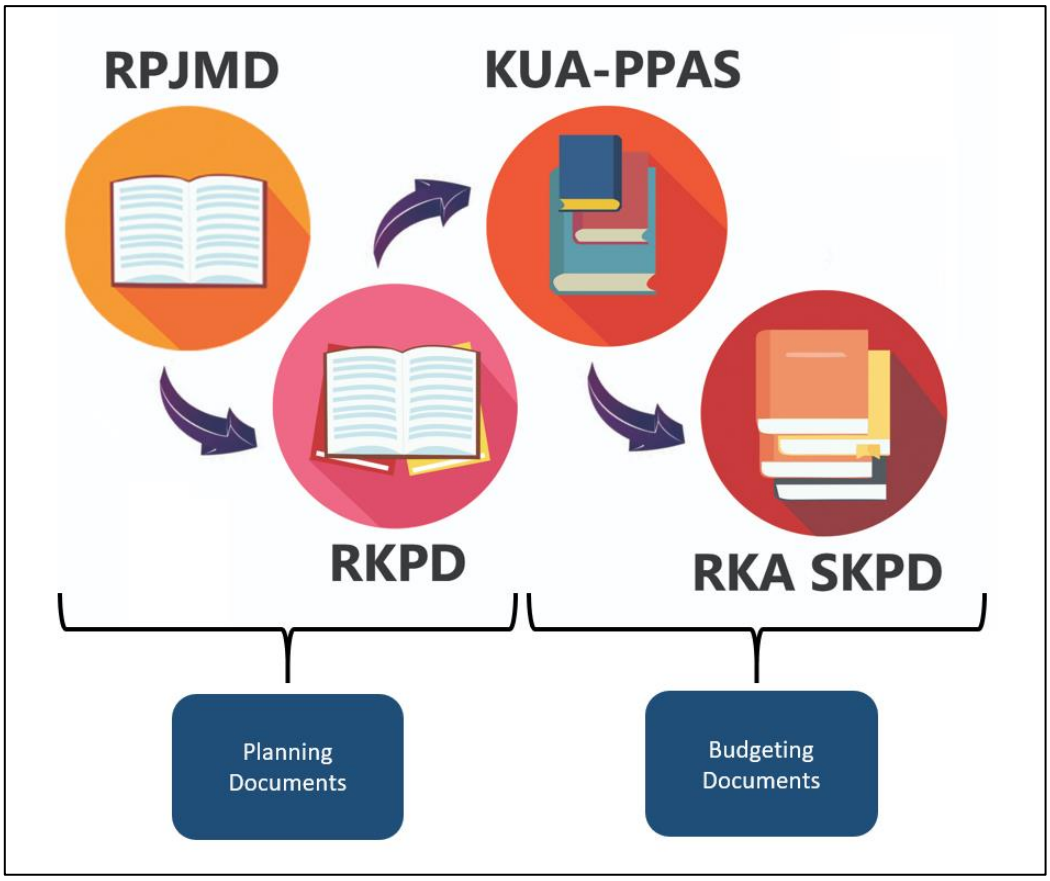



**Figure 4**. Stages of Planning and Budgeting in Provincial Government

The following in detail are:

a. Determination of the RPJMD by the Governor and DPRD

The Provincial Government Medium-Term Development Plan (RPJMD) is a five-year provincial planning document. RPJMD is an elaboration of the vision, mission, and program of the elected Governor. The preparation of the RPJMD is guided by the existing Long-Term (20-Year) Plan. It considers the National Medium-Term Development Plan that the central government has determined. In the RPJMD, there are general policy directions for the programs of agencies within the provincial government, which are accompanied by their respective work plans. In addition, there are financial policies within the framework of sources of funds and each agency's work plans, which are indicative.

Before joint stipulation between the Governor and the People's Representative Council at province level (DPRD), the Head of the Development Planning Agency (Bappeda) prepares the initial draft of the RPJMD. The drafting process uses the plans that each other provincial agency has proposed.

b. Determination of RKPD by the Governor

The Provincial Government Work Plan (RKPD) is a year-long provincial planning document. The RKPD is an elaboration of the RPJMD and contains the draft provincial development priorities, work plans, and funding framework. In line with the determination of the RPJMD, before stipulation by the Governor, the Head of Bappeda and preparing the initial draft of the RKPD using the plans proposed by provincial agencies.

c. Determination of KUA-PPAS by the Governor and DPRD

The General Budgeting Policy (KUA) is a document that is connected between the planning document and the budgeting process. KUA specifically discusses the funding framework. It includes a policy of income, expenditure, financing, and other financial assumptions for one year. In addition to the KUA, there is a Tentative Budget Priority and Ceiling (PPAS) that contains priorities and benchmarks for the maximum budget limit given to provincial agencies for each program as a reference in preparing work plans and budgets (RKA) for each provincial agency.

Although KUA has specifically discussed financial matters, the substance of KUA is about policy matters. It does not explain technical matters, such as in PPAS. General policy matters, such as:

1) A description of the national macroeconomic conditions, including the development of provincial macroeconomic indicators.
2) Basic assumptions such as inflation rate and GRDP growth.
3) The forecast of the amount of revenue and its management strategy.
4) Expenditure plans reflect provincial government programs that manifest provincial stakeholders and central government policies.
5) Financing policies describe provincial budget deficits and surpluses as anticipation and development strategies.

Before the joint determination between the Governor and the DPRD, the Provincial Government Budgeting Team (TAPD) prepares and discusses the KUA-PPAS draft based on the RKPD that the Governor has determined. After TAPD makes the draft, the Governor and DPRD discuss the KUA-PPAS draft to be decided.

d. Preparation of RKA of Provincial government agencies

The KUA-PPAS, which has been agreed upon by the Governor and the DPRD, becomes the guideline for provincial agencies in preparing their respective organizations' work plans and budgets (RKA). The RKA is the material for the provincial government's budget draft. After

each agency head prepares its RKA, TAPD verifies the RKA before it becomes a provincial draft budget that will be discussed with the DPRD.

## 2.7 Forest and Land Fires as a Triggering Event in Budgeting Process

Forest and land fire control is a series of activities for prevention, extinguishing, post-fire handling, evacuation and rescue support, and management support. Presumably, the budgeting process without considering forest and land fire control is the status quo; applying PET in formulating the accommodation of forest and fire control is critical. PET is suitable for long-term policy implementation because this accommodation budgeting process needs to change the agenda-setting and not harm other stakeholders, such as agricultural industries and other social issues, such as education and health.

In the case of forest and land fires in Riau Province, creating a new agenda in policy requires intervention from external interests. In this case, it is the issue of Transboundary Haze. This external issue is expected to shift the Provincial Government's status quo (budgeting process without considering forest and land fire control). Forest and land fires should be a shock/catastrophic event that can trigger significant budget changes. After such triggering events, the budget will consider more forest and land fire control. With increasing public attention to these external issues, in a broader political context where power is more fairly divided, diverse actors will consider new agenda concerns, and new actors can define the agenda. (Baumgartner and Jones, 1993).

# Chapter 3
# Methodology

This chapter depicts the methodology used to achieve the research objective. In addition, this chapter includes the research framework, data collection, and analysis.

## 3.1 Methodological Approach

Since the research aims aims to identify gaps in the provincial government's budget in implementing fire control measures, this research required quantitative data from Riau Provincial Government budget and hotspot of forest and land fires. In addition, this research needed qualitative data in the form of information from grey literature, academic literature, and interviews. This research collected data from the government budget, grey literature, and academic literature as secondary and interviews as primary data. Researcher analyzed all these data with the mixed method. Desk research results in government budget analysis use the quantitative method, and analysis of other desk research data and interview results use the qualitative method.

Data analysis was carried out at the time of collection and after the data was collected. At the time of data collection, analysis was carried out to maintain the relevance of the data to the research objectives. In addition, the research carried out after the data had been collected was a continuation of the previous analysis to describe the data and information systematically. Thus the results of the investigation were used to draw research conclusions that answer the research objectives and questions.

## 3.2 Conceptual Framework

To understand policy changes, in this case, the budget, from time to time, this research used the variables in Punctuated Equilibrium Theory, such as bounded rationality, policy monopolies, political systems, framing, venue shopping, and triggering events. This research analyzed the budget for controlling forest and land fires through certain variables in PET. The budget as the dependent and independent variables are positive and negative feedback, especially forest and land fires as triggering events or shocks.

These variables were chosen because forest and land fire is an important event that forms positive feedback for this research. Furthermore, researcher knew whether there was some negative feedback that became an obstacle to the forest and land fire event so that this triggering event could be accommodated in budgeting policies. Thus, this research perspective is a conceptual framework model to describe the relationship between the dependent variable, namely the budget and its changes, with the independent variable, namely forest and land fires, in PET's framework.

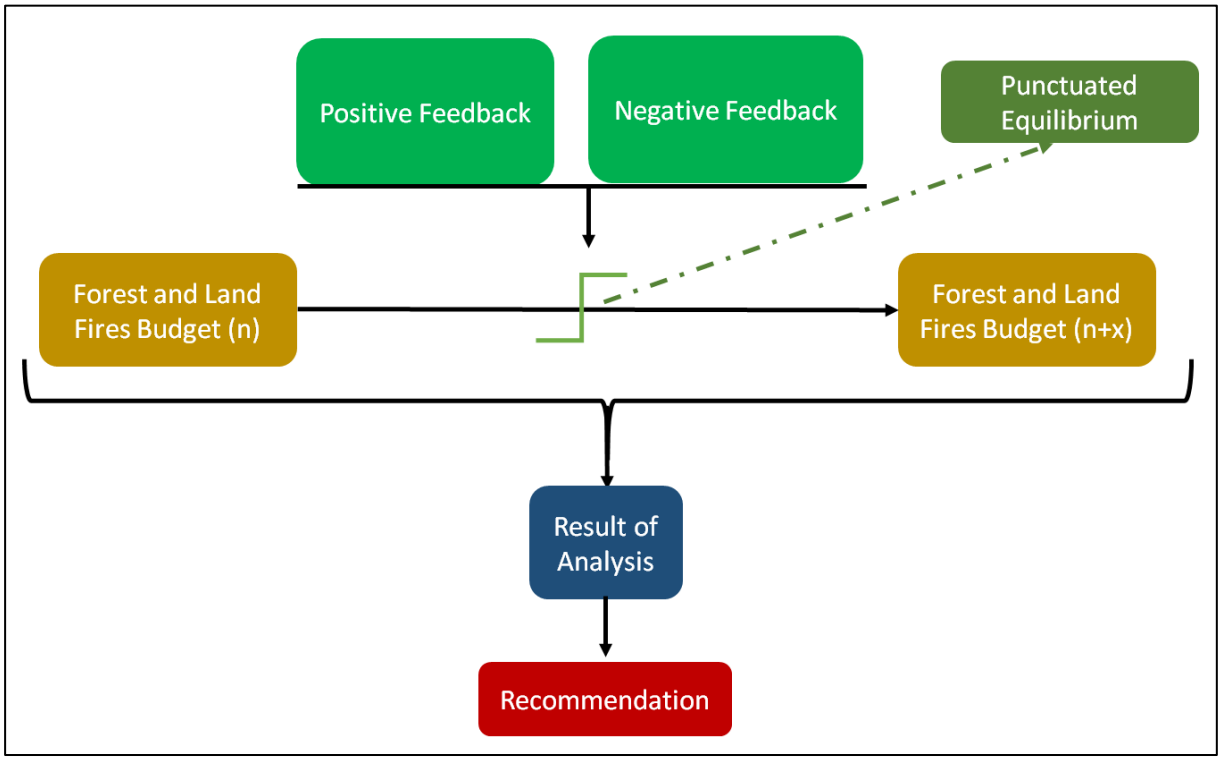



**Figure 5.** Conceptual Framework

## 3.3 Research Strategy

### 3.3.1 Research Units and the Criteria

First, this research identified research units based on the budgeting process in Law 17 of 2003 concerning National Finance Matters and the Regulation of the Minister of Environment and Forestry Number P.32/MenLHK/Setjen/Kum.1/3/2016 concerning Forest and Land Fire Control. Article 10 of law 17 of 2003 mentions the power of the provincial financial management work unit as the supporting element of government affairs that carries out the management of the budget. Article 14 of the Regulation of the Minister of Environment and Forestry Number P.32/MenLHK/Setjen/Kum.1/3/2016, the Provincial Controlling Task Force

for the Handling of Forest and Land Fires at least consists of the Provincial Secretariat, the Development Planning Agency (Bappeda), Disaster Management Agency, Environmental Agency, Technical Agency for Forestry, Plantation, and Agriculture

Based on those regulations, researcher determined government agencies within the Riau Province relevant to the budget of forest and land fire control, which are:

a. Financial and Asset Management Agency (BPKAD) as coordinator financial matters agency.
b. Development Planning Agency (Bappeda) as coordinator planning agency.
c. Disaster Management Agency (BPBD) is an operational agency for resolving disasters.
d. Environment and Forestry Agency (DLHK) is an operational agency to prevent environmental and forestry issues.

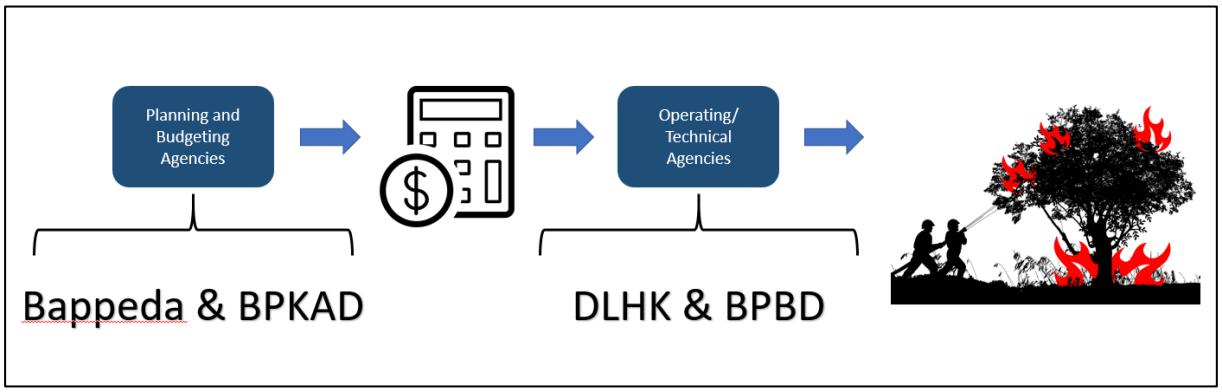



**Figure 6.** Research Units

Since the provincial secretary has secretarial functions and also the organizational structure in the plantation and agriculture agency does not have forest fire management units scattered throughout the Riau area, researcher did not include these three organizations as interviewees. The organizational posture of the plantation and agriculture agency which does not have a fire management unit makes their forest and land fire control activities very limited, such as there are only dissemination activities for plantation and agriculture companies.

### 3.3.2 Interview Approach

Based on Law 23 of 2014 concerning Local Government at Provincial and District levels, provincial government administration is guided by the principles of legal certainty and orderly state administration. Therefore, the government administration follows the duties and functions determined by the Governor or Major. In Riau Province, according to Regulation of the Governor of Riau Number 61 of 2021 concerning position, organizational composition, and working procedures of agencies in Riau Province Government, the course of the provincial

agency is determined based on public affairs are under the authority of the provincial government.

This research identified what public affairs are related to the budget for controlling land and forest fires in the four research units based on the Regulation of the Governor of Riau Number 61 of 2021.

a. Article 368 states that Bappeda plans development policies in the economy and natural resources, including trade, industry, cooperatives, investment and finance, tourism, environment, forestry, agriculture, marine, and fisheries. According to this article, an interview was conducted with the Head of Economic Affairs and Natural Resources Unit at Bappeda or their representative.
b. Article 379 states that BPKAD reviews the proposed work plan and budget (RKA) and evaluates the design of the use of agency cash. According to this article, an interview was conducted with the Head of the Budgeting Unit at BPKAD or their representative.
c. Appendix II letter K shows that the Functional Group implements forest and land fire prevention and control for climate change control and forest and land fire prevention at DLHK. Based on this term, an interview was conducted with the Lead of the Functional Group for forest and land fire prevention at DLHK or their representative.
d. Appendix II letter K shows that the implementation of Coordination of rescue and evacuation of disaster-affected communities and distribution of logistics with relevant agencies is carried out by the Emergency Division at BPBD. In addition, the Emergency Division also assesses the location, damage, and losses from the impact of the disaster. Based on this term, an interview was conducted with the Head of Emergency Division at BPBD or their representative.

This research used the identification results as material for submitting an interview request to Riau Provincial Government, in this case, the permission service office. After obtaining research permission, researcher contacted the general affairs section of each service via Whatsapp application to make sure the research permission was submitted to the head of the agency. Then the head of the agency appointed the relevant officials to be interviewed. After that, researcher contacted the potential candidates to be interviewed to convey the purpose of the research and asked for interview consent. After the potential candidate agrees to be interviewed, researcher and interviewees agree on an interview schedule.

### 3.3.3 Research Boundaries

This research has limitations which were the capacity and time available. Thus, this research was narrowed to analyze the provincial budget per year and significant fires that happened in 2013-2020 rather than the complete chain of causes and impacts of forest and land fires. Meanwhile, the PET variables are used to strengthen the analysis of the role of forest and land fires as a shock, which is also a particular variable in PET. Information on variables such as bounded rationality and policy monopoly supports the analysis of whether the shock in the form of forest and land fires can affect the budgeting process in Riau Province.

## 3.4 Data Collection

The data have been collected through desk research and semi-structured interviews with four provincial agencies to answer the sub-research questions. The interview objective was to understand the implementation of budgeting in forest and land fire control in Riau Province. Moreover, desk research aims at scientific journals and grey literature related to disaster budgeting in general and budgeting in forest and land fire control in Riau Province.

Before accessing the data, the operationalization of variables was needed to change abstract conceptual ideas in the research question into measurable data.

**Table 1.** Operationalization

| Sub-research question | Variable or Information | Variable Definition or Information Description | Measurement | Sources of Data | Accessing and Analyzing method |
|---|---|---|---|---|---|
| a. What are Indonesia's prevailing laws and regulations related to budgeting for controlling forest and land fires? | Obligation | the minimum requirement in budgeting for forest and land fire process | Number of requirements | National Legal Documentation and Information Network | Desk research<br><br>Procedures and regulations have been analyzed with content analysis to give information about the obligation of the provincial government |
| b. What does the forest and land fire control budget in Riau Provincial Government look like over time? | Budget Allocation and realization | an estimate of expenditure allocation or ceiling (forest and land fires control) for a set period of time | Amount of income and the sources Amount of expense and the uses | Riau Province Government Financial Report 2013-2020 | Desk Research<br><br>Budget and budget changes have been analyzed with descriptive statistics to overview financial information and its trend |
| | Budget Changes | value of change (increase or decrease) the amount of budget | Amount/ Percentage of budget change | | |
| c. When have major forest and land fire events | Triggering Events | major forest and land fires that create a transboundary haze | The number of hotspots indicates the number of | Grey Literature - Ministry of Forestry and | Desk Research<br><br>Triggering events |

| Sub-research question | Variable or Information | Variable Definition or Information Description | Measurement | Sources of Data | Accessing and Analyzing method |
|---|---|---|---|---|---|
| happened that caused transboundary haze in the past in Riau Province? | | | events that occur burned each year | Environment's monitoring system data in 2013-2020 | have been analyzed with descriptive statistics to overview significant fires information and their trend |
| d. How do major transboundary haze events impact significant budgetary changes? | Positive and Negative feedback | A decision-making process that attempts to satisfice rather than optimize | Variables in PET relate to Shock or triggering event | Disaster Management Agency<br>Environment and Forestry Agency<br>Development Planning Agency<br>Financial and Asset Management Agency | Semi-structured interview<br><br>Interview results have been analyzed with content analysis based on quotes from interview minutes to give information about barriers in the policymaking process |

To answer the first sub-research question, researcher identified regulations that mandate the provincial government's duties and Responsibilities of the provincial government. These regulations are searched through the information system available on https://peraturan.go.id/, which the Directorate General of Legislation of the Ministry of Law and Human Rights manages. The keyword in the search was "forest fire". The accounting and reporting unit at the Financial and Asset Management Agency gave Budget allocation and realization for answering the second sub-research question. Researcher collected hotspot data series and news from the media to capture significant forest and land fire events. Riau Province hotspot data source is obtained from the site https://sipongi.menlhk.go.id/ open access to the public. The site is an official site managed by the Directorate of Land and Fire Control, Ministry of the environment, and forestry.

Secondary data was used to answer the first, second, and third questions. Primary data was collected through interviews to answer the fourth question. The semi-structured interviews were conducted to collect data from four interviewees at four agencies related forest and land fire control budgets. Researcher interviewed two operational agencies (BPBD and DLHK) on 16 and 17 June 2022. Then interview with Planning and Financial Agencies on 6 and 20 July 2022. The list, date, and code of the interviewee are presented in Table 2.

**Table 2.** List of interviewees

| No | Name | Type of Agency | Institution name | Interview date | Interviewee code |
|---|---|---|---|---|---|
| 1 | JG | Operational | BPBD | 16 June 2022 | Interviewee 1 |
| 2 | DY | Operational | DLHK | 17 June 2022 | Interviewee 2 |
| 3 | RER | Planning | Bappeda | 6 July 2022 | Interviewee 3 |
| 4 | DP | Budgeting | BPKAD | 20 July 2022 | Interviewee 4 |

For the interview, this research used semi-structured interviews. The interview questions are described in Appendix A.

## 3.5 Data Analysis

In addition to data collection, Table 1 also shows data analysis, types, and methods per research sub-question. The data collected were analyzed by quantitative and qualitative methods. For the quantitative method, data from financial reports and fire monitoring systems were analyzed with descriptive statistics to obtain forest and land fire control budget trends at Riau Provincial Government. This statistic was performed to describe a set number of data features briefly. Furthermore, for the qualitative method, the data about procedures, regulations, and data from semi-structured interviews were analyzed using content analysis. Content analysis was conducted to obtain references and draw systematic conclusions on the meaning and purpose of texts, messages, or other forms of communication.

The data were analyzed using content analysis with thematic categorization based on positive and negative feedback in PET to answer the first and the fourth sub-question. The data were analyzed using descriptive statistics to answer the second and third sub-questions. With content analysis, researcher gained information about the obligation of the provincial government and their compliance and barriers in the policymaking process based on types of feedback in PET. Researcher obtained simple summaries of the budget, its changes, and significant fire information and trends.

In general, this research uses a mixed-method, whereas the analytical method used was descriptive statistics and content analysis. These data analyses were used to gain in-depth knowledge of forest and land fire control budgeting. In addition, the data that has been obtained and analyzed were validated by triangulation of data sources, namely a method to unite information from different sources. According to Carter et al., 2014, what is meant by triangulation is the process of comparing data from interviews with data obtained from desk research and vice versa. Thus, desk research (both sourced from academics and grey literature) and interview results will be the primary sources of knowledge and data in this research

## 3.6 Ethical Considerations

Researcher prepared a consent form and gave it to the interviewee to avoid ethical issues during and after the interview, such as anonymity, confidentiality, researcher's potential impact on the participants. With this form, researcher requested prior consent for recording and transcribing the recorded data. Researcher will maintain the data generated from the research project even

though the results have been published. Other research conducted by researcher can analyze the data set.

In addition, regarding confidentiality, research data and information provided to researcher are confidential and will not be shared with parties not part of this research. Interviewees were also given the option of remaining anonymous. Thus, it increases the reliability of the information in the research report, ensures that the researcher's data is used respectfully, and guarantees the interviewee's privacy.

# Chapter 4
# Result and Discussion

## 4.1 Obligation for Provincial Government under Regulations

The control of forest and land fires must be guided by the existing laws and regulations to run effectively. In Indonesia, the division of concurrent government affairs between the central, provincial, and district governments uses the principle of local government autonomy and national strategic interests. Based on Law Number 23 of 2014, the central government is responsible for preventing, controlling, and restoring pollution and/or environmental damage across provinces and/or national borders. In contrast, the provincial government manages cross-district/city affairs within one province. The haze disaster is the most significant contributor to air pollution in Indonesia due to forest and land fires. Since the haze disaster is transboundary, making this problem a widespread problem not only in areas where forest and land fires occur.

Transboundary haze makes forest and land fires in Riau Province an issue at the national level due to the negative impact across provinces or countries. This makes the provincial government too dependent on the central government. Potentially, this dependence on the central government will make the provincial government reduce its attention to controlling forest and land fires. Syaufina (2018) states that intentional and unintentional human activities cause almost all forest and land fires in Indonesia. According to her, this phenomenon in Indonesia is unlike fires in temperate climates, which allow natural fires to occur. Thus, forest and land fires can be prevented and handled early, in the context of this research, starting from the provincial government level.

This research identifies several regulations related to forest and land fire control for the provincial government, including the following:

a. Institutional

   Based on Government Regulation Number 45 of 2004 concerning Forest Protection, the Provincial Government is obliged to implement:

   1) Formation of a fire control brigade
   2) Establishment of fixed firefighting procedures
   3) Fire prevention training
   4) Preparation of firefighting teams

5) Fostering and supervising fire control units and activities.

In addition, the Provincial Government may establish a Forest and Land Fire Control Organization consisting of organizations or agencies across government levels. This is based on the Regulation of the Minister of Environment and Forestry Number P.32/MenLHK/Setjen/Kum.1/3/2016 concerning Forest and Land Fire Control. The organization is called the Provincial Controlling Task Force for Forest and Land Fire Management, which the Governor determines. The members are the Provincial Secretary, Head of Bappeda, Head of BPBD, Head of the Environmental Agency, and other heads of specialized agencies such as Forestry Agency and Plantation and Agriculture Agencies. In addition, this task force consists of the Fire Control Brigade under the auspices of the Ministry (Manggala Agni) and District/City Governments. If needed, this task force can invite surrounding Provincial Governments, the National Police, and the National Army at the provincial level.

b. Early Detection and Warning System

Based on the Regulation of the Minister of the Environment Number 10 of 2010 concerning the Mechanism of Prevention of Pollution and/or Environmental Damage Related to Forest and/or Land Fires, the Provincial Government is obliged to implement an early warning system by utilizing:

1) fire hazard rating system;
2) local, national, and global weather and climate forecasts;
3) the pattern of distribution and direction of smoke pollution
4) acquisition of satellite imagery and analysis of satellite imagery to identify areas prone to forest and/or land fires as well as burnt locations;
5) development of hazard maps and biomass potential maps for forest and/or land fires;
6) algorithm development and hotspot detection;
7) result of the development of the database on the area and impact of forest and/or land fires.

c. Fire Fighting System

Based on Government Regulation Number 45 of 2004 concerning Forest Protection, the Provincial Government is obliged to carry out:

1) community evacuation and security
2) fire brigade mobilization

3) mobilization of heavy firefighting equipment such as four-wheeled and two-wheeled vehicles, water vehicles, and air vehicles.
4) coordination with other relevant government agencies

d. Post Fire Handling

Based on Government Regulation Number 45 of 2004 concerning Forest Protection, the Provincial Government is obliged to implement:

1) collection of data and information on the occurrence of fires;
2) measurement and sketch of the fire location;
3) damage level analysis and recommendations;
4) prosecution of criminal responsibility;
5) prosecution of civil liability;
6) compensation collection;
7) giving administrative sanctions;
8) rehabilitation.

e. Standard of Facilities and Infrastructure

Based on Government Regulation Number 45 of 2004 concerning Forest Protection, the Provincial Government is obliged to implement:

1) map inventory of provincial forest fire-prone areas
2) development of the extension model
3) preparation of guidelines for the implementation of forest fire fighting

In addition, there is the Minister of Forestry Regulation Number P.12/Menhut-II/2009 concerning Forest Fire Control, and it was replaced in 2016 with the Minister of Environment and Forestry Regulation Number P.32/MenLHK/Setjen/Kum.1/3/2016 , which technically regulates about:

1) fire prevention equipment
2) firefighting equipment
3) monitoring post building
4) fire warning sign
5) map of fire-prone locations
6) making firebreaks
7) documentation of Fire Control Activities

f. Development of Innovations

Based on Regulation of the Minister of Environment and Forestry Number P.32/MenLHK/Setjen/Kum.1/3/2016 concerning Forest and Land Fire Control, the Provincial Government is urged to carry out:

1) promotion of land clearing without burning;
2) fire behaviour research;
3) firefighting techniques on peatlands;
4) ground and air blackout integration;
5) use of weather modification technology (artificial rain)

These regulations oblige the provincial government to carry out efforts to control forest and land fires. However, based on Law Number 41 of 1999 concerning Forestry and Law Number 32 of 2009 concerning Environmental Protection and Management, every person or organization is prohibited from burning forests and throwing objects that can cause fires that damage forest functions—and banned from clearing land by burning. Moreover, since the tremendous forest fires that occurred in 1997, the problem of forest and land fires in Riau has become an international issue. So that transboundary haze is behind the establishment of the ASEAN Agreement, and the Indonesian government ratified the agreement into Law 26 of 2014 (Interviewee 2).

Indonesia's forest and land fire control regulations, from prevention to post-fire management, are comprehensive and involve many parties. Even though the central government has provided alternative options for funding forest and land fire control (Interviewee 3), the low compliance rate of relevant parties to these regulations is the obstacle. The provincial government needs sufficient budget allocation to oversee the companies and fulfill these regulations. The insufficient budget allocation makes activities in the forest and land fire control cannot run well.

## 4.2 Budget Allocation and Realization over Years

The eight-year forest and land fire control budget can be seen in table 3. This table depicts budget allocation and realization of forest and land fire control activities. Budget allocation is the optimum level and also the highest limit of the budget that can be used to finance government activities. Budget realization is funds that have been used for actions that have been planned in the budget.

**Table 3.** Budget Allocation and Realization on All Activities Related to Forest and Land Fire Control

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot | Realization Percentage |
|---|---|---|---|---|
| 2013 | 3.700.000.000 | 2.239.623.275 | 5.660 | 60,53% |
| 2014 | 9.971.922.000 | 7.142.254.550 | 9.003 | 71,62% |
| 2015 | 7.247.216.000 | 3.976.390.667 | 2.047 | 54,87% |
| 2016 | 15.117.768.779 | 11.319.131.775 | 1.805 | 74,87% |
| 2017 | 25.902.450.588 | 14.689.795.747 | 189 | 56,71% |
| 2018 | 8.219.700.900 | 4.306.637.834 | 1.920 | 52,39% |
| 2019 | 18.551.832.765 | 6.973.254.259 | 6.426 | 37,59% |
| 2020 | 13.046.700.799 | 2.898.282.596 | 694 | 22,21% |
| Total | 101.757.591.831 | 53.545.370.703 | | 52,62% |

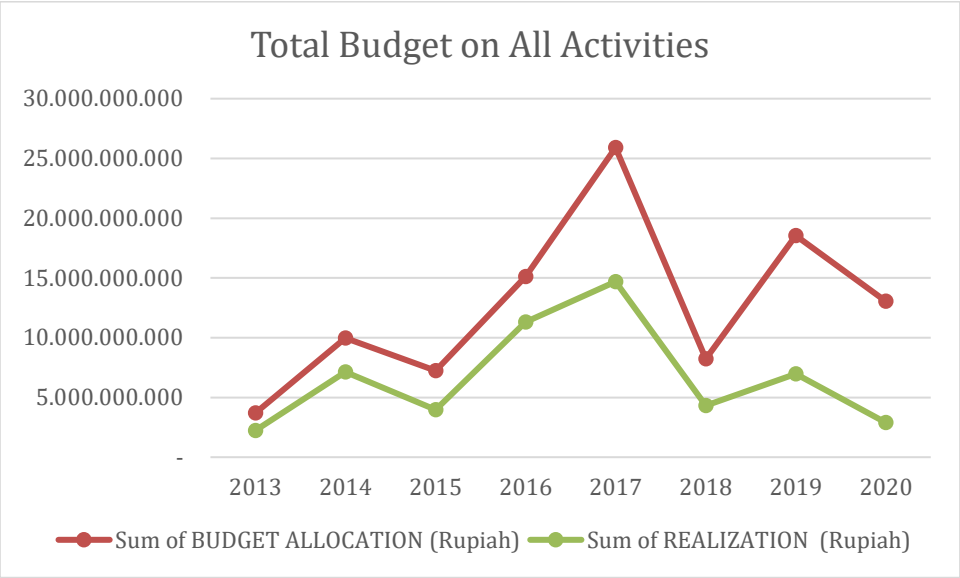



**Figure 7.** Budget Allocation and Realization of All Activities

Table 3 and figure 7 depict budget allocations during 2013-2020 that are planned and never used optimally according to the plan. The average actual use of the budget for eight years is 52%. The most optimum year of actual use of the budget is 2016, which is almost 75%. The realization of low-budget use occurred in 2019 and 2020, below 50%. In addition, in 2017, there was a significant increase in budget allocation from the previous year of more than 10 billion rupiahs (71%).

In details of allocation and realization of the Riau Province for the eight-year budget, there are many activities related to fire forest and land control. From all activities identified as activities related to controlling fire forests and land, this research categorizes existing activities in the document budget into nine categories. This categorization refers to the nuances of each type of activity in the forest and land fire control series. Although there are many different activities,

these activities have relatively the same nuance or theme. With this categorization, it is hoped that it will be easier for all interested parties to read this research report.

a. Capacity Building is an increase in the ability, skills, and attitudes of people or other human resources to be more effective and efficient in achieving organizational performance goals/targets. This category includes education and training in forest and land firefighting, coaching, facilitation, socialization, and empowerment of society.
b. Facilities and Infrastructures are equipment or instruments used to assist the activities process. Thus, the objectives of these activities can be achieved. This category includes procuring goods and services related to forest and land fire control fire and building permanent facilities.
c. Fire Fighting is an effort to countermeasure related fire forests and lands on the field.
d. Fire Prevention on the Field are means taken to prevent fires, like routine preventive patrol conducted when some indications of fire will appear.
e. General Fire Prevention are all supporting efforts for preventing fire, like upgrading maps in the prone fire area or other supporting data for fire prevention on the field.
f. Research and Studies are a series of activities with scientific and systematic methods that can explain and predict phenomena related to forest and land fires. This category includes all studies related to controlling fire like technology estimating wave bounce electromagnetic or enhancement quality cohesiveness and speed handling
g. Institutional Matters are any efforts to create a more conducive culture/behaviour to create an effective and efficient bureaucracy. Thus, each work unit can synergize in realizing the organization's vision and mission. This category includes the coordination of activities between parties in the internal Riau Province Government and external parties
h. Post Fire Handling is all efforts, actions, or activities that include inventory, monitoring, evaluation, and coordination to deal with an area after burning; This category includes data and information collection on the occurrence of fires and law enforcement on violations that cause fires.
i. Public Safety is a series of rapid first aid reactions in the case of a health crisis due to forest and land fires. In other words, the form of activities to overcome the effects on public health.

The details of the nine categories are as follows

a. Capacity Building

**Table 4.** Budget Allocation and Realization on Capacity Building

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot |
|---|---|---|---|
| 2013 | 2.000.000.000 | 827.766.875 | 5.660 |
| 2014 | 1.024.372.000 | 457.500.050 | 9.003 |
| 2015 | 2.000.000.000 | 810.697.900 | 2.047 |
| 2016 | 721.812.000 | 640.386.730 | 1.805 |
| 2017 | 1.197.250.314 | 620.455.400 | 189 |
| 2018 | 175.583.400 | 144.656.900 | 1.920 |
| 2019 | 454.623.700 | 416.212.300 | 6.426 |
| 2020 | 0 | 0 | 694 |
| Total | 7.573.641.414 | 3.917.676.155 | |

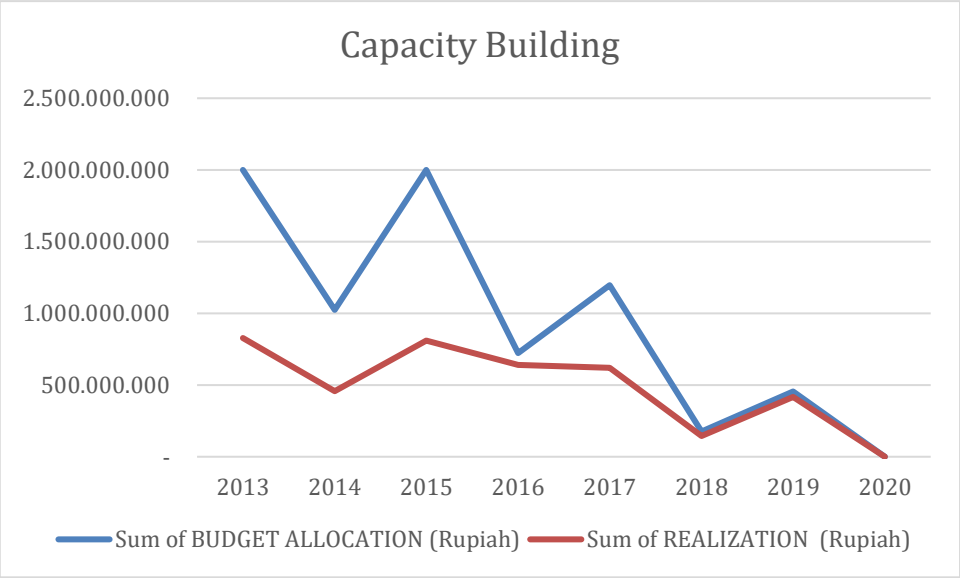



**Figure 8.** Budget Allocation and Realization on Capacity Building

Figure 8 depicts the declining trend in Capacity Building budget from 2013 to 2020. This shows that Riau Province Government's attention to human resource capacity-building activities has decreased.

b. Facilities and Infrastructures.

**Table 5.** Budget Allocation and Realization of Facilities and Infrastructures

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot |
|---|---|---|---|
| | | | |
| 2013 | 0 | 0 | 5.660 |
| 2014 | 2.000.000.000 | 1.602.956.800 | 9.003 |
| 2015 | 575.000.000 | 128.520.000 | 2.047 |
| 2016 | 9.366.454.229 | 7.077.584.101 | 1.805 |
| 2017 | 14.674.999.685 | 11.768.950.728 | 189 |

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot |
|---|---|---|---|
| 2018 | 6.477.626.400 | 3.612.597.279 | 1.920 |
| 2019 | 0 | 0 | 6.426 |
| 2020 | 9.082.995.700 | 1.201.477.170 | 694 |
| Total | 42.177.076.014 | 25.392.086.078 | |

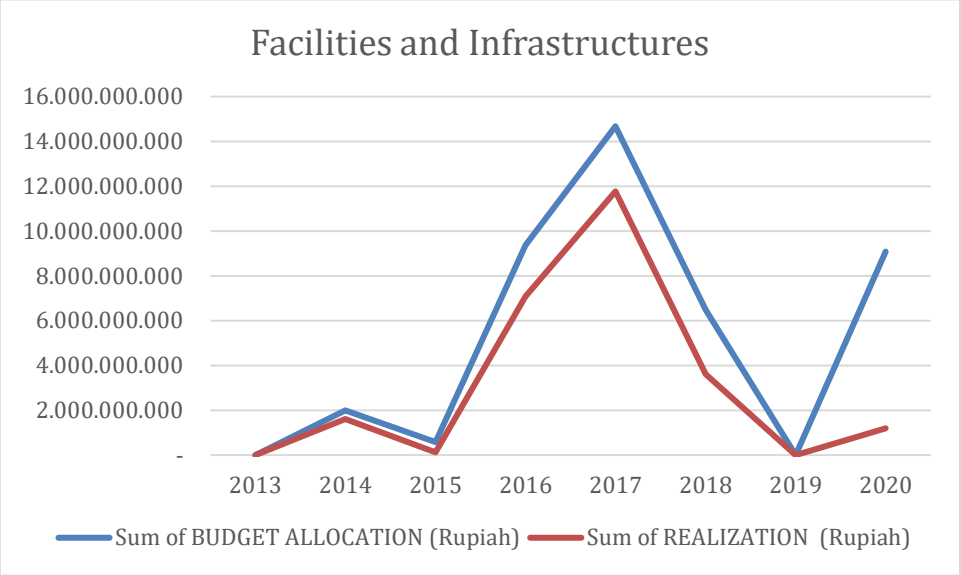



**Figure 9.** Budget Allocation and Realization of Facilities and Infrastructures

Figure 9 depicts a significant increase in the procurement of Facilities and infrastructure from 2016 to 2017. This shows that the provincial government paid considerable attention to the needs of Facilities and Infrastructure in 2016 and 2017.

c. Fire Fighting

**Table 6.** Budget Allocation and Realization of Fire Fighting

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot |
|---|---|---|---|
| 2013 | 750.000.000 | 618.681.700 | 5.660 |
| 2014 | 5.747.550.000 | 4.115.138.800 | 9.003 |
| 2015 | 750.000.000 | 700.771.500 | 2.047 |
| 2016 | 850.000.000 | 283.391.500 | 1.805 |
| 2017 | 2.100.000.000 | 492.879.319 | 189 |
| 2018 | 1.075.962.200 | 287.656.955 | 1.920 |
| 2019 | 8.582.145.000 | 1.841.239.783 | 6.426 |
| 2020 | 820.607.800 | 820.514.500 | 694 |
| Total | 20.676.265.000 | 9.160.274.057 | |

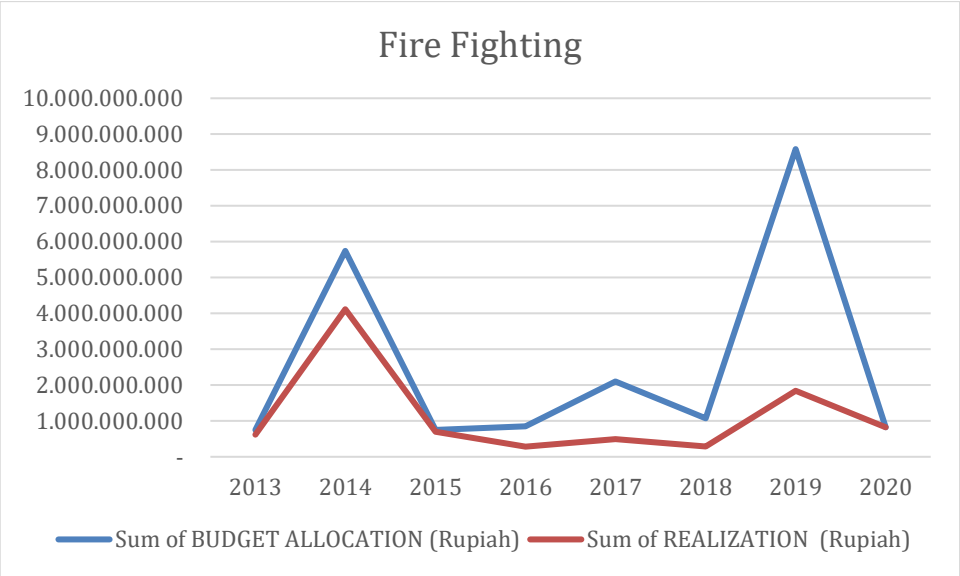



**Figure 10.** Budget Allocation and Realization of Fire Fighting

Figure 10 depicts a significant increase in firefighting activity from 2014 to 2019. This shows that the provincial government's efforts to extinguish fires directly in the field were extensive in 2014 and 2019.

d. Fire Prevention on the Field

**Table 7.** Budget Allocation and Realization of Fire Prevention on the Field

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot |
|---|---|---|---|
| 2013 | 0 | 0 | 5.660 |
| 2014 | 0 | 0 | 9.003 |
| 2015 | 0 | 0 | 2.047 |
| 2016 | 0 | 0 | 1.805 |
| 2017 | 0 | 0 | 189 |
| 2018 | 0 | 0 | 1.920 |
| 2019 | 1.705.038.400 | 1.496.083.843 | 6.426 |
| 2020 | 741.750.000 | 596.132.100 | 694 |
| Total | 2.446.788.400 | 2.092.215.943 | |

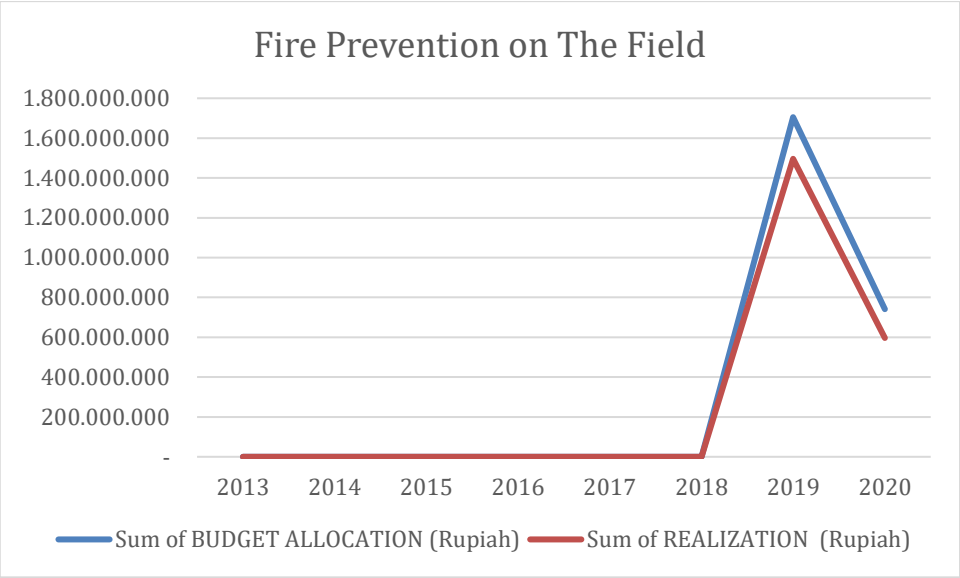



**Figure 11.** Budget Allocation and Realization of Fire Prevention on the Field

Figure 11 depicts Fire Prevention in the Field activity initiated in 2019. This shows that the provincial government started its direct prevention efforts on the ground in 2019.

e. General Fire Prevention

**Table 8.** Budget Allocation and Realization of General Fire Prevention

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot |
|---|---|---|---|
| 2013 | 350.000.000 | 292.991.700 | 5.660 |
| 2014 | 350.000.000 | 212.786.800 | 9.003 |
| 2015 | 500.000.000 | 155.129.500 | 2.047 |
| 2016 | 1.227.733.000 | 992.392.200 | 1.805 |
| 2017 | 900.000.000 | 659.700.100 | 189 |
| 2018 | 429.857.900 | 222.131.000 | 1.920 |
| 2019 | 208.248.265 | 101.493.436 | 6.426 |
| 2020 | 0 | 0 | 694 |
| Total | 3.965.839.165 | 2.636.624.736 | |

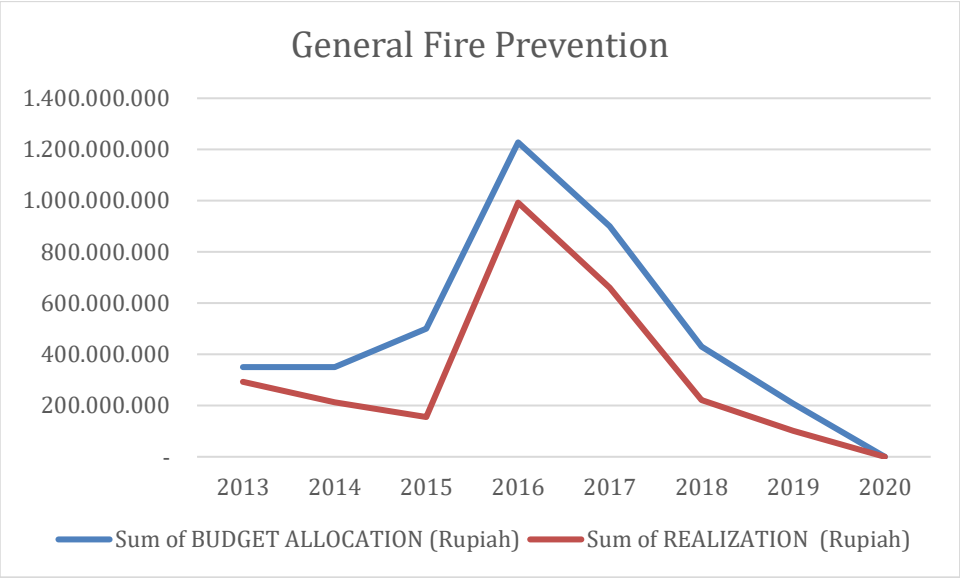



**Figure 12.** Budget Allocation and Realization of General Fire Prevention

Figure 12 depicts Fire Prevention activities are always provided except in 2020, and in 2016 the government's attention was most significant among other years.

f. Research and Studies

**Table 9.** Budget Allocation and Realization of Research and Studies

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot |
|---|---|---|---|
| 2013 | 200.000.000 | 137.906.200 | 5.660 |
| 2014 | 850.000.000 | 753.872.100 | 9.003 |
| 2015 | 720.000.000 | 137.353.075 | 2.047 |
| 2016 | 874.370.000 | 782.283.374 | 1.805 |
| 2017 | 550.000.000 | 381.037.200 | 189 |
| 2018 | 0 | 0 | 1.920 |
| 2019 | 0 | 0 | 6.426 |
| 2020 | 0 | 0 | 694 |
| Total | 3.194.370.000 | 2.192.451.949 | |

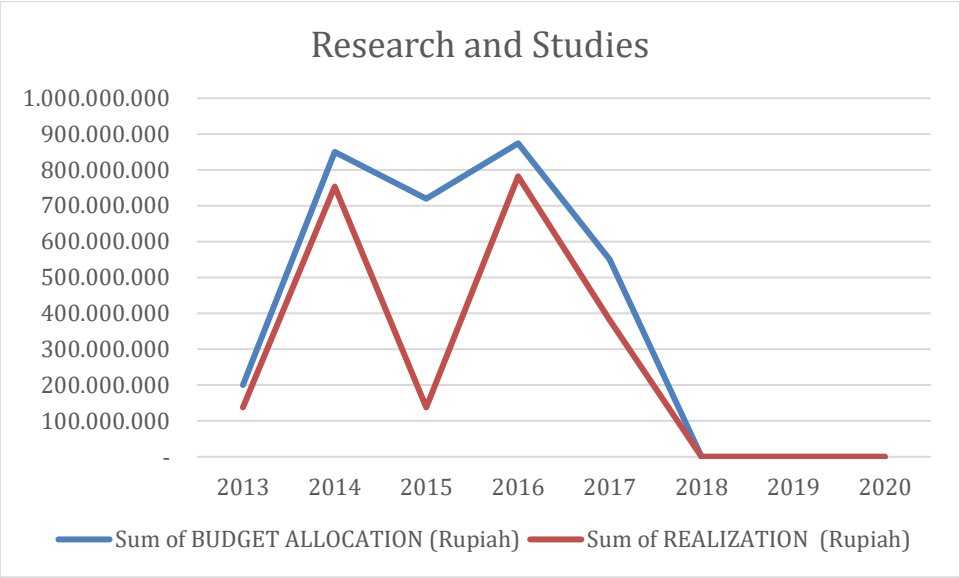



**Figure 13.** Budget Allocation and Realization of Research and Studies

Figure 13 depicts research and studies that increase significantly from 2014 to 2016 but decline to zero from 2018 to 2020.

g. Institutional Matters

**Table 10.** Budget Allocation and Realization on Institutional Matters

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot |
|---|---|---|---|
| 2013 | 400.000.000 | 362.276.800 | 5.660 |
| 2014 | 0 | 0 | 9.003 |
| 2015 | 1.602.216.000 | 1.046.038.292 | 2.047 |
| 2016 | 2.077.399.550 | 1.543.093.870 | 1.805 |
| 2017 | 5.400.000.000 | 33.989.700 | 189 |
| 2018 | 0 | 0 | 1.920 |
| 2019 | 0 | 0 | 6.426 |
| 2020 | 0 | 0 | 694 |
| Total | 9.479.615.550 | 2.985.398.662 | |

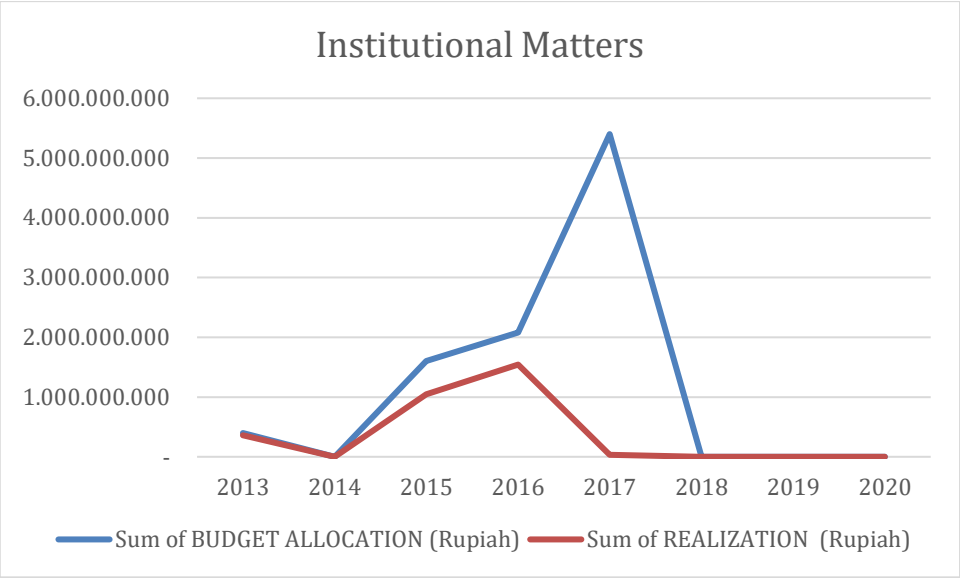



**Figure 14.** Budget Allocation and Realization on Institutional Matters

Figure 14 depicts an increase in activities related to institution matters until 2016, but in 2017, it is no longer there even though 2017 is still budgeted.

h. Post Fire Handling

**Table 11.** Budget Allocation and Realization on Post Fire Handling

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot |
|---|---|---|---|
| 2013 | 0 | 0 | 5.660 |
| 2014 | 0 | 0 | 9.003 |
| 2015 | 1.100.000.000 | 997.880.400 | 2.047 |
| 2016 | 0 | 0 | 1.805 |
| 2017 | 1.080.200.589 | 732.783.300 | 189 |
| 2018 | 60.671.000 | 39.595.700 | 1.920 |
| 2019 | 6.467.227.400 | 2.642.437.287 | 6.426 |
| 2020 | 299.409.250 | 280.158.826 | 694 |
| Total | 9.007.508.239 | 4.692.855.513 | |

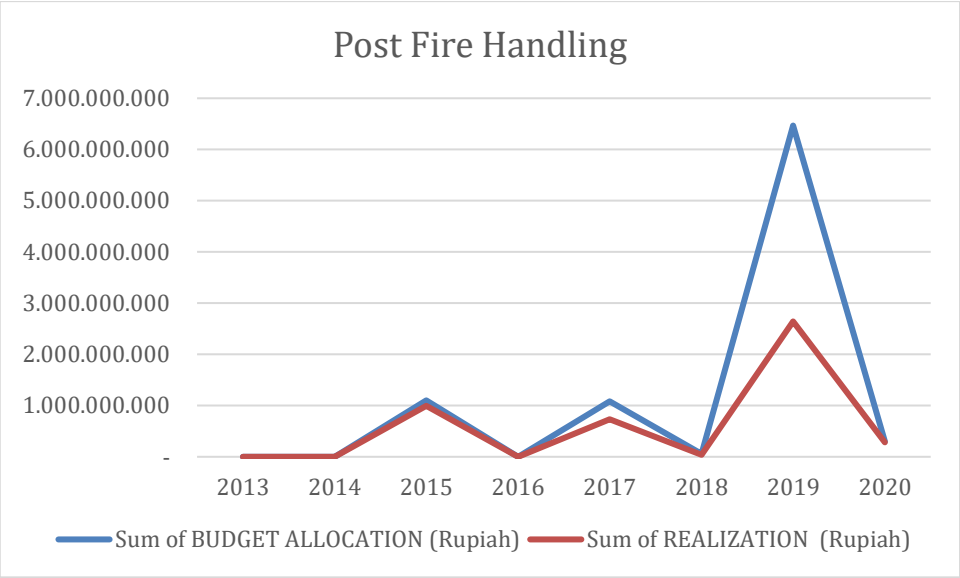



**Figure 15.** Budget Allocation and Realization on Post Fire Handling

Figure 15 depicts post-fire handling activities starting every two years starting in 2015 and increasing significantly in 2019.

i. Public Safety

**Table 12.** Budget Allocation and Realization of Public Safety

| Year | Budget Allocation (Rupiah) | Budget Realization (Rupiah) | Hotspot |
|---|---|---|---|
| 2013 | 0 | 0 | 5.660 |
| 2014 | 0 | 0 | 9.003 |
| 2015 | 0 | 0 | 2.047 |
| 2016 | 0 | 0 | 1.805 |
| 2017 | 0 | 0 | 189 |
| 2018 | 0 | 0 | 1.920 |
| 2019 | 1.134.550.000 | 475.787.610 | 6.426 |
| 2020 | 2.101.938.049 | 0 | 694 |
| Total | 3.236.488.049 | 475.787.610 | |

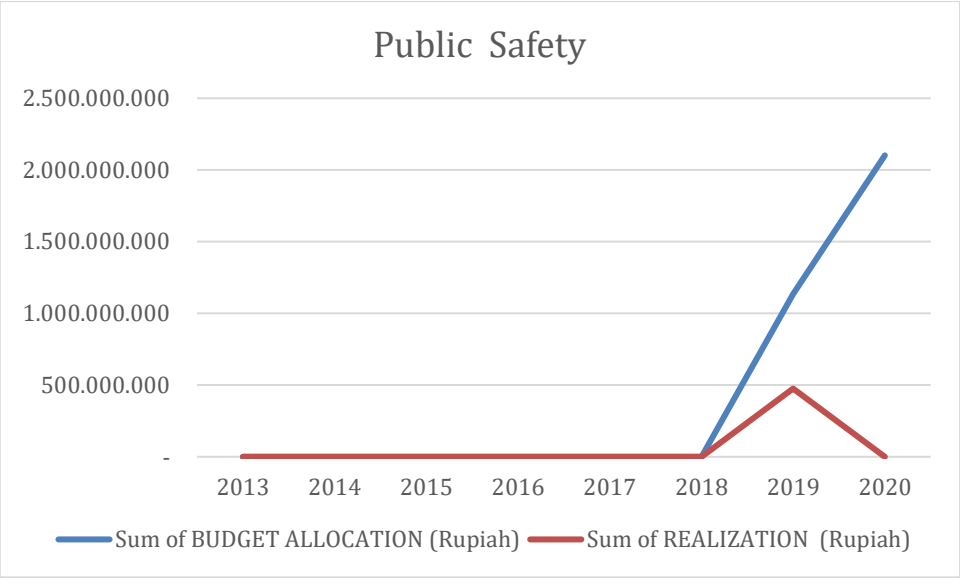
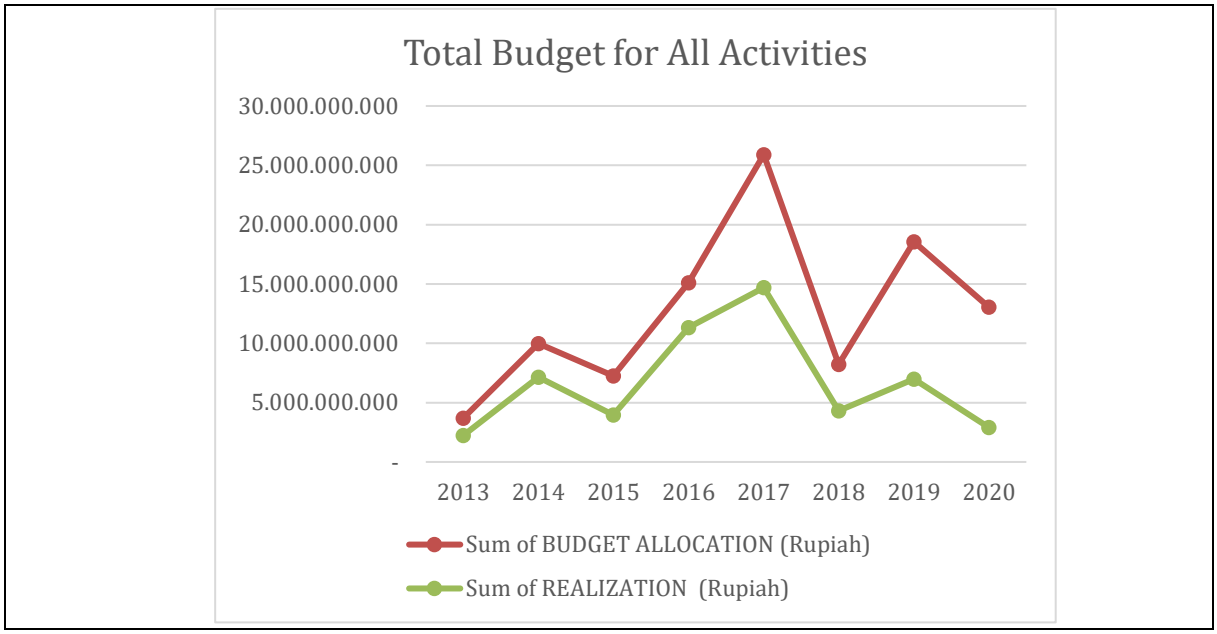



**Figure 16.** Budget Allocation and Realization of Public Safety

Figure 16 depicts that public safety is starting to be noticed and increasing since 2019, although in 2020, it is not implemented.



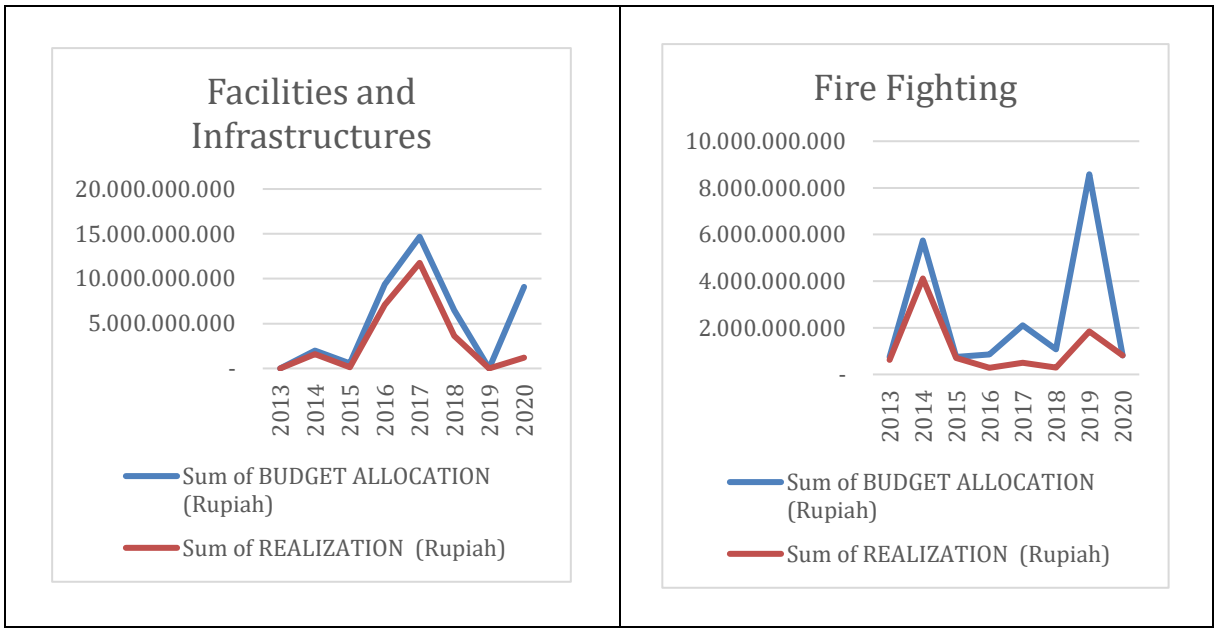



**Figure 17.** Significant Activities that Affect the Total Budget

Overall, the total budget for all activities is most affected by two major activities, Facilities and Infrastructures and Fire Fighting, as seen in Figure 17. In 2020 forest and land fire control activities are very low and even non-existent 2020. This coincides with the covid-2019 pandemic. In addition, Capacity Building experiences a downward trend until there are no activities at all in 2020. However, there has been an increase in certain activities in different years. These include, from 2014 to 2016, when research activities began to increase, 2016 institutional strengthening, and General Fire Prevention increased significantly. They peaked in 2017, and the procurement of infrastructure on a large scale occurred. Interestingly, in 2019, before the pandemic occurred in 2020, several Prevention Activities on the Ground, Public Safety, and Post Fire Handling began to appear and experience a significant increase.

## 4.3 The Effect of Major Forest and Land Fire Events on Budget

a. The Hotspot Data from The Ministry of Environment and Forestry's Monitoring System in 2013-2020

   Hotspots are signs of forest fires that identify an area with a temperature that is noticeably higher than the surrounding area. The ministry of environment and forestry is the data author of the hotspot distribution data, which publishes the data at https://sipongi.menlhk.go.id/.

**Table 13.** Number of Hotspot per Year in Riau Province

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|
| Hotspot | 5.660 | 9.003 | 2.047 | 1.805 | 189 | 1.920 | 6.426 | 694 |

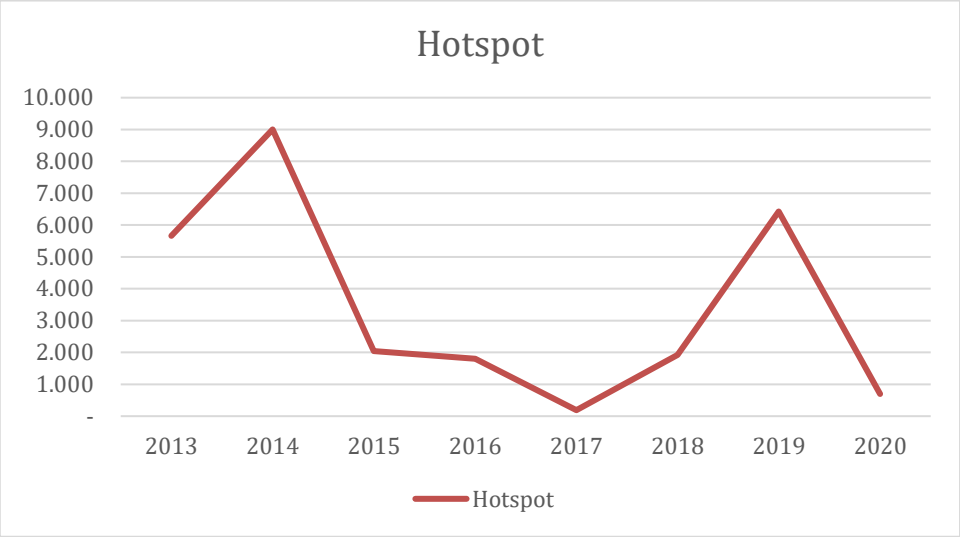



**Figure 18.** Hotspot Trend in Riau Province

Figure 18 depicts the hotspot indicator on Y-axis indicates forest and land fires. In 2014 and 2019, extensive forest and land fires occurred in the Riau Province area. From 2015 to 2017, forest and land fires decreased until they rose again from 2018 to 2019. The hotspot data is continuously monitored by the environment and forestry ministry, especially the Fire Control Brigade, under the auspices of the Ministry (Manggala Agni). According to interviewee 1 and interviewee 2, the central government, through their agencies in Riau Province, is on standby by monitoring hotspots and forest and land fire prevention patrols.

b. Effect of Major Forest and Land Fire on Riau Province Budget

The comparison of the budget trend for forest fire control activities with the trend of fires indicated by the number of hotspots shows the following:

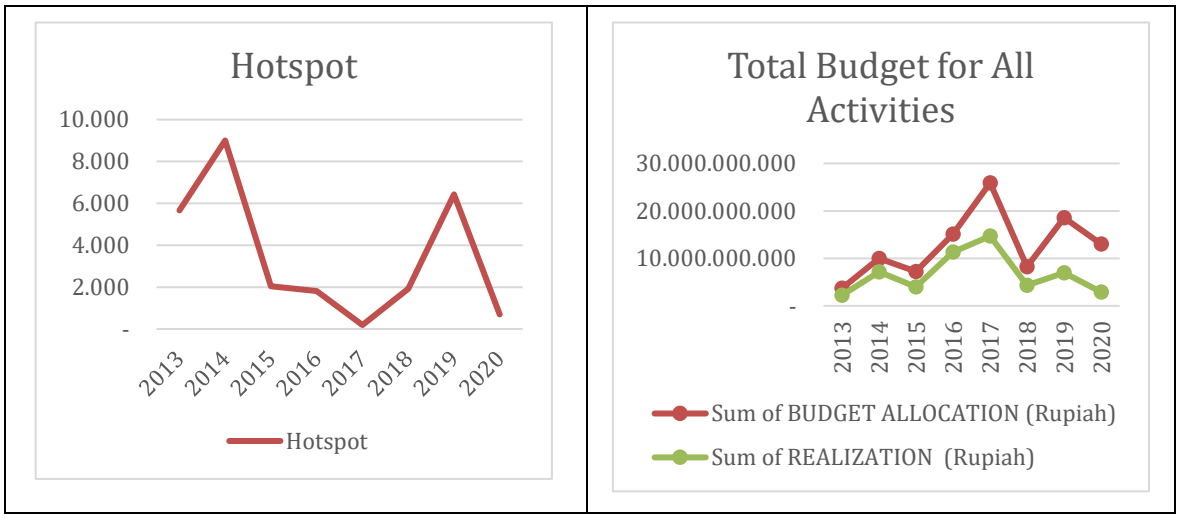



**Figure 19.** Comparison of Hotspot Trend with the Budget Trend

1) The magnitude of forest and land fires directly affected the budget increase in 2014 and 2019 on firefighting activity. This indicates that the provincial government is responsive to firefighting efforts. According to Interviewee 1, if the agency's budget allocation turns out to be insufficient, TAPD provides financing through the Unexpected Expenditure (BTT). Interviewee 4 states that BTT is government spending for emergencies and urgent needs that cannot be predicted in advance, including forest and land fires. If an emergency happens, BTT will switch to operating or technical agencies without specific approval from the House of Representatives; since the unpredictable nature of these expenditures (BTT), the BTT budget is attached to BPKAD as the Provincial Government Financial Manager. Interviewee 3 stated that despite there being no forest and land fire occurrence in Riau Province, the central government provides funding support for forest and land fire control through DBH-DR, and one of the BTT budget funding sources is coming for this fund. Therefore, although it is not a specific budget for controlling forest and land fires, the budget allocation and process for disbursing the BTT budget keep the forest and land fire extinguishment activities effective.

2) In 2014, there were large forest and land fires indicated by many hotspots. This increased the government's attention, but the budget proposal process for firefighting facilities took quite a long time in 2015 and 2016 until it was finally budgeted in 2017. The budget is quite long because, apart from waiting for sufficient fiscal capacity, since 2014, the Riau Provincial Government has assisted the central government through the BNPB with forest and land fire control.

   After the government tried to meet its own needs by providing a budget for the procurement of land and forest fire fighting facilities until its peak in 2017, Riau

Provincial Government realized that the hotspots had dropped dramatically in 2017. So that in 2018 the government immediately lowered the budget for controlling forest and land fires. However, when hotspots escalated again in 2019, the government's vigilance made budgeting go faster.

## 4.4 Insights Gained in Shocks Adaptation in Budgeting Process

This research sought information about the shocks adaptation in governmental budgeting in Riau Province. The research on whether the shock in the form of forest and land fires in Riau Province can alter the budgeting process is aided by information on variables like the shock itself, bounded rationality, and policy monopoly. The PET variables support understanding how shocks like forest and land fires, which constitute a specific PET variable, function in changes in the budget.

According to subchapter 4.3, the effect of significant forest and land fire events on the budget, researcher argues the forest and land fires as triggering / focusing events change the budget amount for forest and land fire control activities. Despite such a major shock event, even as Singapore faced a financial loss of nearly $1 billion in 2013 alone (Routers, 2014), Riau Provincial Government still does the status quo procedure, same policy monopoly, and same place or policy communities for the budgeting process. Therefore, according to Interviewee 1, Interviewee 2, Interviewee 3, and Interviewee 4, from a budgeting process perspective, forest and land fires do not significantly impact budgeting process changes. Nevertheless, the forest and land fire occurrence affected the number of funds or budgets allocated for forest and land fire control.

To explain the adaptation of Riau Provincial Government to shock, researcher describes it by using a set of rules for coding based on negative and positive feedback in PET that emphasizes the response to shock from the research unit.

First, according to Interviewee 1, Interviewee 2, and Interviewee 3, there is no bounded rationality in planning forest and fire control. Riau Province has established a strategic environmental study that assesses whether development activities harm the environment and provides guidelines so that environmental damage will not occur again. Aside from internal initiation, Riau Provincial Government considered The ASEAN Agreement in 2002 concerning transboundary haze pollution (Interviewee 2). Furthermore, the government pays attention to the aspirations of the community towards public issues, such as student demonstrations

(Interviewee 1 and Interviewee 2) and focus group discussions (FGD) with NGOs (Interviewee 3). However, researcher argues that in 2017 there is a gap between forest and land fires and the infrastructure budget for forest and land fire control. Two years (2015-2016) for planning are long enough to respond to the enormous fires that occurred in 2014. This is because the provincial government cannot implement planning and procurement approvals short time. The budget serial processing, which is still based on the old procedure, shows that there is still bounded rationality. Not to mention the condition of Riau Provincial Government, which lacks fiscal capacity and still relies on central government assistance, both of which are causes of bounded rationality. In addition, Fahlavi et al. (2019) also argue that local governments in Indonesia still use a traditional budgeting approach, which is still very procedural and incremental.

The second variable of PET is Policy Monopoly. According to Interviewee 1, Interviewee 2, Interviewee 3, and Interviewee 4, the roles and procedures carried out by TAPD have not changed. TAPD has a central role because, with the power of the Governor, this team determines the budget policy (KUA) and the highest allocation (PPAS) for each agency. These policies and allocations (KUA-PPAS) benchmark for agencies to formulate budget proposals. However, due to the governor's promise in the campaign as a goal in the RPJMD is *Riau Hijau* (Greener Riau) which DPRD approved, the fire issue has become a concern for TAPD and other related agencies.

Moreover, in RPJMD, *Riau Hijau* has specific missions and each target, namely: (1) Environmental Quality Index and (2) Greenhouse Gas Emissions. Since these goals and targets have been included in the planning documents, the planning and budgeting of the provincial government every year always considers forest and land fire issues (Interviewee 3). Thus, TAPD must comply with RPJMD when determining KUA-PPAS for the agency. Even though there is a policy monopoly in Riau Provincial Government's budgeting process, the shock is still accommodated by this status quo role because one of the main tasks of TAPD is to accommodate triggering events like forest and land fire.

The following variable is the political system. According to the Indonesian constitution, the government is formed based on the people's sovereignty. So Indonesian law guarantees a democratic system in the course of government. To be elected, the governor candidate is committed to hearing and accommodating people's aspirations about forest and land fire issues. After the election, the government must stipulate the governor's promise as a regulation that

guides the running of the government. For example, development planning, local government, and finance laws regulate the obligation to accommodate the people's aspirations. Interviewee 3 states that the development planning deliberation process organized by the provincial government takes place at the sub-district and district levels throughout the province. This participatory budgeting process provides space for the community to fulfill their needs to the government. In addition, DPRD input in the form of member ideas is also aligned with provincial government policies. In addition, the general election makes the candidate leaders pay close attention to the people's problems if they want to be elected.

Forth variable is framing the shock issue. According to Birkland (1998), "local" events can attract national and international attention. Forest and land fires in Riau Province are events that trigger shocks for the wider community. The damage caused by forest and land fires in Riau Province is more real and felt than the impact of transboundary haze that extends across a region, country, or global region. Thus, the change in the issue of forest and land fires into a haze disaster issue occurs automatically. In other words, the issue of framing will undoubtedly occur and form naturally in the problem of forest and land fires due to the resulting transboundary haze.

Nevertheless, according to Interviewee 1 and Interviewee 2, there is no need to frame the issue. The government just shared the information with the mass media and explained it to the public. Since the tremendous forest fires that occurred in 1997, the problem of forest and land fires in Riau has become an international issue. Therefore, all nations, including Indonesia, in ASEAN determined ASEAN Agreement in 2002 concerning transboundary haze pollution (Interviewee 2). However, researcher argues that the action of Riau Provincial Government in providing data and information on forest and land fires to the mass media and the public is part of framing the issue. It has turned local issues into international haze events, and even the central government accommodated the issue in an international agreement.

Venue shopping is the last variable to address the shock. According to Interviewee 1, Interviewee 2, Interviewee 3, and Interviewee 4, the agencies never did venue shopping to accommodate shock in their budget because the policy monopoly and conventional procedure always accommodate forest and land fire control. However, if some government activities did not meet the target or goals due to lack of funding, Riau Provincial Government invited other stakeholders like industries and NGOs. Other stakeholders' involvement is to fulfill the target by adapting their goals to government goals using their internal funds (Interviewee 2 and

Interviewee 3). Apart from budgeting, the agencies report to the central government to be able to help the provincial government because the provincial government is not able to control forest and land fires that are already large. Then, the central government has a role in promoting this regional issue into a national issue, moreover can bring this issue into international (ASEAN) problems.

# Chapter 5
# Conclusions and Recommendations

To sum up, the result and its analysis in this research answer the main research question and sub-research questions. In addition, the recommendations for implementing better shock adaptation in the budgeting process are also provided in this chapter.

## 5.1 Conclusions

For the first sub-question, "What are Indonesia's prevailing laws and regulations related to budgeting for controlling forest and land fires?" this research identified many regulations that oblige many parties to control forest and land fires. However, because transboundary haze made forest and land fire issues national-level affairs, the central government has aided forest and land fire control in the Provincial government affairs. Compared to Birkland's (1998) research, he states that a local event can magnify national attention even more internationally because transboundary haze is a problem that often arises at a broader level.

For the second sub-question, *"What is the budget composition for forest and land fire control in Riau Provincial Government, and how does it change over the years?"* this research revealed that two major activities, namely Facilities and Infrastructures and Fire Fighting, affected the most forest and land fire control budget. Besides that two activities, other activities are not consistently planned and applied yearly. During the eight years of the scope of this research, the significant change in the amount of budget in line with the occurrence of large fires is firefighting activity. This shows the attention of Riau Provincial Government to respond more quickly if large forest and land fires occur. However, the budgeting process for Facilities and Infrastructure is slow since the capital expenditure planning and budgeting process has more steps than other expenditures like services cost and salary.

For the third sub-question, *"When have major forest and land fire events happened that caused transboundary haze in the past in Riau Province?"* this research found two significant forests and land fires between 2013 – 2020, 2014, and 2019. There is a specific budget affected by those two large fires, namely the firefighting budget. Since the most effective and vital activity in forest and land fire control is Firefighting operations, this activity has been represented. It should represent the major shift in budget size in response to the incidence of large fires.

For the fourth sub-question, *"What lessons can be learned about future budget adaptations toward greater resilience to forest and land fires?"* this research describes how Riau Provincial Government responds to shocks by facilitating all input from stakeholders in the status quo of Riau Provincial Government. In contrast, the impact of forest and land fire as the consideration of determining the number budget allocation makes the shock became the priority in funding addition.

Finally, for the main question, *"How do major transboundary haze events cause by forest and land fires impact significant budgetary changes in fire control activities?"*. All in all, to comply with regulations and respond to disasters, Riau Provincial Government has accommodated triggering events in the form of forest and land fires as a shock that can change the budget allocation. This research result is aligned with Birkland's (1998) and Birkland & Schwaeble's (2019) research states that focusing events in "domains prone to disaster" has a significant role in changing agenda-setting on public policy making. Nevertheless, many fire control activities such as prevention efforts are not carried out consistently.

The answers to these research questions can be obtained using PET as the theoretical basis for this research. PET assists this research in identifying variables that can support a shock so that it becomes the agenda-setting of budget changes or not. Comparison with other studies about how shock can change agenda-setting also shows the same result with this research result in framing issues and the political system. For the Framing variable, according to Birkland (1998), focused events can trigger broader interest group movements if the public interest is relatively high. Moreover, Sabatier (1999) states that external shocks can affect public attention, attract decision-making authorities' attention, and finally, the government's agenda can be changed. For the Political system, Birkland (1998) states that focused events can persuade elected leaders since the public wants the events to be accommodated by the leaders.

Nevertheless, in this research, a variable of PET that is not proved is policy monopoly as negative feedback. Research result shows that policy monopoly did not become negative feedback for the changes in budget allocation.

## 5.2 Recommendations

Even though many variables on PET, like bounded rationality, political system, and framing, guided researcher through analyzing how forest and land fire as triggering events can change the amount of budget allocation. For the theory literature, researcher argues that one variable

of PET does not align with the result of this research: policy monopoly. This research suggests that policy monopoly becomes neutral feedback that does not have to be negative; it depends on other variables or conditions.

The provincial government's obstacle is that the use of the budget is never optimal due to the high costs of controlling forest and land fires and the sources of funding that do not reach the target. Thus, increasing prevention efforts is an effort with minimal costs to optimize the use of the budget. The recommendation for Riau Province Government first is early detection through daily condition monitoring in hotspot-prone areas. The second is supervision and evaluation of industries' compliance since the industries also should control forest and land fires. Before obtaining a permit, the companies must meet the requirements of human resources, facilities, and infrastructure, as well as a forest and land fire control system. Then, the last one is law enforcement if monitoring and evaluation results are not followed up to create a deterrent effect. By those means, Riau Provincial Government not only relies on the central government for funding and providing forest and land fire control but also on the industries.

## 5.3 Research Limitations

This research has limitations in research strategy because the complete chain of causes and impacts of forest and land fires are not discussed. Moreover, the time series of the data is insufficient because the data availability is only from 2013, yet major forest and land fires have occurred since 1997. Thus, for future research, researcher suggests analyzing how the causes and impacts of a forest and land fire can affect the provincial government budget. Also, increasing the time series is needed for future research to gain more information about the forest and land fire trend.

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# Appendix A – Interview Questions

Interview questions are arranged in a set of rules for negative and positive feedback from PET as the variables. In order to gather data about variables in PET, this research asked interviewees the following question:

a. Bounded rationality
   1) Has your agency ever proposed a forest and land fire control budget?
   2) What factors or things are the basis for considering budget proposals?
   3) If not, why not propose controlling forest and land fires? What are the obstacles that cause there to be no budget for controlling forest and land fires?
   4) From your point of view, under what conditions can land and forest fire control programs and activities emerge in the budgeting process?
b. Policy monopolies
   1) In your view, which parties are most interested in the budget for controlling forest and land fires? Can this party influence the budgeting process for controlling forest and land fires?
   2) In your opinion, if the parties mentioned above are very interested, what factors make these parties influence or not influence the budgeting process?
   3) In your experience, who has a more central role in the budgeting process? Has this role changed over time? Has the method or procedure of budgeting ever changed significantly?
   4) From your point of view, what particular interests can hinder the budgeting process for controlling forest and land fires?
   5) Has your agency ever received encouragement from an external party from the Riau Provincial Government (e.g., NGOs, industries, or communities)? Do they have a proposition (proposal or opinion but not formal or procedural) regarding controlling forest and land fires? If so, is this proposition generally accepted? If rejected, why?
   6) From your point of view, is the role of each agency involved in the budgeting process well distributed? Is there an agency that is more dominant in making decisions?
c. Political systems
   1) In your opinion, does the Riau Provincial Government's budgeting process accommodate a democratic system?

2) From your experience, if there is a friction of demands/interests between the central government (higher level) and other stakeholders at the provincial level (Communities, NGOs, Industry), what is the friction like, and how is the friction of interest resolved?

d. Framing the issue
   1) In your view, Can forest and land fires be described as a transboundary haze problem so that it becomes a national or international problem? How can the framing forest and land fires be carried out if so?
   2) In your opinion, what is the right way to frame the issue of forest and land fires so that it gets the attention of policymakers that it is included in an essential agenda in the Riau Provincial Government's budget?
   3) In your experience, have the media or the public also responded to framing the forest and land fires issue?

e. Venue shopping
   1) To your knowledge, has your agency tried to take other methods (not breaking the rules) through other organizations inside or outside the Riau Provincial Government?

f. Triggering / focusing event
   1) How do forest and land fires impact Riau Provincial Government's budgeting process? What is the impact like?
   2) When forest and land fires arise, are other urgent issues in your agency more prioritized than forest and land fires? What kind of problem?