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List of Acronyms

APBN	= National Development Budget
APL	= other uses area/ Areal Penggunaan Lain
BKSDA	= Conservation of Natural Resources Office /Badan Konservasi Sumber Daya Alam)
CCCCO	= Climate Change Control Office
DMO Riau Province	= Disaster Management Office of Riau Province
DMO Palangka Raya City	= Disaster Management Office of Palangkaraya City
ENSO	= El-Nino-Southern Oscillation
FAO	= Food and Agriculture Organization of the United Nations (FAO)
FCFG	= Fire-Cared Farmer Group
GAPKI	= Indonesian Palm Oil Association/ Gabungan Pengusaha Kelapa Sawit Indonesia
GPBI	= Association Indonesian Big-Plantation Company
IUPHHK-HT	= Natural Timber Forest/ Izin Usaha Hasil Hutan Kayu Hutan Alam
IUHHK-HT	= Industrial Timber Forest Izin Usaha Hasil Hutan Kayu Hutan Tanaman
ISPO	= Indonesian Sustainable Palm oil
JICA	= Japan International Cooperation Agency
KTPA	= Farmers Cared association/ Kelompok Tani Peduli Api
MA	= Ministry of Agriculture
MEF	= Ministry of Environment and Forestry
MPA	= Fire-cared association/ Masyarakat Peduli Api
NDMO	= National Disaster Management Office
NES/ PIR	= Nucleus Estate Scheme/ Perkebunan Inti Rakyat
PRA	= Peatland Restoration Agency
RSPO	= Roundtable on Sustainable Palm Oil
UNOCHA	= United Nation Office for the Coordination of Humanitarian Action
ZBLCM	= Zero Burning Land Clearing Method

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To my parent and my family thank for always supporting me.

To my wonderful ISS friends and staff's thanks for the good vibe of multicultural life "I understand many!!".

To my best friends and friends of my best friends "let's make a great network of brotherhood and sisterhood!".

To God who always grasps my hand and teach me how to walk, to think, to understand, to trust and to manifest my dream, my idea, and my imagination in this multiverse world "I always love and believe You at present".

At last to myself 'believe! achieve! and joyful!'. I trust you... always

Live is beautiful always and always.

Abstract

The Indonesian government actions to countermeasure Forest fires fail and lack public trust. This issue becomes more complicated when forest fire effects are followed by another series of problematic impacts. For example, forest fires create haze disasters, then the haze affects health, transportation, the economic etc. This problem makes forest fire extinguishing activity a perpetual and never-ending story. Researchers find out that the incongruence between the causes of fires and proposed management solutions occur in countries all over the world, including in Indonesia.

The Indonesian Government spends large amounts of money to extinguish forest fires, but forest fires still occur and sometimes become worse in El-Nino and drought seasons. Forest fire researchers claim that there is a discrepancy between the causes of forest fire. This research defines and categorizes 2 approaches based on the causes. They are: the *technical approach* which is the idea of a single frame to extinguish the fire. Meanwhile, the *social, environmental, and political approach* refers to the fact that forest fire management is not just management to extinguish 'the fire' but a complexity of the nature of 'fire' which pertains to the effects of other issues that also have a secondary impact.

Severe weather contributes to making the effect of forest fire broad and uncontrollable, but it does not ignite the fire. In 2015, 99% forest fires happened because of human burning activity. Then after the 2015 conflagration, forest fire policy was renewed, revoked, and recreated. Since 2015, all burning activity has been forbidden no exception made for swidden. However, although a reduction of forest fires nevertheless was achieved in 2017 many researchers claim that oil palm plantations and swidden cultivation are the culprits of the forest fires.

This piece of research wants to understand why the fire policy implementation continues using the *technical approach* dominantly over the years. For over 18 years forest fires continue to happen; the question has arisen examining what the challenge and obstacles are that forest fire policy design does not consider as well as the social, environmental and political causes of forest fires, together with the technical causes in the policy process and implementation.

Relevance to Development Studies

Development Studies is a multidimensional, and interdisciplinary study area of social sciences. Studying forest fires is one of the cross-cutting issues in development studies. This research uses the perspective of political economy, political ecology, and global environmental politics to understand the causal mechanism and complexities of the issues. Some concepts of development in this research are contested like the economic growth with the sustainability of forest areas in the state development agenda.

Keywords

Forest Fires, Haze, Government Policy Design, Palm oil, Swidden Cultivation, technical causes, social, environmental, and political causes of forest fire

Chapter 1 Introduction

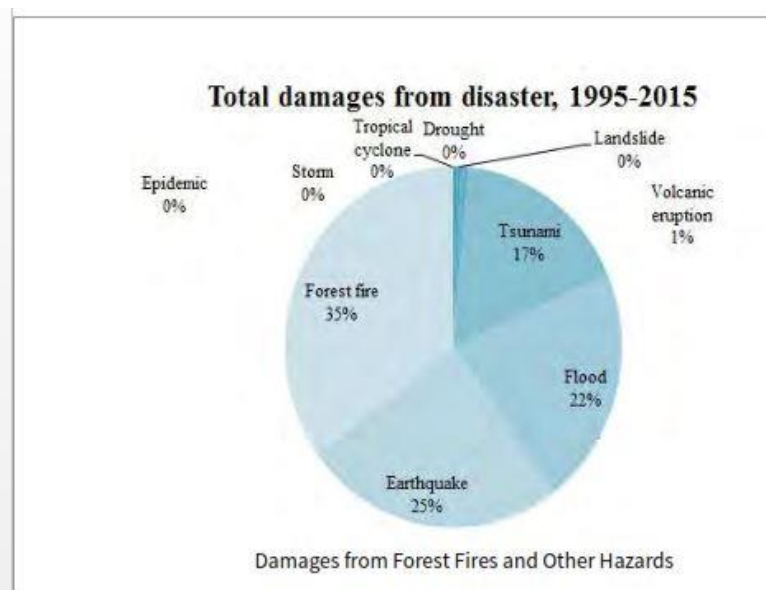
Since the early 19th Century, forest fires have been a perpetual problematic issue for Indonesia and Southeast Asia (Potter 2001 as cited in Tacconi et al. 2007). Severe weather plays a significant part in making certain existing problems more significant like drought and El-Nino-Southern Oscillation (ENSO). Moreover, forest fires become more arduous when a conflagration occurs in a peatland because it generates haze. Peatland fires produce 90 percent of the haze, with three to six times more particles released (The World Bank 2015) and also require a long period of combustion because of peat trait (Limin 2006).

The World Bank has estimated 2,6 million hectares (ha) of Indonesian land were burning between June to October 2015, around 33% percent of which was in peatland (Glauber&Gunawan 2016:1). As a consequence, this forest fires produce a haze disaster which last more than one month. The report revealed that the cost of destruction had reached US \$ 16,1 billion (IDR 221 trillion). Moreover, its impact on agriculture and forestry reached around 8.8 billion (IDR 120 trillion), the transportation sector approximately USD 372 million, 19 deaths and more than 500,000 cases of acute respiratory infections. It also had effects on schooling, with teaching and learning process disrupted for one month (Ibid 2016:1).

Compared to this, in 1997, an estimation of the economic loss caused by forest fires around USD 1.62-2.7 billion and the costs by haze pollution around USD 674-799 million (Tacconi 2003:v). The 1997 forest fires have many different estimates on the size of the burned land, ranging from 2 to 5 ha of total area (Suratmo, 2003:3).

Forest fires and the haze consequentially create local, regional, and international impact. For instance, at the local level, it disrupts transportation, health, education, and biodiversity. At the regional level, it generates transboundary haze pollution. At the international level, it increases greenhouse gas (GHG) emissions. The United Nation Office for the Coordination of Humanitarian Action (UNOCHA) elaborates that the impact of forest fires between 1995 to 2015 is higher than other disasters in Indonesia (2015).

Figure 1 Percentage on Total Disaster Damage from 1995-2015 in Indonesia



Source: (UNOCHA 2015: 38)

The World Bank Report emphasizes that the causes of the 1997/1998 forest fires in Indonesia are mostly by human activities (Aden et al. 2000). Moreover, the Report elaborates that 34 percent of fires are burned by large-scale companies on land clearing conversion; 25 percent by shifting agriculture; 17 percent by permanent agriculture; 14 percent by arson and social jealousy; 8 percent by transmigration projects; and only one percent by natural causes (Ibid 2000: 16-17). This report also states that the palm oil plantation industry was highly responsible for starting fires to expand land use in the 1990s (Ibid 2000). Moreover, oil palm influence is criticized because a typical conversion of an area to an oil palm plantation often used fire as a clearing agent (Sargeant 2001). In 1998, an Indonesia Ministry of Environment Report claimed that 85 percent of forest fires are triggered by oil palm plantation companies, industrial plantations and logging concessions (Dennis 1999:12).

Bambang Hero Saharjo a researcher from IPB¹ states that based on evidence of conflagration in 1997/1998, 65-80% forest fires came from concession and plantation areas. Around 176 plantation companies are allegedly involved with these fires (Sahardjo 2003: 147). Land use remarkably attracts many actors interested in concession areas, peatland is no exception. This type of land usually lacks state attention, but this weakness makes it easy can be converted to “Land for other uses or APL²”. That might trigger to land management conflicts regarding the use of ‘fire as a weapon’ (Tomich et al. 1998 as cited on Suyanto 2005:68).

Fires are a typical tool used by people to convert forest to agricultural land (Murdiyarso & Lebel 2007:4). After a month, the burned land will be planted with oil palms or timbers. The method is easy and cheap (Purnomo et al. 2017:22). Smallholder farmers or people who don’t have tools or the budget just need a match to clear the land. The burning activities are influenced by social, environmental, and political factors (Ibid 2017). It means there is a relation to economic and political motivations that trigger people to start fires. However, the burning activity is also commonly used by indigenous people or the Adat community to practice swidden agriculture³.

Meanwhile, S. Robert Aiken, a geographic lecturer, states that the government has primary responsibility for forest fires and the repercussion effects like haze. He also elucidates that during the 1997 forest fires, the government did not only ignore the warnings from scientists on drought information, but also continued to sanction conversion of forest land. Aiken explains, concurrently that the government was unsuccessful in complying with the environmental laws and regulations. Then, he points out that the weather is one way to divert the failure of government forest policies and faulted the large land-holders (Aiken 2004).

Based on the evidence of forest fires in 2015, the government claimed that 99,9% of forest fires were caused by human activity (Wahyuni 2015). According to this, and in consideration of President Jokowi’s commitment at the Paris Climate Change Conference ‘COP 21’ in 2015 and ASEAN Agreement on Transboundary Haze Pollution, the government is more determined to fight a forest fire. Many efforts were encouraged from firm coordination to the changing policies both in national and local level. However, although there are extraordinary efforts being taken on forest fire management, forest fires nevertheless remain a problem.

¹ Bogor Agrarian Institute

² Area Penggunaan Lain

³ Agriculture that involves slash and burn technique

Problem Definition

The government is the main actor in the effort to stop forest fires. Several programs, agendas, and projects have been created and enacted with multi-sectoral cooperation. They have been renewed, reformed, and reestablished. Still, forest fires remain a recurring problem. In 2011, under the former President Susilo Bambang Yudhoyono (SBY), the government enacted Presidential Instruction number 16/2011, which detailed forest fires' intensive coordination among government institutions. This instruction renews the ministerial regulation⁴ on the management of forest fires, calling on them to be more integrated and collaborated on with other institutions. It also shows the government's serious commitment on forest fires. The SBY administration publicly declared "war with haze" (Scott Adam&Heiduk 2015:65); this means also war with forest fire. Furthermore, this policy has been renewed under the President Jokowi era by the Presidential Instruction no 11/2015, creating broader coordination with many other actors on forest fires management. The 2015 is the turning point when the new government policy is enacted to create integrated collaboration of many actors such as The Grand Design on Forest, Land, and Plantation Fires 2017-2019 and the National Standard Operational Procedure on Forest Fires Prevention. Still, in 2017, the forest fires appear to be not as severe as in 2015. In this year, recently, forest fires have been intensively controlled through monitoring by the integrated patrol brigade.

Luca Tacconi and other researchers explained forest fires are not only a policy problem, but the impact of fires are also a set of problems (2003:4-5). Forest fires bring about deforestation and generate haze problems on farms, land, and forest. Forest fires are complicated. The Indonesian government has tried to solve this issue for more than 18 years since 1997 but is still ineffective (UNDP n.d. as cited in Risnawaty 2016:24). The set of problems is followed by another set of problematic impacts. For example, forest fire create deforestation. Deforestation impacts on the loss of biodiversity and land degradation. It is more complicated when this happens on peatland. It creates haze. Then the haze impacts air quality and contributes to creating air pollution. The pollution has detrimental effects on transportation and public health.

Moreover, peatland is like wasteland, neglected and unmonitored (Varkkey 2013) and after months it easily converted to plantation. It then becomes more problematic when people start fighting over the land rights to this wasteland. Luca Tacconi (2007) emphasizes forest fires and their impacts should be related to fire as part of land management processes, not only a problem which needs to be prevented, but also to be responded to and mitigated. Moreover, he states that Indonesian Government Regulation on Forest Fire Management no 4/2001 is too general to describe the burning activities that are undifferentiated in the background of fire ignition (Tacconi 2008: 8). Hence, this legislation is not effective to reduce forest fires and some forest fire policy also overlaps with other land management regulations.

Robert Aiken stated that the Indonesian government has for years neglected the burning area expansion (2004). For instance, during the period 1967 to 1997, converting forest to palm oil plantation using burning activity increased to 2.5 million hectares (Casson 2002:221 as cited in Aiken 2004). Despite this, the government had made many efforts such as seeking international assistance,

⁴ *The Ministry of Forestry Regulation no p.12/Menhut-II/2009* about the Management of Forest Fires. This regulation renewed the former *Ministry of Forestry Regulation no 260/kpts-II/95* about the Forest Fires Prevention Effort and Response.

strengthened fire management adoption including bilateral and multilateral fire projects and studies, also reformed institutions; and created and renewed regulations. Still, forest fire occurred continually, some very seldom but some triggered by severe weather. Nevertheless, government actions are the only reaction which go forwards alleviating the problem without considering the long-term target of stopping the forest fires. Action that has been taken only draws attention to the technical situation in order to reduce or suppress the burning as fast as possible.

As previously stated, forest fires are created by human actors, but the government officially blames severe weather such as The El Niño-Southern Oscillation/ENSO as the primary cause (Aiken 2004). Whilst, it is true that ENSO makes fires more severe, it is also true that without arson or human burning activity it will very seldom ignite. Robert Aiken also claims that state has their own agenda on resource-oriented development, so the government searches for scapegoat rather than looking at humans as actors (Ibid 2004).

Fighting against forest fire has been ineffective during recent decades. Government actions to countermeasures forest fires and its effects fail, and lack public distrust. Herry Purnomo (2017) asserts that there is a discrepancy between the cause of forest fires. It means making fire extinguishing activity a perpetual never-ending story (Ibid 2017:22). Carmenta and her co-authors (2011) describe the incongruence between the causes of fires and proposed management solutions occurs in all countries over the world. "In Indonesia and Brazil, the underlying causes of fires are social-politic problems, while action plans prioritize technical research into firefighting" (Carmenta et al. 2011 as cited in Purnomo 2017:22).

Most government policies focus on the idea of a single frame to extinguish the fire. In this research, this concept called *technical approach*. This means that the effort is just focusing on suppressing forest fires as firefighters, rather than seeking understanding of the complicated cause of fires. Indeed, forest fire researchers emphasize that fire policies need to place stress on social, environmental, and political aspects. This aspect will be called *social, environmental, and political approach*. This concept is difficult to explain because it tries to understand 'fires come from other problem impacts and the effects of forest fires bring other effects that might affecting other problems'. It long causal mechanism and not just to extinguish the fire. It is related to social issues mixed with environmental problem and political situation such as the market demand on oil palm and the governance of land use in relation to the Adat land right.

Rachel Carmenta et al. (2011: 4) points out that the socio-political (SP) definition is "social, cultural, and demographic variables e.g. time on plot, attitudes, population density, and factor related to institutional and political variables e.g. land tenure and state". Social politics is related to livelihood, economic interest, lack of knowledge and state-governance related to apparatus and policies. Although there are also other factors causing forest fires such as weather conditions and accidental ignitions, mostly in Indonesia these are lower affecting than social-political factors (2011). Weather can trigger more severe forest fires, but human activity is what begins the process.

Based on this explanation, my research aim wants to focus on the reason why the fire policy implementation keeps using *technical approach* dominantly for years. Since more than 18 years forest fires still happen, the question arose what is the challenge and obstacle that the policy design not consider the social, environmental and political causes together with the technical causes in the policy process and implementation.

Although after 2015, policy reformation is more integrated, it still difficult to clarity more detail on the effort 'preventing the cause of forest fires not just extinguish the fires'. Moreover, this

research will also discuss how the state's roles and agendas relate to the forest fire policy process in Indonesia, especially after 2015.

Research Question

What are the challenges and obstacles facing the government surrounding the 'social environmental and political causes' of fire? Is the new policy design after 2015 have considered on this?

Organization of this paper

This paper is organized into seven chapters. The first is an introduction to the forest fires, its consequences effects, the impacts and loss of the perennial problems and the puzzle surrounding forest fires policies design. The second chapter, elaborates on the overview of the issues on the history of forest fires, the actions against the problems, and land use distribution and peatland management. The third chapter will discuss the history of palm oil and swidden agriculture in Indonesia. The fourth chapter is about 'technical' causes and 'social, environmental, and political' causes of forest fires, policy construction on sustainability of Indonesian Forest; and the conceptual framework. The fifth chapter is about the methodological approach to analyze this issue as well as the data collections and the limitation and the benefits of this research. The sixth chapter is about the result of field work and the analysis of the result. Finally, the concluding chapter elucidates on challenges and obstacles on forest fires policy design in Indonesia to make better policy processes.

Chapter 2 Historical Overview of Forest Fires Issue

In this section, the history of forest fires will be explained as well as the government effort to tackle the issue. This issue will be analyzed from the colonial era, post-Independence era, and post-reformation era. The number of forest fire incidents in the past 20 years is fluctuating, but will become a significant incident pattern if continually happens during times of severe weather.

Talking about the forest fire in Indonesia cannot be separated from land and plantation fires because they pertain each other. Fires on land and plantation also unjustified because uncontrolled land and plantation fires will spread to forested areas. Although recent Indonesian policies put the terminology of forest, land, and plantation fire policy together, I still use the term forest fire in this research. Because I believe in the political setting of the forest as contested state resource is very important. Land and plantation are profitable sectors for several actors, but forest should be tightly conserved as a dormant resource for the future generation and sustainable environment.

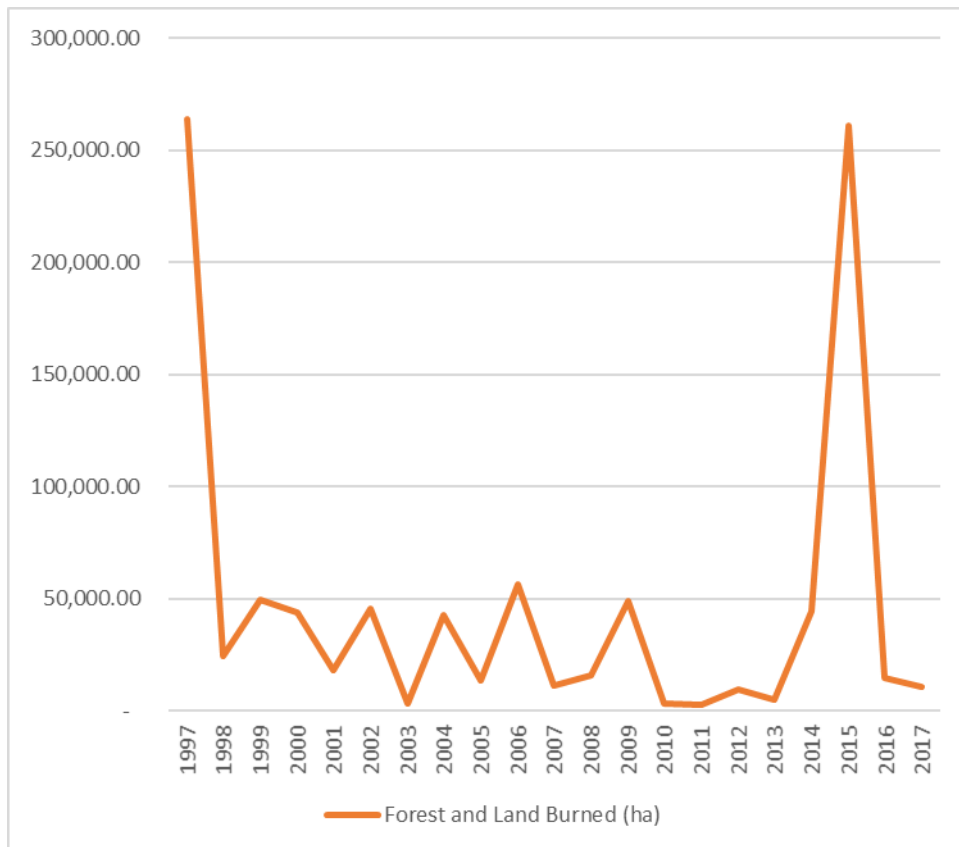
In Indonesia, forest fire management is divided into three areas: prevention, response, and rehabilitation. The prevention phase for the cause of forest fires is critical to hinder forest degradation and spread the impact in many aspects.

In this chapter, I also underline the importance of land use in the forest fire, especially the peatland management including how difficult peatland is to manage and the appeal of converting it into plantations especially palm oil.

An Annual event of Forest Conflagration

Before and shortly after Indonesian independence, there is very little information from the literature about forest fires. Since the Great Fires of Borneo 1982/83 that created cross-national border haze, forest fires got more attention from the public. The great Borneo fires are one of the most well-known conflagrations along with 1997/98 and 2015 which also culminated in a haze disaster. Forest fires which happened because of El Nino were in 1982-1983, 1987, 1991, 1994, 1997-1998 and 2015 (the World Bank 2015). Not all forest fires trigger haze disaster; more haze is generated if more peatland is burned during severe weather. In 1997/98, the Indonesian Government publicly declared a national haze disaster (Suratmo 2003: 1). Moreover, in the 2015 fires, it declared forest fires a provincial problem, although the Indonesian government accepted international assistance to extinguish the fires.

Figure 2 Forest and Land Burned from 1997-2017



Source: Directorate of Forest Fires Management, Ministry of Forestry and Ministry of Environment as cited from compiled resources (Ministry of Environmental and Forestry 2017⁵; Sukrismanto 2012; Ministry of Environmental and Forestry 2015; Wahyuni 2011)

The Greater Efforts, the Broader Effects

Since Indonesian pre-Independence, The Dutch Colonial Government regulated forest fire management. Soedarmo, from Ministry of Forestry mentions several reference to forest fire management in Dutch policies: Forest Ordinance on Java and Madura created in 1927, *Provinciale Bosverordening Midden Java*, and *Rijkblad-Soerakarta Ongko 11* in 1939 (Soedarmo 2003; Rasyid 2014). The Dutch considered creating the policies about forest and land fire management in Indonesia since the 1900s after many incidents of fires. During the 1877-1878 drought in Kalimantan, there was a lack of information available on human intervention in forest fires (Potter 1999 as cited in Aiken 2004). However, it is assumed that in the 1902 forest fires, the haze pollution that was covering Kalimantan was indicative of burning activity (Brookfield, Potter, and Byron 1995 as cited in Aiken 2004).

After 1945, the Indonesian post-Independence era, there were several forest fire policies. Soedarmo discusses initial policies on forest and land fires in 1947 called the “Lombok Raad” (Soedarmo 2003). Moreover, in 1948 the Balinese King Council enacted the official announcement no 9 (Ibid 2003). However, during the 1940s until 1980s, there was a lack of information on forest fire

⁵ Ministry of Environment and Forestry ‘Updated Report on Forest and Land Fires Control on 3 November 2017 at 07.00 WIB’.

policy which did not get any attention, because there were no significant evidence or effects that give consideration to handling forest fires.

F Gunawan Suratmo, from IPB explains the history of Indonesian forest and land fires from 1982 to 1998. He elaborates that forest fires happen because of severe drought and the increasing prominence of El Nino. Usually, in a normal year, the drought season takes place over three months but in a severe weather year it can occur for 11 months. He confirms that many scholars argue over weather swidden agriculture had a prominent involvement in conflagration besides other factors that can be accounted for. Then, during 1985 to 1990, he elaborates that there were fewer occurrences of forest fires but unnoticed, presumed because of no long drought season. However, during the period 1991 to 1997, El Nino occurred every three years and a long drought period frequently coincided with forest fires. He states that in 1997/1998 conflagration created the haze pollution which cross over national border that burned around 2 to 5 million ha of forest and land. This fires happened because of changing on land use (Suratmo 2003).

The Indonesian National Planning Agency on the Final Report of Fire Prevention and Drought Management in Indonesia shed light on the fact that forest and land fires' causes and principles vary (Sukrismanto 2012). In the past they were caused by communities; now it has shifted to private companies. The report claims during 1982 until 1987 the forest fires were lead by land speculators and swidden activities, then from 1991 to 1994 because of negligence during burning activity while opening farming land. Moreover in 1997-1998 until now it is because of the conversion of forest areas to rubber or palm oil plantations (Ibid 2012).

After Independence, the Forest Office (Jawatan Kehutanan) handled the forest issue, then in 1964, it handed to the Directorate Forestry inside the Agriculture Department without any special section in charge of it (Cribb:1988). Then it changed again under a particular section of Forest fires in the Department of Forestry⁶ (echelon IV⁷). This section was created because of the great Borneo fire in 1982/1983. Then in 1994, this issue was taken to the higher echelons⁸, the Sub-Directorate of Forest Fire. During that period, the Department of Forestry initiated a forest fire patrol system called the National Forest Fires Control Centre or PUSDALKARHUTNAS that works at the national level and at the provincial level the governor created Forest and land Fires Control Centers or PUSDALKARHUTLA and *Forest and land Fires Corps* which have personnel in every district.

The conflagration in 1997/1998, triggered the government to merge the Directorate General of Plantation under the Ministry of Agriculture to the Department of Forestry and Plantation for the reason that forest fires cannot be separated from plantation and farm areas. However, it only stood for 1 year and was then separated again, because of changing bureaucracy.

Furthermore, in 2000, two official units handled the forest fire issue. Both were a higher level than before⁹ but were situated in a different departments or ministries. They were the Directorate of Forest and Land Fires Management under the Department of Forestry and the Directorate of Forest Fire Control under the Department of Population and Environment. Then, in 2002, the latter directorate was omitted. In 2003, the Ministry of Forestry created Manggala Agni, a special brigade for quelling forest fires. It was designed to make an easy coordination on forest fire management. But

⁶ In 1983 the Department of Forestry stand-alone from the Department of Agriculture

⁷ the Indonesian ministry structure and organization is divided into 4 parts; echelon IV is the lowest structure.

⁸ Echelon III based on *Ministerial regulation SK no 667/Kpts/II/1993*

⁹ Changing from echelon III to echelon II

this only works in the forest area. If fires happen in plantation or land, another brigade from other actors¹⁰ is in charge.

Then since 2015, after the merging bureaucratic structure between Ministry of Forestry and Ministry of Environment¹¹, the Directorate of Forest Fires Management handles the forest fire issues. However, not only this section in charge on forest fires, there are trajectory projects with other directorates under the Secretariat General Directorate General of Climate Change Management in the Ministry of Environmental and Forestry.

Forest fire management has been encouraged to be a multisectoral project since 2015. It was the turning point on the implementation of different policies. Before that year, although the government under the former President declared a “war on haze” in 2006, there were not many changing efforts (Scott Adam & Heiduk 2015:65). The ‘Jokowi’ administration held a national meeting on the coordination on forest fires annually. Erenow, the Minister of Environment conducted the meeting. Today, although the Ministry of Environment and Forestry is the prominent actor, other ministries and institutions are involved in every phase of forest management for instance, the patrol brigade involving all partner institutions from local, national, the community organizations, the private sector, and NGOs. This changing effort also triggered by the increasing deforestation rate in Indonesia, especially in locations near plantation areas and transmigration settlements (Dennis & Colfer, 2006).

In the effort to quell forest fires, The President enacted *Presidential instruction no 11 /2015* on 24 October 2015. This instruction governs ministries and governmental institutions both national and local regarding the quelling of forest fires and haze. The instruction focuses on the preventive, responsive, and rehabilitative phase on forest fire and haze management by involving the coordination and cooperation of all government sectors, societies, and private parties. Also, the instruction focuses on the law enforcement and sanctions on burning activity by individuals or groups.

The president held the National Meeting on the Coordination of Forest Fires on the 23rd of October 2015. This meeting was to clarify *the Presidential Instruction no 11/2015*. Three crucial actions on the Instruction are illuminating which include, to prevent and mitigate on forest fires by encouraging one map policy; stopping peatland license permit management; and taking immediate action on peatland restoration. This instruction also includes the response action on deploying and mobilizing resources from national and international assistance in order to quell the fires immediately and build blocking canal to prevent forest fires spreading into other areas.

This Presidential Instruction was not the first in enhancing coordination among national and local actors on the issue of forest fires. In 2011, under the former presidential administration, Susilo Bambang Yudhoyono, the government enacted *Presidential Instruction number 16/2011*. The instruction was the same but with a different structure and a few actors involved in forest fire management. Before that the policy on enhancing the coordination was enacted by the Ministry of Forestry.

On January 18th, 2016, a national coordination meeting of forest fire management was held by the president. This meeting concluded different action points from the 2015 action points; it is commonly-known as the five presidential directives:

- to strengthen the synergies among institutions;

¹⁰ The Ministry of Agriculture brigade, or the Plantation workers who are in charge in plantation company forest brigade.

¹¹ Under *the President Regulation no 16/2015*.

- implementing law enforcement;
- applying reward and punishment system to the employee;
- establishing peatland restoration agency; and
- forbidding new license on peatland management.

The implementation of law enforcement using an integrated task force that is sent to monitor land and forest. In terms of reward and punishment, government transfers or demotes an official person in charge to the area if cannot quell the forest fire. Moreover, the Peatland Restoration Agency was created to restore two million ha of burned peatland in 7 provinces. Indeed, a peatland moratorium has been in effect since 2011, but it was renewed and reformed in 2013 and reformed again in 2015.

In 2017, a subsequent presidential national coordination meeting on forest fires was held. It resulted in other new strategies such as action plan 2017 in the Grand Design Forest, Land and Plantation fires 2017-2019. The strategies include increasing the early warning system, creating canal blocks and drilling wells, activating Post Commando as a reminder and an educational facility of forest fires and haze anticipation. Furthermore, the President also instructed related institutions to monitor forest and peatland, and to improve management and private sector concession, coordination, and cooperation in terms of preparedness for action.

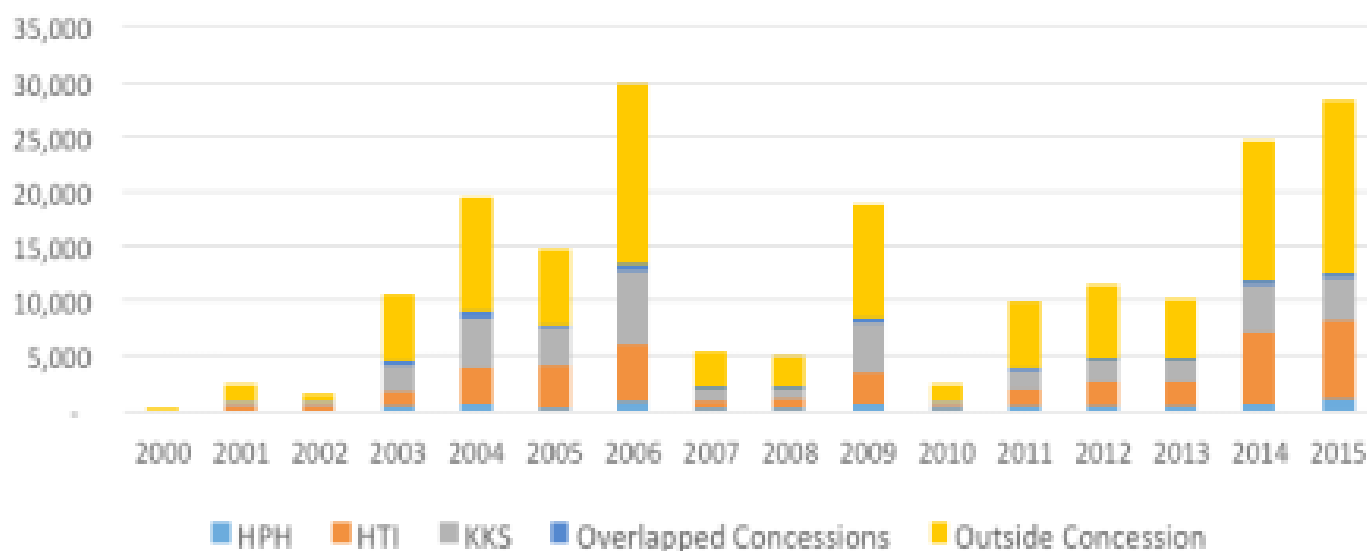
On February 23rd, 2017, some provinces declared an emergency alert status because there were many hotspots occurring in their location that could not be handled without central government help. This included the province of Riau, Province of South Sumatra, the province of Jambi, the province of West Kalimantan and the province of South Kalimantan. To cope up with the problems, Ministry of Environment and Forestry deployed helicopters, assigned task force patrols in 700 vulnerable villages in those seven provinces, mobilized resources like Manggala Agni (a special force to extinguish forest fires) and Fire-cared association (MPA), strengthened law enforcement, and carried out water bombing.

Although there is a change in establishing and renewing the policy, forest fires do still exist up to now. The problems today are not as pressing as the 2015 conflagration, which are believed to be the result of the complexity of the causes.

Forest Fire Propagation: Between Land Use Distribution and Peatland Degradation

The concept of land and plantation areas cannot be separated from forest fire policy. Because fire propagation involves land use distribution from forest, land, and plantations. The interesting part of the forest fire cause is that the authority separated the forest, land and plantation policies with different actors in charge with the issue. For example, the local government is in charge of the management of land and plantation areas, including giving licenses on plantations. However, the Ministry of Agriculture is involved in creating regulation and monitoring the system. On the other hand, forest issues are under the Ministry of Environment and Forestry including concession permits, or licenses for the foresting.

Figure 3 Land use and number of hotspots in Kalimantan and Sumatra (2000-2015)



Sources: The Grand Design on Forest, Land, and Plantation Fires 2017-2019 (2017)

In the new policy, The Grand Design on Forest, Land, and Plantation Fires 2017-2019 land use is divided into areas of the **concession land (34%)** and the **outside concession land (66%)**. There are **four types of the concession land use: Natural Timber Forest (IUPHHK-HT)¹², Industrial Timber Forest (IUHHK-HT)¹³, Palm Oil Plantation and overlapping areas** from the three of them. Palm Oil Plantations are located on the 'area of other uses' or APL (9%) and forest areas that are being converted to plantation (3%). Further explanation, on the land use **outside of concession** consist of the **APL outside palm oil plantation (29%)** and **forest areas (36%)**.

¹² Izin Usaha Hasil Hutan Kayu Hutan Alam

¹³ Izin Usaha Hasil Hutan Kayu Hutan Tanaman

There are many disputes among actors in relation to forest fires and land use. Some actors are unsatisfied with the current policy system. For example, the Indonesian Palm Oil Association (GAPKI) currently demands that the government changes the strict liability clause on law no 32/2009 about environmental management and protection, and law no 41/1999 about forestry. GAPKI argues that the company does not only use concession land but also smallholder farmers. On the other hand, The Environment and Forestry Minister Siti Nurbaya Bakar states that this strict liability clause should be in the law because it is the companies' responsibility for granting concession permits (Ompusunggu 2017). Moreover, she also argues that this clause is a standard global concept in environmental law (Ibid 2017). As a result, the different perspectives on forest fire management creates conflicts among parties and institutions.

Fires in peatland are very critical because they contribute to 90% of the haze (the World Bank 2015). Peatland is a very important area for biodiversity and the environment, which is protected by government regulation. Peatlands in Indonesia amount to 20.6 million hectares or 10.8% of Indonesia's land area (Synthesis Team Policies Ministry of Food and Agriculture 2008 as cited from Risnawati 2016: 27). "Ministry of Agriculture guidelines identify areas of peat which are more than 76 cm deep peat as unsuitable for conversion to agriculture" (Ministry of Forestry 2009 as cited from Varkkey 2012: 680).

A wetland report on Indonesian Peatland Management explained

"*Presidential Decree 30/1992* on protection of peatlands deeper than 3 meters (seems to only protect part of the peat domes, instead of all peatlands). Regulation of the *Minister of Agriculture /Permentan No 14/2009*, which stipulates that if there is a concession in peatlands with an area of more than 30% of its total concession having a peat thickness > 3 meters, then the entire concession should not be opened. This regulation can be abused as concession maybe split into smaller areas where less than 30% of peatland area with 3 m depth can be reduced" (Wibisino et al. 2011:28)

More than a quarter of all Indonesia's oil palm plantations are on peat (Greenpeace 2007; Silvius and Kaat 2010; Kaat and Silvius 2011; Wicke et al. 2011 as cited in Varkkey 2013: 685). However, peatland in Indonesia which more than 3 meters depth are being protected¹⁴ (Varkkey 2013). In Indonesia, the peatland appeal for oil palm plantation because of lack on monitoring from the authority relates to the location of peatlands; and the lack of availability of other mineral-rich land (Ibid 2013). Peatland is mostly concentrated in Sumatra, Kalimantan and Papua wherein Sumatra and Kalimantan the worst impacts of forest fires and haze have happened (The World Bank 2015).

After the booming of monoculture plantations, especially palm oil, the private sector with its patronage network created forest fire problems even in the protected areas like peatland (Purnomo et al. 2017; Varkkey 2012). The market's economic incentives have changed most of the protected peatland to timber or palm oil plantations (Scott Adam & Heiduk 2015). Conversion mainly because of palm oil demand which in turn progressively changes to other monocultures such as rubber (Laoli 2017). The demand is also because of the benefit of palm oil as a flex crop and commodity (Borras 2015). Moreover, it becomes a concerning issue around the world when Indonesia has a target of doubling palm oil production in 2020, creating fear for peatland protection like in 2012 around 3 million ha had been changed (Varkkey 2013; Scott Adam & Heiduk 2015).

¹⁴ Presidential Decree No. 32/1990, Indonesian Government Regulation No. 26/2008

Chapter 3 The Broader Context: Oil Palm Expansion and Swidden Cultivation “Are they the culprits of Indonesian Forest Fires?”

This chapter explains swidden cultivation and oil palm plantation; many resources claim the clearing activity carried out by the *Adat* – the indigenous community – and the expansion of the palm oil industry are the culprits of the forest fire problem. However, swidden cultivation has existed for centuries; why has it suddenly become problematic? Is the slash and burn activity destructive for the sustainability of the environment? What is the government perspective on this?

Oil palm is one of the state’s source of economic growth, why has it become problematic regarding fire? Since has it become problematic? What is the government point of view on the development of oil palm? This chapter also seeks to answer the question about what is the relation between swidden cultivation and the oil palm expansion? Do they connect each other to forest fire issues?

The demise of swidden agriculture

Swidden agriculture has existed for centuries as a subsistence livelihood for the indigenous community. Ole Mertz and his co-authors state varying definitions of swidden cultivation, shifting cultivation, and slash-and-burn agriculture (2009) mainly for Southeast Asia. They mention that shifting cultivation is a rotation system of plantation between short crop periods (1-3 years) and long fallow periods (5-20 years, usually plants from valuable tree crops, either for subsistence or cash income) and involved clearing activity by slash-and-burn (Pelzer’s 1945 as cited in Mertz et al. 2009). Slash-and-burn is often defined as a “wide range of land use practices where no shifting of fields takes place” (Ibid 2009: 260). Mostly in Indonesia farmers use the composite swidden which combination of permanent “wet rice fields” with shifting swidden on one resource household (Rambo 1998 as cited in Ole Mertz et al. 2009:261).

The swidden practice has been assessed as a detrimental practice for environmental protection and sustainability. The government, and modern development agenda describe this technique as a ‘Political economy of ignorance’ (Dove 1993). It happens because of several reasons. The first, pertains to the myths of swidden. Micheal R Dove, explains the erroneous interpretation of swidden practices that comes from communal objectives in a community. In fact, its conducted by individual households and its aims to fulfill a household’s need. Furthermore, there is prejudice toward swidden as a destructive and wasteful agriculture technique; indeed, it is more productive and sustainable for farmer livelihood than commercial intensification techniques. The other myth is that this method is just for subsistence and confined to the survival economy, but the truth is it is more stable and integrates to the world economy (Ibid 1993).

The second reason is, the ignorance of swidden cultivation, because of fire use for land management being labelled as a “complex socio-ecological system” (Monzon-Alvarado & Keys 2017: 497). The study conducted in South-eastern Mexico highlighted that farmers count atmospheric conditions and the land characteristics to clearing by slash-and-burn. However, changes in climate lead to an unwanted outcome called “Malquemados” or ‘poorly burned’(Ibid 2017). This ‘Malquemados’ is largely undocumented and remains invisible, but policy makers and practitioners normally do not address this issue in their policy. They should address this to enhance local farmers’

adaptive capacity to face environmental change (Ibid 2017). Because swidden activity, is beneficial as a buffer for the smallholder livelihood in the severe weather.

Thirdly, Jefferson Fox and his co-researchers explain the demise of swidden because of the changing political and economic environment on farmers' livelihoods (2009). Their paper explains several influencing factors on the changing of swidden cultivation. They are identification of swidden activities as primitive; unidentified into forest and agriculture system; state forestry control and conservation expansion in areas where swidden occurred; resettlement; privatization and commodification of land use on commercial agriculture; state endorsement on market-driven agriculture. Furthermore, the paper indicates that national regulation and laws are recognized only considering "western-style, state-authorized, private property rights at the expense of communal or other traditional systems" (Fox et al. 2009:319). For example, monoculture plantations are promoted to change the agrarian system on Dayak Tribes in Kalimantan, but these cannot be eliminated easily (Ibid 2009). Meanwhile, the study on swidden agriculture by Dressler and Pulhin (2010) in Palawan Island Philippines generate that although several factors influence the changing on swidden, but rather than reduce, the swidden practice is compromising with the condition.

Swidden agriculture has been under debate for years over its benefits for the environment. Wolfram Dressler explains that the state has an interest in the adverse effects of swidden practices in order to protect their interest in forest management (2005). He elaborates that swidden agriculture sustains the environment and smallholder livelihood. The indigenous farmers use swidden as local wisdom, but they encounter obstacles to practice because of insecure tenure, lack on accessing the land, prohibition, and political networks (Dressler 2005). In the other article, he and Pulhin explain that the ban on swidden practice creates insecure smallholder livelihoods, increases indebtedness and unstable food security and creates poverty in the community (Dressler & Pulhin 2010). Their research explains that intensification makes people depend on market systems and omits community food sovereignty. In this agrarian transition, Indigenous people still use this practice, especially when they cash money during hard situations when their intensification is not working or has failed (Ibid 2010).

There are many conflicts of forest interest with economic values, sources of revenue, the source of livelihood as well as a benefit for technical and scientific knowledge versus a traditional form of education (Gonzalez-Hidalgo et al. 2014). For example, the tragedy in Horta de Saint Joan in Catalonia that leads to multi-perspective discourses on how to deal with the politicization of fire (Ibid 2014). The state interest in economic growth is changing the swidden agrarian system to a market-driven agriculture intensification.

Another obstacle is that swidden farmers are not differentiated from ordinary farmers in census population but found disparate in reality and social research (Mertz et al 2009). In the same article, Ole Mertz and his co-authors explain that in 1980 the total population of swidden farmers in Indonesia was around 55,8 million. The article also explains other calculations of swidden farmers from other research studies which assess swidden farmers being around 40-70 million by Food and Agriculture Organization of the United Nations (FAO), 7 to 60 million around 1990 by Fox and Atok (1997). However, the article also argues that it is very hard to calculate the exact number of swidden farmers because of uncertain data (Mertz et al 2009).

Despite this, the existence of swidden agriculture is changing rapidly, primarily through the government policy system. The Indonesian Government respects swidden practice as indigenous local

wisdom¹⁵. Colchester claims that around 60-90 people live from 'state forest area' in Indonesia recognized as Indigenous people (2006). However, the government also supports modern agriculture of monoculture plantations such as open land for a transmigration program (Fox et al. 2009). This action creates obstacles to swidden practice. The government states that the swidden practice is sensitive to the environment especially in the drought season and El Nino. The Government states the forest fires in 1982/1983 were caused by this practice (The World Bank 2001). Conservation policies and practices encourage changing swidden restrictions and promoting market-based agriculture (Van Vliet et al. 2012). So, the government project is prompted to change people. For example, in 1975 the Governor of Sanggau District in West Kalimantan encouraged people to use 'sleeping' swidden fallow planting with palm oil (Perusahaan Negara Perkebunan VII 1984 as cited in Fox et al. 2009). Recently, the Indonesian government held a review on the consent clause/article of swidden agriculture, in particular on local and customary laws. Some of it is already revoked, mainly after the 2015 conflagrations like *Central Palangkaraya Governor Regulation no 10/2015*.

An Expansion of Oil Palm Plantation in Indonesia

Oil Palm plantation plays an important role in Indonesian economic development. In 2015, smallholder farmers had 41 percent of oil palm plantations, the private sector had 52 percent, and state-owned company had 7 percent (Purnomo et al. 2016). However, the World Bank and the government acknowledged that oil palm plantations have become driving factors in the process of deforestation through burning activity since the 1990s (Aden et al. 2000).

Suseno Budidarsono and his co-authors, state that oil palm development brings a positive impact to labor employment, increasing income on local and national revenues (2013). There has been a historical chronology from stage in oil palm plantations from Dutch colonial times to the reformation stage (Budidarsono et al. 2013). In the early stage, the Dutch commercially traded palm oil since 1911. It was planted firstly in the east coast area of Sumatra in large plantation projects. The indigenous did not replace coconut palms with palm oil, they just used it for ornate purposes. From 1919 to 1937 palm oil trading grew faster and plantations occupied 6.920 ha in 1919 growing to 75.000 ha by 1937. It increased rapidly because the demand for palm oil evolved exceedingly with the intensive use of oil palm production in Europe and the United States. However, they also explain the behaviour of many local farmers, especially how shifting cultivators suffered from the expansion of palm oil plantations. On the other hand, many people come to the east coast of Sumatra as migrant labor to create consumer goods. (Budidarsono et al. 2013)

During the second stage of palm oil development, the article elaborates that since early post-independence, the Indonesian government took palm oil as policy consideration. In 1955, this development program packed together with the transmigration project on five years of national planning. The transmigration project was a project to relocate people living on overpopulated Java island to the outer Java. However, this rapidly changed after 1970's when the Government promoted the Nucleus Estate Scheme (NES) or Perkebunan Inti Rakyat (PIR). Budidarsono et al. explain that the nucleus is a state-owned plantation company supplying seedlings, assistance, and financing to plasma farmers. The plasma farmers have to sell their palm oil harvest to the NES. This system is also linked and implemented together with transmigration projects. Moreover, the article elucidates this

¹⁵ *the Law on Protection and Management of Environment 32/2009 clause 69; Ministry of Environment Regulation no 10/2010.*

government action of policies driving modifying rural areas to support state programs on the world's largest oil palm producer. By 2009 Indonesia was the world's largest producer of crude palm oil and palm kernel oil. Furthermore, the article also states that oil palm expansion creates issues of deforestation, legal and illegal migration and food security and loss of natural resources and social tension. (Budidarsono et al. 2013)

Commonly oil palm plantation land is converted from "other uses land" because legally it is allowed (Kontan 2017). Recently, Palm oil Plantation land is around 11.4 million ha (Purnomo et al. 2016) and it will increase as Indonesia is planning to double palm oil production in 2020 (Scott Adam&Haiduk 2015). In Riau Province, the expansion of palm oil plantations shows the environmental cost of deforestation and converting protected peatland (Budidarsono et al. 2013). Although policy tries to control land conversion, it is not easy to regulate because of the rapid urbanization and immigration brought to the location (ibid 2013).

On the other hand, after a post-reformation period (mid-1998), not only oil palm expansion created fires. S. Suyanto from the World Agroforestry Forum states that increasing land tenure conflicts between local communities and tree plantation companies or the forestry department created forest fires (2005: 67). Moreover, he elaborates that dispute over tenure and land use rights cannot be solved when local communities were not involved. This dispute still exists even use of military force, forest policy, and management power in order to protect forest resources. "Fire is used as a weapon" to reclaim land for agriculture (Tomich et al. 1998 as cited on Ibid 2005). Land tenure conflict in oil palm plantations is highly risky, particularly in conversion land that has overlapping land next to the Adat communities.

The increasing use of palm oil is because it has a trait as flex crop and commodity. As mentioned by Saturnino Borrás and his co-authors, flex crops and commodities are 'multiple-ness' and 'flexible-ness'(2015). This trait makes palm oil easy to substitute for other uses, affordable technological possibilities, and profit viability. Moreover, Borrás et al. explain that flex crops and commodities become issues when "how it is produced, who controls the wealth produced from these commodities, and for what strategic purpose are politically contested questions" (Borrás et al. 2015:111). Moreover, they also elaborate that these traits are inopportune for smallholders and marginal people as well as the environment (Ibid 2015). Alberto Alonso-Fradejas et al. states, the key actor that have significant influence to make palm oil become flexing is the government like the government can induce a new system on monoculture land use; while international politic-economic conjecture also one of the key actor for valuing palm oil commodity in certain times (2016).

To tackle the negative aspects of deforestation for palm oil, some major oil palm industries, and conservation organizations initiated The Roundtable on Sustainable Palm Oil (RSPO) certification in 2004. On the other hand, the Ministry of Agriculture enacted the Ministry Regulation on Indonesian Sustainable Palm oil (ISPO) certification in 2011. The Indonesian Government obliges ISPO for all Indonesian Palm oil companies. However, today around 20% of Indonesian companies passed the certification standard (Purnomo et al. 2016). Both of ISPO and RSPO have articles on forest and land fires management.

Chapter 4 Setting on Literature & Conceptual Framework

In this chapter, I explain the concepts which relate to forest fire causes from several authors. Then I set a conceptual boundary on *technical* causes and *social political and environmental* causes to analyze the forest fires issue. This boundary will help me to clarify and to examine evidence based on a qualitative methodology on case study research and put a limit on factor causes that I will elucidate.

I also shed light on the decentralization issue as policy can never be separated from the implementation of national and local government. This chapter elaborates on how the local government autonomy era brings challenges to forest fire management.

Forest Fire Causes

The government has made many efforts to solve the issue of forest fires including by reforming the policies, creating brigades and asking for international assistance. In fact, it is still an annual problem for Indonesia. Rachel Carmenta and her co-authors investigated 408 articles in order to understand how human-fire interactions in tropical forest regions relate to the interdisciplinary study of fire (2011). The research used eight categories to analyze the papers. Finally, they found out that socio-political and technological aspects are the most proposed management solution for forest fires. For example, the socio-political management aspects are strengthening community institutions and providing an economic incentive and tenure security. Moreover, their research explains that there is incongruence on the causes and solutions of fire such as in Brazil and Indonesia (Carmenta et al. 2011).

According to Andrew P. Vayda, two factors should be taken into consideration to understand forest fire research. They are the factors that initiate the start of fires and the factors that spread out the fires. The factors that start fires are arson, facilitation of access to resources and clearing land for plantations. Meanwhile, the factors that cause the spread of fires are forest microclimates; the extension of fuel loads and intensive logging as well as specific forestry policies (2006:616). Factors that spread the fires are not only include those linked with starting but also those which lead to its endurance.

Luca Tacconi and his co-authors state that the problem of forest fire policy management in Indonesia lies mainly in the fact that the fire is treated as the problem that should be prevented and extinguished. However, in fact fires evoke other problems and not every fire is the same (Tacconi et al. 2007). In their research, they explain that fire must be used as part of a land management processes and that the causes of fire complex and interlinked. Moreover, their study also elaborates on the different places which have different characteristics which can lead to fires like in Kalimantan and Sumatra. However, the government has a different perception of looking at forest fires:

“Before 1994 there was a sense that the fires were a one-time event and related to weather and climate conditions. Following 1994 came the recognition that fire-related issues were more complex than shifting agriculture and weather and involved commercial companies, land use changes, and perhaps climate” (Tacconi et al. 2007:57)

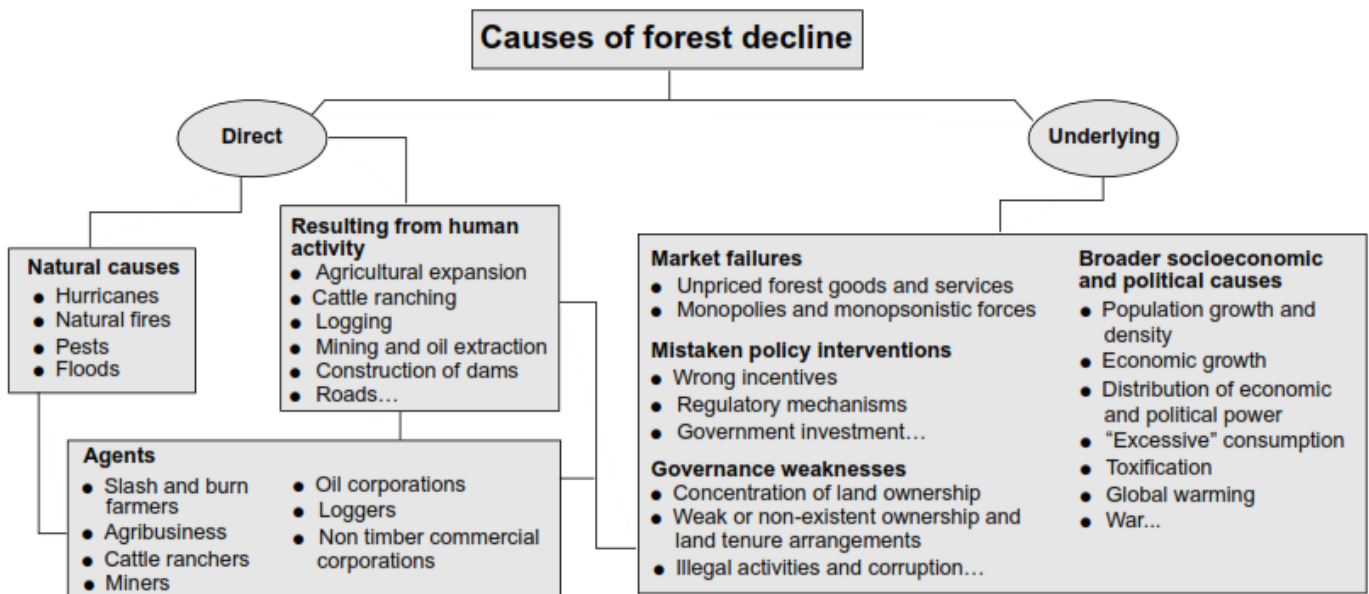
Moreover, Tacconi et al. explain that in Indonesia the impact of fires leads to haze pollution (including greenhouse gas emissions, etc.); and forest degradation and deforestation (including loss of products and services, soil erosion and flood). Their research explains underlying causes of fires

happened because of environmental conditions such as in ENSO years, livelihood, financial and economic interests, bad governance, lack of knowledge and accidental ignitions. Their research indicates that the government effort is ineffective because it works more on fire suppression than on strategic action to tackle underlying causes on the prevention and preparation phase. Furthermore, suppression actions like firefighting should be carefully considered because it is not always suitable for the situation and location of forest fires, and can be an expensive investment.

Forest fires and deforestation are unseparated. Arnaldo Contreras-Hermosilla, from the World Bank, identifies direct drivers and underlying causes of deforestation, especially in Indonesia (2000). He states that direct drivers are natural causes and human activities, such as clearing the land, illegal logging, and mining. Meanwhile, underlying drivers are market failures, policy failures, governance weakness and broader socio-economic and political issues. Market failures are a situation where there is a different perspective on valuing forest as a non-priced benefit and the cost to exploit the forest become disputable between present society and future generation particularly in environmental sustainability. For policy failures, the examples are transportation policies and building roads, giving licenses to mining companies and concessions to agriculture and land tenure, subsidy policies, policies that led to the unmanageable international debt, structural adjustment policies, and log export bans. The weakness of institutional factors lies in arrange of issues, such as policies that permit concentration of ownership, unclear property rights, illegal activities, and corruption. The broader socio-economic causes are about population growth and density, and economic growth. (Contreras-Hermosilla 2000). Underlying drivers are the more *social, environmental and political causes* of fire, which pertains to the human motivation causing the burning activity.

Contreras-Hermosilla also explains that the imprecision between the direct driver and underlying driver exist for several reasons (2000). They are, first, both causes are connected with a long causal relation and cannot be viewed separately or analyzed individually. This point of view on examining the causes is very important for policy-making to create long-term effectiveness with projects or programs. Second, the 'cause-effect chains' are not linear or rarely straight. There are no simple multi-causal chains, and explanations only on a single cause. Indeed, it is very tough just to investigate a single cause of deforestation. Third, causal factors change continually and there is no constant association between the factors, depending on human influence on the forest. For example, the relationship between actors may be different from one location to other, from dependent to competitive in other situations. The chart provides an explanation of the complexity of direct drivers and underlying drivers of deforestation as shown below. (Contreras-Hermosilla 2000).

Figure 4 The Complexity of Deforestation Causes



(Contreras-Hermosilla 2000: 5).

Policy Construction on Forest Sustainability

Theoretically, decentralization will bring autonomy to local government, so they can arrange environmental protection and sustainability. However, in Indonesia, after the fall of the Soeharto regime in 1998, one of the inabilities to reduce forest fires and haze issues came from the rapid decentralization and devolution process (Scott Adam & Heiduk 2015). For example, the transfer authority on natural resource management gave district and provincial heads unbounded power to give consent on converting and managing forest resources like oil palm plantations to get revenues.

Vid Adrison, a researcher from the University of Indonesia, explains that there is a high correlation among district head elections and local government budgets on deforestation (2013). Since decentralization prevailed in 1999, the national government and the local government are in the same position on rights and obligation apart from on five concerns (religion concern, foreign affairs, military field, law and human right affairs, and monetary). Because of this, the local government institution on environmental matters is independent from the national institution. On the environmental issues, there is no structural connection between local and national just action on coordination, cooperation, and collaboration. For example, the Ministry of Environment and Forestry has no structural relation with local environmental and forestry offices either in the provinces and districts.

The policy has a strong influence on constructing social and political efforts on forest sustainability and changing agrarian lifestyles. Ian Scoones, an agricultural ecologist explains that “policy is presented as the official statements, regulations or laws associated with government intentions...policies often via complex overlapping institutional arrangements can have a huge impact on livelihood opportunities” (2015:56-58). He elaborates that today livelihood approaches still exclude the politics and power, but policies, institutions, and organizations have an effect on people’s choice of capabilities, strategy, and outcomes. He gives an example of policies of land access shaping the complexity of livelihood. In Indonesia, land access policy enacted by the formal institution is mostly different, with an informal policy created by a custom institution. Policy implementation tightly intertwines with the complex arrangement of cultural, social, and political context (Scoones, 2015). Recently, the debate on policy process and livelihood relates to sustainability and lifestyle. This because of the broad effects of climate change or another environmental issue on the present and in the future (Scoones 2015).

Conceptual Framework

There are many ways to identify the causes of fire proposed by researchers, but they have some similar characteristics. In this research, the direct drivers that start fires are called *technical* causes while the underlying causes of fire spreading are called *social, environmental, and political* causes. The technical causes mean that policy only discerns a single frame to extinguish the fire: that being to extinguish the fire, which focuses on stopping the fire that happened before it spread uncontrollably. Meanwhile, *social environmental and political* causes, see forest fires as a complicated issue that is not just ‘fire’ but an effect from other activity that is causing other effects that might in turn lead to different impacts.

The classification of the two different causes of forest fire gives perspective to policymakers to identify the project and program target planning that they want to achieve in the short term or long term to reduce forest fires. The technical approach, considering the technical causes of forest fires is more effective in the short-term and gives a faster result to stop the fire. For instance, building canal blocks and drilling wells. This approach does not refer to the deep root of why forest fire is a recurring problem. This approach only reduces the shallowness of the symptom. The technical approach also means it is acceptable and feasible but not actually the most suitable way, because forest fire may happen in other moment and uncertain time.

The *Social, environmental, and political causes* are a complex and broadened concept. It is difficult to explain rigidly, but the literature review agreed that this is the effective way to combat forest fires. Some of the roots of forest fires are economic growth and government weakness. These two factors set the boundary of this research. The economics growth for example, increasing the demand of oil palm plantation which means increasing extensification or intensification of oil palm plantation either by legal or illegal action that this action may be supported by many actors with different interest. With as consequences lead to other different effect like for land use oil palm clear the forest using fire because it cheaper and this action effecting loss biodiversity. Meanwhile, the increasing of oil palm plantation also has influence on changing subsistence of the *Adat* community or migrant-worker that can be negative or positive. This becomes a web chain issue of forest fire. The *Social environmental and political approach* is very complex and dynamic. This also happened with the government weakness issues. For example, overlapping land use management or centralization of power or corruption. Forest fire is not just ‘a fire’ that burn the land.

Contrera-Hermosilla explains that there is an imprecision on these two causes (2000). This means a rigid understanding of the linear causality and single analysis cannot explain the problematic situation in reality. The situation is not in a chain but a web that connecting to many different issues and give many different effects. The policy design has to consider both of the causes as a result of the complexity in order to create an effective result for forest fire management.

Chapter 5 Methodological Research

In this chapter, I elaborate on the research data collection both by semi-structured data interviews and forest fire policies. I also clarify the limitations and benefits of the research. Finally, I define the risks and ethical challenges of the research.

Data Collection

Table 1 Data Collection

No	Name	Ministry/ Institution	Division/Department
1	Respondent 1	Peatland Restoration Agency	Deputy for Planning and Cooperation
2	Respondent 2	National Disaster Management Office	Directorate of Community Empowerment
3	Respondent 3	Ministry of Environment and Forestry	Directorate of Forest and Land Fire Control
4	Respondent 4	Ministry of Agriculture	Directorate of Plantation Protection, sub-Directorate Impacts of Climate Change and Fire Prevention
5	Respondent 5	National Disaster Management Office	Directorate of Preparedness
6	Respondent 6	National Planning Agency	Directorate of Natural Resources and Environment
7	Respondent 7	Disaster Management Office of Riau Province	DMO of Riau Province
8	Respondent 8	Disaster Management Office of Palangka Raya City	DMO of Palangka Raya City

I interviewed eight people using a **semi-structured questionnaire**. Interviews were recorded and translated and transcribed to English. While interviewing, I explained my research aims and asked a specific question based on institutions' roles and issues. The discussion leads to open sharing of information based on the depth of the response. I interviewed 8 respondents from 7 institutions as shown in the table. Five of them I interviewed face by face and the three of them by cell phone (because of limitation on time and place).

I chose to interview these seven institutions because of the institution's roles in forest fire management, especially in the area of prevention. The prevention program of forest fires is a vital relating to the *social, environmental, and political* approach, compared to the response and rehabilitation approach of the forest fire problem. The Directorate of Forest Fire Management in the Ministry of Environment and Forestry has handled forest fire issues since the beginning. The Ministry of Agriculture has the main role in the design of policy for plantation and land areas. Moreover, the National Planning Agency is an essential agency regarding Indonesian national planning, priorities, and targeting of the state development agenda for one year, five years and twenty-five years. Furthermore, the Peatland Restoration Agency is a new institution created in 2016, that has a role in prevention and rehabilitation action on peatland management. Then, the National Disaster

Management Office is essential in relation to the prevention program and emergency response action to the forest fires and haze disasters. Moreover, the Disaster Management Office of Riau Province and Disaster Management Office of Palangka Raya City are important actors in the local area because these institutions are directly involved in the severe situation of the 2015 conflagration. Further to this, the topography of the two areas has a large portion of peatland.

Most of the research respondents are at the level of senior staff that has been working for more than ten years in their institutions and are familiar with the issue of forest fires. I interviewed one respondent for around 1.5 hours to 2 hours. I also considered interviewing the local environmental office, but when I did my field research, some changes within the structural bureaucracy occurred as well as there was a forest fire alert emergency in the areas. Moreover, the Ministry of Home Affairs was also a target interviewee because of the critical relation to local government, but they had a very tight schedule to interview. After having interviewed eight people, I think the issue is capable of being understood by also combining the interviews with secondary data analysis.

For my secondary data, I acquired from archival data like policies, final drafts of policy, material, and discussions from the institution meetings. However, this research focuses on 22 policies that are still active on forest fire management until now.

Limitations and benefits of research

This research is limited regarding the government institutions as policy makers of forest fires policy. The legislative institutions legalize the law, but the other regulations are usually initiated by the institution and affirmed by the chief of institutions. Then, the policy is implemented through programs and projects. The forest fire issue involves several institution policies because forest fire impacts also affect many other sectors as does the haze.

The management of forest fire occurs in the prevention phase, response phase, and rehabilitation phase. The prevention phase has a strong relationship to avoiding the issue getting severe by bringing effective and efficient practice to the forest fire risk reduction and mitigation strategy. A good strategy during the prevention phase can stop the broader effects of forest fires. Hence, this research hopes to give a contribution on how policy makers make better policy on the forest fire issue. Moreover, this research considers the different perspectives on valuing forest from the perspective of many actors, as a contested area. For the scholar and broad reader, this study gives deep insight on how the forest fires are not only a natural disaster but also have political, economic, and environmental issues entangled with development.

Risk and Ethical Challenges

This research considers the principle of human rights protection under the Institute of Social Studies permission. All respondents are protected and given freedom to object. Although all respondents held no objection about their true identities being revealed for the purposes of the research. The results are presented as interpreted by myself and any contradiction is unintentional.

Chapter 6 Unravel Forest Fires Prevention Efforts

In this chapter, I used process tracing as a method to understand causal chains of forest fire policy process. Therefore, semi-structured interviews of 8 people and archival data of 22 policies are presented together creating an in-depth trace of the issues. This analysis concerns the John Gerring method of process tracing by creating an evidence diagram or model and explaining each stage in order to synthesize the inference (2007:184). This tracing links evidences from the primary and secondary data collection. The objective of using this tracing method is to give a plausible explanation of complex evidences (Beach & Pedersen 2013). I made a limit of only on 22 forest fire policies after the year of 1999. Moreover, I set 2015 as a turning point in order to understand the changing of policy processes after the significant incident of the 2015 conflagration to the aims is to understand the influence of a new presidential administration on forest fire policy design.

I have divided this chapter into four sub-chapters. Every section has a contribution on the challenges and obstacles facing the government surrounding the 'social environmental and political causes' of fire. First, an overlapping management and programs leads to the impact of more complex and ineffective efforts especially for the long-term target. For example, land management strategies among the national and local government on plantation license. Second, inconsistency in the bureaucratic structure means that changes in the political administration because elections both at national and local level create a new system adaptation. For instance, the merger of the Ministry of Forestry with the Ministry of Environment. Third, a double standard in the policy implementation leads to bad governance and weakens the regulation itself, for example, the policy on the license of the *Adat* burning activity and peatland conversion to plantation. Fourth, proclivity on the technical approach to the forest fire policy leads to the ineffectivity of the management system over the long-term period. An example of this is, the canal blocks programs and creating drilling wells.

Overlapping management and programs

After the decentralization in 1999, intricate consequences revealed themselves for environmental management, particularly in the form of concessions and plantation licenses. The respondent from the Ministry of Agriculture explains that the national government gives all authority over plantation permits to the local government. However, the government retains the right on giving concession permits over forest land to the national domain by the Ministry of Environment and Forestry¹⁶. The respondent states that this action brings the difficulty to mapping the land use. Because of a lack of sharing information from the district/province to the province/ national government and the Ministry of Agriculture roles only involve creating regulation and standardization of plantation licenses. The Respondent from the Ministry of Agriculture said more detail that:

¹⁶ in 1994, the local government is given the authority permission of forest concession, but a rapid deforestation happened intensively in months. Then it was revoked. However, since the authority on land and plantation management is giving to the local government, then to prevent unwanted consequences, the Ministry of Forestry and Plantation (merger on Habibie era in 1998) enacted Ministerial Decree on the limitation of the expansion on concession area (*SK nu 728/Kpts-II/1998*) and a new license system on concession areal auction (*SK nu 731/Kpts-II/1998*), also the communities forest social criteria (*SK nu 677/Kpts-II/1998*) (Nicolas 2003: 433-434).

“if the plantation posits on district area then the district governments have the right to enact the permit. On the other hand, if it is located in the larger area, two districts or more then the governor has the authority to give plantation permit.”

The land use license system leads to unrelated management regulation among districts, provinces and at the national level. The private companies might use this weakness to expand the plantation areas, for example, the conflict between the private company and smallholder farmer on the rights of ‘Other Uses Area’ (APL)¹⁷ for agriculture.

APL is problematic technically, because of inappropriate assessment methods to label the forest as APL. Many pristine forests are labeled as degraded forest so that they can be converted to APL (Kompas 2017). Meanwhile, APL appeals to many actors because of the benefit of legalizing the land to plantation. The Respondent from the Ministry of Environment and Forestry affirms that in local areas, since the promising future of oil palm plantations, the head of the village has the power of authorization to sell forest land as APL certified land easily. This action makes the issue of forest fires more complicated.

Moreover, the respondent from the Disaster Management Office of Palangka Raya City explains that almost all of Palangka Raya city is counted as peatland areas. However, there are no clear mapping areas showing the areas that are not allowed to be burned. The respondent elaborates that the local people in Palangka Raya indeed commonly use fire to clean and clear the land during the dry season. Furthermore, the respondent mentions that local people in Palangka Raya do not really care much about the frequent changing of El-Nino. They use fire as a common tool to clear their farms, unintended to open the forest for plantation.

Both the Ministry of Agriculture and the Ministry of Environment and Forestry have created a brigade¹⁸ and ‘forest fires cared group’¹⁹, but they are working separately based on different ministerial locus and roles. However, since 2015, they have been working together to extinguish forest and land fires, because in reality the two cannot be separated. An integrated patrol programme has been established to help suppress the forest and land fires based on Presidential Instruction *no 11/2015*²⁰ and the Ministry of Environment and Forestry Regulation *no P.32/MenLHK/Setjen/Kum.1/3/2016*²¹. There are no differences specified and expertise between these two special forces in local areas. They are working together with other actors. The respondent from the Ministry of Environmental and Forestry states that after 2015, the pressure on the Indonesian government regarding forest fires is higher than before. The respondent explains that the 2015 conflagration was a big lesson on complicated impacts.

Under the Forestry Law *no 41/1999*, the plantation company has an obligation to extinguish the fires if fires happen in their concession land. But after 2015 they can ask for help from an integrated patrol when they have difficulty extinguishing the fires. However, the plantation company should have infrastructure and human resources for firefighting available and take full responsibility for the forest fires that occurred in their plantation areas or they can receive a guilty indictment²² if the land is intentionally burned.

¹⁷ Usually APL is being use for economic development outside from forestry land.

¹⁸ Ministry of Environment and Forestry: Manggala Agni, Ministry of Agriculture: Land and Plantation Brigade

¹⁹ Ministry of Agriculture: KTPA/ Kelompok Tani Peduli Api, Ministry of Environmental and Forestry: MPA/ Masyarakat Peduli Api

²⁰ About Increasing Efforts on Forest Fires Management

²¹ Management Fire Forest and Land

²² Law no 32/2009

Moreover, the respondent from the Ministry of Agriculture states “the difficulty for the Ministry of Agriculture is that a small section of echelon IV only handles this issue of fires, not like in the Ministry of Environment and Forestry”. That is why this section cannot effectively support them”. The respondent from the Ministry of Agriculture claims that one problem with the management of forest fires is the difficulty in cross-sectoral coordination because of institutional-ego to work alone. This issue leads to information on updates of the project and program from each institution being undistributed and not informed in other sectors. Moreover, this problem leads to an overlapping agenda. For example, the regulation regarding the Village Counterpart Team on forest fires²³ from the National Disaster Management Office overlaps with Forest Fires Village Counterpart Team project, initiated in 2014, by the Ministry of Environment and Forestry and JICA (Japan International Cooperation Agency).

The collaboration program’s assessments are not in clear focus. The program might be clear on the focus of the internal institution, but for the national focus it has many flaws. Lack of knowledge on the integrated system and institutional ego create overlapping, double locus and centralized projects on the same locus but without coordination and collaboration. It can be said, that the frame of policy only looks at the single perspective on the institution’s target. These programs are just a waste of money. In some aspects, it might be that the policy becomes more destructive and seen as “bad policy” because of this trait. To make it more for detailed, such a failed program in the Soeharto administration is the²⁴ “the government one-million-hectare peatland development project”²⁵ in 1995 especially held in Central Kalimantan. This project aim was to fulfil rice sufficiency like in the year of 1984. However, the project was unsuccessful, and left the environmental ecosystem degraded, leading to unsecure livelihood and poverty (Sargeant 2001). This program failed because it excluded the social, environmental, and political aspects (Ibid 2001). The planned government rehabilitation also failed. Leaving behind dried peatland that could easily be burned. Right now, these ex-areas under the rehabilitation program from the Peatland Restoration Agency. However, around 200 hectares of the ex-area has been converted to oil palm plantation by private owners (Nugraha 2016).

Inconsistent Bureaucracy Structure

The *Presidential Instruction on Enhancing Coordination on Forest Fires Management no 11/2015* is not the first. In 2011, under the former presidential administration, Susilo Bambang Yudhoyono, the government had issued *Presidential Instruction number 16/2011* about intensive management on forest fires that organized the rules and roles of ministries and institutional coordination and corporation. The difference with the *Presidential Instruction no 11/2015* is the number of ministries and institutions that are involved. This happened because of the differently established-governmental institutions between the latest and the previous president. This changing brings the different politics of coordination and cooperation among ministries and institutions on forest fires. Moreover, today many more ministries and institutions are involved in the forest fire management than before.

²³ Guidelines on Forest and land Fires based on empowerment of the villager from National Disaster management Office

²⁴ Legalize by *Presidential Instruction No. 82/1995* about Development Peatland for Agriculture in Central Kalimantan

²⁵ “Proyek pengembangan Lahan Gambut Sejuta Hektar”

Since the merger of the Ministry of Environment and the Ministry of Forestry²⁶ in 2015, there has been a changing structure²⁷. The respondent from the Ministry of Environment and Forestry elaborated that before it merged, Manggala Agni was embedded with the Conservation of Natural Resources Office (BKSDA/ Badan Konservasi Sumber Daya Alam) and covered the operational area of three districts. Then after the Ministry of Environment and Forestry merged, it was embedded in the Climate Change Control Office (CCCO) which has a broader span of control. In spite of CCCO locations based on enclave areas. There are eight enclave areas in Indonesia. “This new rule, creates difficulty on an operational range of Mangala Agni and impacts on the effectiveness,” she said plainly. Moreover, she adds that there is also another difficulty regarding the administrative arrangement on financial disbursement because of different administration systems between the local level and the national level.

The respondent from the Ministry of Environment and Forestry explained with disappointment that “in 2014, the Ministry of Forestry initiated National guidelines on forest fires called Posnas, but it was not signed because of the presidential transition”. She said that everything to do with the forest fire issues coordination was regulated in the Posnas.

Changing one era of presidential administration gave a different approach on policies and programs like on handling forest fires. In the Jokowi era, the merger of the Ministry Environment and the Ministry of Forestry created a challenge and obstacle in the internal institution body. For instance, the range of command systems became broader than before. It provided more complex coordination from national and local level.

Based on the decentralized system, the Ministry of Environment and Forestry does not have a branch in either province nor district. The local office of Environment and Forestry in the province is coordinated under the local government administration and supervised and coached under the Ministry of Home Affairs. The decentralized system gives strong power on local participation in managing their environmental issues. However, because local budget shortage provides for the environment, annually, local governments receive program subsidies from the Ministry of Environment and Forestry to strengthen their environment program. The respondent from the Ministry of Environment and Forestry explains that although the environment issue is decentralized, the local government spends a shortage of its local budget to manage environmental problems. She states an example, when a significant conflagration happens in 1997 & in 2015 the local government is dependent on the national subsidies to respond to and extinguish forest fires. She asserts the explanation that perennially, on prevention phase, local governments get a budget allocation from a particular allocation budget and a decentralized fund from the National Development Budget (APBN). The local government understands many problems occurred in the environment but they are reluctant to allocate the budget on the environment. She concludes:

“the local government argues it is difficult to assign a budget to an unpredictable event like forest fires because there are no clear criteria to measure how big the forest fires categorize as a hazard even in the prevention area.”

The Peatland Restoration Agency was established²⁸ in 2016. It has tasks on rewetting, restoration, and revitalization of 2,4 million ha burned peatland in 7 provinces for five years (2016-2020). However, in 2015 under the new structure of the Ministry of Environment and Forestry, the

²⁶ *President Regulation no 16/2015* about establishment the Ministry of Environmental and Forestry

²⁷ *Ministry of Environmental and Forestry Regulation no P.18/MENLHK-11/2015* about organization and structure of Ministry of Environment and Forestry

²⁸ *President Regulation no 1/2016*

Directorate Control of Peatland Damage was established, working on the same issue. Finally, this overlapping institution shared task and roles on peatland restoration by dividing the locus area. The Peatland Restoration Agency is working on the priority target of peatland restoration based on Presidential Instruction, and Directorate Control of Peatland Damage will work on another peatland area that is not a priority program like in Sulawesi province. The priority agenda of 2,4 million ha consists of 1,4 million ha peatland in the concession area and 1 million ha of peatland in the non-concession area.

The Respondent from Disaster Management Office in Riau Province complains that the Peatland Restoration Agency is ineffective on the performance since they do nothing in the field. However, the respondent from the Peatland Restoration Agency explains that due to lack of resources and as a new institution, they were actively working in 2017, but hibernated in 2016. The Peatland Restoration Agency is a national institution that does not have a structural branch in the local area. He elaborates that this agency creates an ad-hoc team locally consisting of several local government offices to help implementation of project strategies.

Double Standard on forest fires Policy

The Government acts ambiguously in response to the *Adat* burning activity. Mostly it is seen as a negative. Especially, after the great forest fires and haze disaster in 2015, policies that allowed burning activities as *Adat* local wisdom were revoked in several local areas like in Central Kalimantan²⁹. *The Government Law on Forestry no 4/2001* and *Law on Plantation no 18/2004* forbade all burning activity except only for the eradication of disease or to protect the ecosystem. On the other hand, *Law no 32/2009*³⁰, and *the Ministry of Environment Regulation no 10/2010* still allow this practice. Moreover, the Ministry of Environment and Forestry and the Ministry of Agriculture promote the Zero Burning Land Clearing Method (ZBLCM) as a new clearing land method. From this point of view, there is an inconsistent perspective on government policies and programs.

The Respondent from the Disaster management Office from Palangka Raya City explains that in Palangka Raya City, people commonly use burning activity to clean and clear the land. *The Central Kalimantan Governor Regulation no 15/2010* giving permits and regulates the *Adat* and local people to practice burning activity as local wisdom. She elaborates that after 2015 conflagration, the policy was revoked and it states this method can not be controlled because the length of reporting too far from officials and difficulty to monitor. She also explains that usually, local people use the palm oil to mark land border, but right now it is forbidden and changes into other plant.

The Respondent from the Indonesian National Planning Agency explains that there are two assumptions on forest degradation they are, the impact of palm oil expansion and the international market want to attack Indonesian oil palm market for their interest. Moreover, he states that Palm oil is not related to forest fires because in 2005 to 2009 it was booming however economic turned down, palm oil shared small amount from GDP at that time. Moreover, he elaborates that in *The Grand Design on Forest, Land, and Plantation Fires 2017-2019* it is known that there are two causes of fires direct and indirect. However, today is more focusing to the direct causes because it is not yet ready to

²⁹ *Central Kalimantan Governor Regulation no 15/2010*

³⁰ About Protection and Management of the Environment

indirect causes. Moreover, the respondent affirms that the government gives more attention depend on the president commitment.

The respondent from the National Planning Agency statement is in the opposite direction from the World Bank Report in 2000, BH Sahadjo research and Dennis Statement that oil palm concession have tight connection with the forest fires. Although, their statement for the forest fires 1997, but it can deduce that palm oil today has more influence on forest fires from the extension of land use evidence and the shared market growth. Herry Purnomo and Helena Varkkey explain about there are patronage system on forest fires in relation to convert forest land become oil palm plantation. Moreover, Palm oil is Indonesia's largest export commodity after oil and gas (Scott Adam&Haiduk 2015).

Discussion on Technical Approach Propensity of Forest Fires Policy

The Government program on forest fires is inclined to *technical approach* such as Zero Burning Land Clearing Management (ZBLCM), the integrated patrol, and canal blocks or creating other infrastructural building. All of these programs concentrated on fast outcome without looking to relation to the *social environmental and political causes*. Even the new strategy on The Grand Design of Forest, Land, and Plantation Fires 2017-2019 and the National Standard Operational Procedure on Forest Fires Prevention.

Previously before 2015, the program's priority in the Ministry of Forestry and the Ministry of Agriculture were ZBLCM. Both respondents from the Ministry of Environment and Forestry and the Ministry of Agriculture explains that mostly their budget was spent to strengthen ZBLCM program. However, both ministries had different locus areas with different aim. The Ministry of Agriculture strengthens on the land and plantation while the Ministry of Environment and Forestry focus on the concession forest land. Both respondents agreed that this program is wanting to change smallholder farmers and community mindset from burning to unburned activity in clearing the land.

Then after the conflagration 2015, both of ministry programs changing more focus to the integrated patrol, for example, the Ministry of Agriculture focusing to establish brigade and the Ministry of Environment and Forestry give subsidies to make patrol brigade working on the field. Both respondents from the Ministry of Environment and Forestry and the Ministry of Agriculture explains that after focusing to the integrated patrol program, the budget proportion for ZBLCM program drastically reduce. On the other hand, in 2015 when conflagration happened, the Ministry of Environment and Forestry build many canal blocks and drilling wells to suppress fire spread. This role then transferred to the Peatland Restoration Agency in 2016.

Both the respondents from the Ministry of Environment and Forestry and the Ministry of Agriculture state that before 2015 they had a project related to 'Market-based experience'. This project gives expertise to smallholder farmer on alternative livelihood approach besides the main farming activity like making charcoal briquettes and fertilizers. However, both respondents elaborate, the problem were on how to market the products in the areas far from the city and near the forest? market network is difficult. It is impossible to create without involving many other actors such the Ministry of Economics and Private Sectors. From this kind difficulty, the program was left behind.

Since the conflagration 2015, the Ministry of Environment and Forestry subsidies on patrol program to suppress the forest fires. The respondent from the Ministry of Environmental and Forestry elaborates that in the beginning, it was only Manggala Agni. Then growing to be more integrated³¹ in 2016 by involving many sector from military, police, and ‘fires cared society’. The reason for this program because the Ministry of Environment and Forestry out of resources and cannot always keep an eye to forest fires. Moreover, in 2016, 750 vulnerable forest fires villages in Sumatra and Kalimantan were under the monitoring of the integrated patrol. Then in 2017, this growing to more areas covering 871 villages, mostly located in South Sumatra and Riau Province. She adds statement that this locus area determined based on the number of hotspots in 2016 and the local government reports on forest fires. The respondent from the Ministry of Environment and Forestry said that

“One team of integrated patrol consists of 5 people from a different background that working on five days in one village. Integrated patrol considered as the most effective program, so we spend around 60% of our budget in this program. This program creates the sense of abiding the rule, but we are assumed it is effective in a short-term period, so we have to think the long-term program.”

Moreover, the respondent informs that some obstacle on integrated patrol is the budget come out in a longer time even until in the mid of the year. Meanwhile, the forest fires patrol already begins in the early year. The consequence, the patrol personnel do not get paid in time. The National budget is based on the national system administration when the budget subsidies to the local, it becomes complicated things like a longer time to transfer and difficulty to understand national finance accountability by the local officer.

During the conflagration 2015, the government built more than 1000 of drilling wells and many of canal blocks in many parts of protected peatland areas and forest to response a big forest fire. Many institutions involved in this projects like the Ministry of Environment and Forestry, the Ministry of Agriculture, the National Disaster Management Office, and the local government. However, the respondent from Ministry of Agriculture explains that this strategy is not effective. Moreover, the respondent from the Disaster Management Office of Palangka Raya City explains,

“The canal block program is not so effective to prevent the fires. It only absorbs the water in drought season. It is more effective to build a pond called ‘embung’. Canal block become effective on stopping the spread of flames but this has a problem on making dried water land and the land itself in the next year become more dried than before”

The respondent from the Ministry of Environment and Forestry elaborates,

“Mostly the structure of canal blocking is wrong, because the project does not involved Ministry of Public Works who understand the structure of land. There is a lack of coordination but another factor that make this program is failed because farmer or communities does not understand how canal block system is work. Then they maintenance the canal wrongly”

Since 2016, the National Disaster Management Office gives a particular budget to the forest fires resilience village. This program is conducted based on the *presidential instruction no 16/2011* to increase coordination on forest fires issue. In 2016, 14 districts get subsidies, and in 2017, there are 10 districts. The number of districts is reduced but the number of target village is increasing from 28 (2016) to 40 (2017). The forest fires resilience village is given a subsidy to create forest fires volunteer and providing forest fire extinguisher equipment. This volunteer consists of 20 people from KTPA and

³¹ *The Ministry of Environment and Forestry Regulation no P.32/MenLHK/Setjen/Kum.1/3/2016* about regulation on integrated patrol brigade.

villagers. The respondent from the National Disaster Management office elucidates that the enhancement in the resilience village is more to the readiness on anticipate the forest fires. However, the respondent states that there are difficult facts with the integrated patrol brigade program from the Ministry of Environment and Forestry when the programs want to collaborate, 451 villages are not existed³². Moreover, the respondent explains that It could be happened because of dissection areas of district or province. On the other hand, the respondent from the Ministry of Environment and Forestry reveals, there will be a further coordination with the Geospatial Information Agency and the local government to mapping the change in one map policy program.

The respondent from Disaster Management Office of Riau Province explains that forest fires and haze is more intricate when the migrant from another province come and open the forest land by burning activity. Then, they claim the converted location as their village such as an issue of illegal community in Tessolino Park. Based on the law³³, *Adat* community allows to clear the land by burning activity if not excess than 2 ha per household and used as household interest. However, this practise in Riau is not done by the locals but the migrant.

Moreover, the respondent from Disaster Management Office of Riau Province confirms that socialization on forest fires is ineffective because everyone knows about the forest fire, but they keep doing it because of many reasons. From this perspective, he says that monitoring is the best way to reduce forest fires than any other project. He says that the integrated patrol in collaboration with many actors is more effective than quelling the forest fires just by the Ministry of Environment and Forestry.

In 2017, mostly the Ministry of Agriculture budget in land fires management spends to create the Ministry of Agriculture Brigade³⁴ in the national and local level. There are seven districts and nine provinces where the brigades operates. This group establishes to monitor and suppress land fires. This team consists of local agrarian officers, local Disaster Management Officers, GAPKI (Affiliation Palm Oil Companies) and GPBI (Association Indonesian Big-Plantation Company). However, since 2016 the brigade is working together with another private sector brigade, and community.

The respondent from the Ministry of Agriculture claims that the difference between the Land and Plantation Brigade from the Manggala Agni is the brigade more reach down to the local area. On the other hand, the Respondent from Ministry of Environment and Forestry states that Manggala Agni has more expertise and professionalism. Furthermore, the Ministry of Agriculture also initiates Fires-Cared Farmer Group or KTPA program. There are 161 farmer groups in 7 provinces. The respondent from the Ministry of Agriculture underlines that the land and plantation brigade is still receiving the subsidies, but KTPA is not. Because KTPA is considered to trigger co-finance from the local government and private sector participation. Commonly, the brigade and the integrated patrol program need higher budget than other programs to run consistently.

The Grand Design on Forest, Land, and Plantation Fires 2017-2019 states that burning the land is a cheaper method than the ZBLCM. It is seven times more affordable. The government gives more incentive to induce people using ZBLCM technique. This technique is modern lifestyle technology promoting a safer procedure in a clearing the land. It expects that the swidden habit could be changed.

³² However, in the Grand Design Forest, Land, and Plantation Fires 2017 is only identified for 146 villages cannot be mapping because unsuitable name, location

³³ Law nu 32 year 2009; Ministry of environment Regulation no 10 year 2010

³⁴ Ministry of Agriculture regulation no 47/Permentan/OT.140/4/2014 about Land and Plantation Brigade

The indigenous practice in agriculture techniques like swidden agriculture is considered as destructive on environmental sustainability.

After 2015, many new policies enacted by policymaker with more multi-sectoral coordination focus. The Grand Design on Forest, Land, and Plantation Fires 2017-2019 bring all the big picture to handle the forest fires management with multi-dimensional perspective and multi-sectoral coordination. This new policy has mutually collaboration with the Standard Operational Procedure on Forest Fires Prevention and the Ministry of environment and forestry regulation no P.32/MenLHK/Setjen/Kum.1/3/2016. However, the *technical* approach is still tangible and no vivid explanation on the *social, political, and environmental* approach.

The Grand Design on Forest, Land, and Plantation Fires 2017-2019 and the National Standard Operational Procedure on Forest Fires Prevention promotes five strategies on forest fires effort:

- providing the incentive and disincentive economics,
- strengthening community roles,
- law enforcement and synchronizing regulation and permit,
- increasing infrastructure, and
- enhancing the early warning system.

However, all this strategy to some extent explain too technical.

The first strategy, the incentive and disincentive economics consist of giving incentive for ZBLCM; increasing farming productivity; stopping credit for plantation company that allegedly burn their land; stopping the license of plantation company that reportedly burn their land; giving the incentive and distinctive with proper mechanism; and giving support on diversification. It is not explained more detail how to increase farming productivity whether by modern lifestyle with the green agriculture mechanism or by giving indigenous freedom of agriculture. Moreover, on the incentive and disincentive perspective is giving technical approach and to grant equipment of ZBLM.

The second priority strategy is strengthening community roles that consist of socialization, assistance, and advocation on forest fires. Although many respondents explained how the ineffective socialization of forest fires, this program always become annual government program.

While the third strategy is the law enforcement and synchronizing regulation and permit that consist of synchronizing and strengthening institution security, determining land use right and one map policy, harmonizing the spatial plan, and synchronizing local-national document. This strategy is focus on the organizing of better system. However, it not yet seen.

Moreover, the fourth strategy is increasing on infrastructure. This consist of restoring water management in a peatland; creating drilling wells, modifying technology, and improving ZBLCM. The last strategy is strengthening the early warning system that consist of restoring fires warning, enhancing crisis centre and the early response system, and building small-scale fires fighting infrastructure. Technology is critical aspect on strengthening the monitoring system.

The Grand Design on Forest, Land, and Plantation Fires 2017-2019 differentiates the direct and underlying causes of forest fires. The Direct driver relates to clearing the land for expansion by improper burning activity. While, the underlying driver are a bad management and unsustainable economic growth. However, this explanation is too limited, uncleared, and unconnected with the program that the government promoted. A contrast argument with Contrera-Hermosilla on the imprecision of deforestation driver that explains unilinear way and not-straight connection between the drivers, and a long causal mechanism which considering the causes are very important for the

policy process. This reflection is unexplained in the grand design 2017. To some extent the program approach should mix together because of forest fires complexity.

This grand design although gives a detail actions on multi-sectoral way on working together but the proposing program is not clear to explain based on the proposed driver that mention in the grand design such as the program plan did not mention to focus on oil palm plantation although in the background of the grand design mention about it. The Respondent from the Ministry of Environment and Forestry explains that there is an initiative to the concept of incentive and disincentive based on payment of environmental services that more to the social, environmental, and political approach propose by the Ministry of Coordinating on Economics, but this needs a further research on how to implement in the different place, culture, and situation.

Chapter 7 Concluding remarks

From analysing the data, this research has discovered that first, forest fire management both at the national and local level are not well coordinated. This issue can be seen from the overlapping management and program. Policy makers and institutions work with their agenda based on their locus, but after 2015 the government intensively urged integrated collaboration among actors. However, collaboration mostly happens in the form of a suppression effort, and this collaboration is more about technical approach programs. Moreover, the Forest Fire Grand Design 2017-2019 does not explain planning efforts clearly, falling to discern which ones are technical or not, or the connection between all program.

Second, researchers like Herry Purnomo, Helena Varkkeys and others claim that the problem of forest fires occurs because of the patronage system and the impact of decentralization policy. However, from this research it can be concluded that the root is not only because of that; the root is deep inside on how the policy maker creates, and implements the policy itself. The forest fire policy that does not compatible enough will cause the patronage system growing, arbitrariness authority and corruption increasing, and the environmental impact keep insisting. Incompatible means failed to understand the broader impacts of the policy to the social, environment and political situation. The policy that mainly focus at the technical approach just a reason to make the programs easier to measure and give faster result like patrol brigades. The outcome is not for the long-term effect, it just for give a quick attainment. The problem may be happened again in the future, become perpetual.

Today, there are still gaps in how to connect with the approaches that can bring a long-term solution to forest fires. However, this is a problem which needs to be surmounted. The government is inconsistent on implementing the program because of government obfuscation in creating appropriate efforts when results are measured on policy system by time.

Also, because an inconsistent bureaucracy structure and double standards create a situation which allows corruption to grow. The power of policy that regulated everything to make it “legal” within the system and implement it on a program to run the system, as fertilizing for the arbitrariness authority. The system itself need to be reviewed.

Third, on the other hand, what is quite surprising is that local government depends on the national subsidies from the environment budget. The local environment budget is kept aside from the local planning system because it is not easy to identify predicted forest fires. There is no measure to predict when forest fires will come. Moreover, the inconsistency of budget also because the inconsistency of birocracy structure. This inconsistency structure lead to unstructure planning system for the next year program and the future planning both in local and national system.

Mostly at the local and national level, respondent states that the attention/consideration for the leader or the politician in chief determine the environmental program. It is not the system that guarantees the effectiveness of forest fire management but the leader that ensures wether it will work. That is why, most of the decentralization has failed because it based on the politician

Fourth, the new policies of 2017 like the Grand Design of Forest, Land, and Plantation Fires and the National standard operational procedure of Forest Fires still need a reviewing. Considering an approach on social environmental and political causes requires more detail because the program is still unconnected to the complexity between the *technical* and the *social, environmental, and political* causes of forest fires. Still, the new policies remains unclear about forest fire as an effect of contested

value with other resources. This means there is something that state does not want to sacrifice which means there is a double standard on forest fire policy. This 'contested thing' give complicated dimension on forest fire with other relates issue like swidden agriculture or palm oil expansion. Swidden agriculture has becomes more politically ignored and forbidden, and this activity is forgotten in the clauses of the new policy. Moreover, Palm oil plantations, although alluded to, are undiscussed in the solution of the forest fires program just used the same word 'plantation' in the program planning.

Oil palm has a clear relation to forest fires, but this is a long causal relation, not linear, and there is a changing causal relation every time because there is no constant relationship between human influence with the forest. The government forest fire program should be clearly focussed on palm oil, though not reject the possibility of other plantation companies influencing. Palm oil has become heavily criticised because it is extensive and has led to massive change in the land use. It is a very lucrative commodity as a flex crop.

Today, all burning activity is banned by the government without looking at the *Adat* using it as 'local wisdom'. The 2015 conflagration become very important when swidden practice also was described as allegedly destructive to forest sustainability. Rigid monitoring programs makes this kind of practice more likely to be perceived negatively. The *Adat* community has been compelled to leave this practice and become modern farmers. This lead to the *Adat* community becoming more dependent on the market-driven economy. This issue might be lead them to exploit the forest for profit, especially when household situations become hard. Although some policy still allows this practice as local wisdom however, in the circumstances, they will be left behind. Also, because today every piece of land has its owner, it is hard to swidden practise without government concern. However, the prohibition of swidden might be not promised for better forest sustainability in the future.

Government policies and programs always have a clear measurement and result in one-year targets. It is quite difficult to implement *social, environmental, and political approach* on this kind circumstances. This action has become a big challenge to the future of forest fire management. The different program's priorities come along with the issues of which ones are the best to manage the forest fires issue in the current situation. The fast result programs hold the priority of extinguishing the forest fires, but then after year it is happening again. The causes lie beneath and beyond this.

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Annex II Semi-Structured Questioners

Interview questions

A. Identification of interviewees

1. Name
2. Institution
3. Department / division
4. Position
5. How long have been working?
6. Contact
email
7. Data specification that can be shared with me
8. Date of interview

B. Semi-structured Question

MEF and PRA

1. Among the follow-up directions of the Presidential Instruction No 11/2015 on improving the control of Forest and Land Fires, which actions are more emphasis on prevention to control forest and land fires? What MEF do to support prevention action on forest and land fires? How is it work?
2. How does MEF response relate to the issue on patronage networks that involving farmers and other interested parties concerned with burning activities? Especially the linkage between the expansion of oil palm plantations and the destruction of the environment? Is there a program related to this? To stop this action? Is law enforcement an effective way to stop this?
3. How do you think about the most effective program to control forest fires? Is blocking canal the most effective way to control forest and land fires? And take precedence over other programs? Is there any other program?
4. How to implement the president directives on national coordination on forest and land fires on January 18, 2016? And how about other directive?

5. It was mentioned on the national meeting coordination of forest and land fires on March 15th, 2016 that one of the long-term preventive measures is to assist rural economic development that has environmental concept. So what MEF do to support this policy? What are the program model?

MA

6. In Presidential Instruction nu 11/2015 on improving the control forest and land fires, MA role is to support guideline on land fires, so how is the progress? How many programs related to this agenda? Do MA has another program to suppress forest and land fires?
7. What are the program before 2015 conflagration? What are MA focus?
8. Do brigades exist in every village that vulnerable to forest and land fires? How does the program work? Do they involve in prevention? Who are the members? How they are working?
9. How do you think about the most effective program to control forest fires?

NPA

10. Among the follow-up directions of the Presidential Instruction Nu 11/2015 on improving the control of Forest and Land Fires, which effort NFA do to support prevention action on forest and land fires? How is it work?
11. In 2015 when the great forest fire happened, an estimated 221 trillion of losses achieved, what are the different programs on 2014 and 2015 and 2016?
12. How to select the prevention program is more effective than others? How do you think about the most effective program to control forest fires?
13. How to selects which one area get more attention on prevention of forest fires program than others?
14. In the grand design 2017-2019, is it mention about direct and indirect causes, could you explain about that? Are the program already consider these causes?

NDMO

15. How is the coordination on the implementation of disaster risk reduction and disaster preparedness activities in line with the president instruction nu 11/2015 to enhance forest fire management?
16. How is the forest fire resilience village program? What has been done to strengthen this program? Do NDMO ever think to use underlying approach to strengthen the program? What is obstacle and challenge to it?

17. How do you think about the most effective program to control forest fires? Do NDMO already take action? How is the obstacle and challenge of this?
18. How is to coordinate all sectors to make the effectiveness of forest fire management?

DMO Riau Province

19. What is the local government roles in optimizing forest and land fires control in Riau Province? What has been done? How are the programs?
20. How do you think about the most effective program to control forest fires?
21. Is there any program that related to indirect causes of fires?
22. Is 2015 conflagration has meaning to strengthen the program on forest and fires?
23. How the local government allocated budget? How is the coordination?

DMO Palangka Raya City

24. What is the local government roles in optimizing forest and land fires control in Palangka Raya City? What has been done? How are the programs?
25. How do you think about the most effective program to control forest fires?
26. Is there any program that related to indirect causes of fires?
27. Is 2015 conflagration has meaning to strengthen the program on forest and fires?
28. How the local government allocated budget? How is the coordination?

C. Closing Remarks

29. What kind of program direction and policy that the government has to do to stop forest and land fires due to every year always there is issue with it?
30. Do you know another person that I can contact to?
31. Do you have another material that can be shared with me?
32. Can I meet you or contact you again?

Annex III Summary of the Result of Research Semi-Structured Interviews (Research Field Work)

No	Ministries and Institution Programs	Programs	Issues
1	Peatland Restoration Agency (PRA)	<ul style="list-style-type: none"> - During 2016 until 2020 the target of peatland restoration will be 2 million ha. This target locates in seven provinces (South Sumatra, Riau, Jambi, West Kalimantan, Central Kalimantan, South Kalimantan and Papua). However, PRA plans to restore 2,4 ha. - PRA main programs 3R: rewetting, revegetation, and revitalization. - Rewetting is creating canal blocking, building wells to wet the peat. - Revegetation is natural enrichment and succession. - Revitalization program will be adapted to local community livelihood. Developing ‘peatland care village’ as adaptive agriculture on peatland area. 	<ul style="list-style-type: none"> - PRA is a new institution and a few people working, so during 2016, it temporary hibernate and work actively in 2017. Although the constitution creates PRA in 2016 - Because PRA does not have a branch and only national institution, it creates a team to do peatland restoration. The group consists of ad-hoc member from local agencies. It is only facilitating action on peatland restoration in local effort
2	National Disaster Management Office (NDMO)	<ul style="list-style-type: none"> - NDMO involves in 2 forest and land fires prevention programs, they are creating the guideline of community village 	<ul style="list-style-type: none"> - The forest and land fires resilience village programs focus on creating fires volunteers, providing handy talked, portable water pump, drilling well.

		<p>empowerment and establishing the forest and land fires resilience village.</p> <ul style="list-style-type: none"> - the forest and land fires resilience village regulate in technical and operational guideline of implementation. - Since 2016 there are 28 villages focusing on forest and land fires in prone areas. Moreover, in 2017 there are 40 locus village in 10 regencies. - The forest and land fires guideline is still being revised for improvement and public testing for finalizing. But this guideline used for strengthening forest fire resilience village program in 2016 	<ul style="list-style-type: none"> - Until now there is inadequate of coordination with another ministry that have similar project because of lack information
3	Ministry of Environment and Forestry (MEF)	<ul style="list-style-type: none"> - In 2017 MEF focusing on integrated patrol. This is the most effective way on prevention of forest fire. This integrated patrol becomes important program since 2016. In 2016 there are 750 vulnerable forest and land fires villages that were targeted for this patrol. In 2017, there are 871 focus villages - In 2015 there was patrol program but did not integrated with other institutions. - Integrated Patrol are from police, military, Fire Care Community Groups (Masyarakat Peduli Api/MPA), Manggala Agni, Local DMO - Another program is zero burning land clearing method (ZBLCM). It becomes annual program in years. - Moreover, MEF conduct program on market-based expertise on how to make organic fertilizer and briquettes. 	<ul style="list-style-type: none"> - Since the merger Ministry of Environment and Ministry of Forestry in 2015, there are many change in bureaucracy, especially on administration and organization structure. For example, the Manggala Agni span of control. It changes to 3 provinces merger on one control than before one operational area per province. It becomes more difficult to supervise the forest fires. - MEF does not have direct structural organization in the local area. Based on this system, local branch manages by local administration - province and regency- and monitor by Ministry of Home Affair Policy. The province and District have rights to arrange and enact permission in environmental issue. This action sometimes makes overlapping administration arrangement. - Provinces and Regencies override allocating budget for forest fire management. They

		<ul style="list-style-type: none"> - In early 2016 build canal block. But then after PRA established this program is transferred to them - In 2017, Integrated patrol gets 60 % of all the budget allocation for forest fires management. - Since 2015 national meeting coordination of forest and land fires held by the president, changing not by the ministry of Forestry. The president drives coordination more multi-sectoral. 	<p>depend on national budget to extinguish the forest fires. Sometimes announcement of local emergency on forest fires is unclear criteria. This action just politically to flow national budget to the local area.</p> <ul style="list-style-type: none"> - For years, MEF and MA socialize and promote ZBLCM but there is no coordination until now and no information which place is being targeted sectors. - the market-based expertise program obstacle is, where is the market when there are no consumers. Where to sell? How to connect with other sector that can create market? - Every ministry has their own locus. It is very difficult to inform and arrange the coordination and mapping location. - Overlapping institution task and obligation, is common in forest fire management. The President has announced to create new institution on peatland restoration, but since the merger of MEF, there is Directorate Control of Peatland Damage which has the same tasks. Finally, between PRA and this directorate share the same task and divided locus areas. - The government still try to make one map policy for all the problematic situation. - MEF cannot work alone for forest fires management because there are many complicated problematic situations and lack of resource. - Creating canal blocking system needs coordination with Ministry of Public Works, but the coordination is difficult. When this program
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			still on MEF, then let the local government work on it, MEF did not know if the local government involved the Local Public Works Office. Because MEF only subsidizes the project.
4	Ministry of Agriculture (MA)	<ul style="list-style-type: none"> - In 2009 to 2013 MA programs focus on Zero Burning Land Clearing Management (ZBLCM). These technicians are planning clear the land without burning. - In 2014-2016 the program more concentrates on create Fire Care Farmer Group (FCFG) and MA Brigade. - In 2017 there is no more creating FCFG but still focus on fires brigade as the main program. Fires brigade consist of LDMO, GAPKI (Affiliation Palm Oil Companies) and GPBI (Association Indonesian Big Company). - Moreover, MA also have program on creating retention basin. 	<ul style="list-style-type: none"> - Changing from ZBLCM to FCFG and Fires Brigade because the program wants to control forest fire not only changing community mindset. - Forest fires and haze issues only related to coordination problem. Coordination intersectoral is difficult because of ego-sectoral. - In MA, there is no coordination with other ministries on creating locus area for fires brigade and FCFG. - MA cannot handle socialization on ZBLCM only The Local Agriculture Office can do it. However, MA subsidizes the budget program but cannot control the Local Agriculture Office because of autonomy system. - The Local Agriculture Offices are not allocating budget to maintenance the previous year of forest fire program initiated by MA. So continuing budget to maintenance the project is need. - Land mapping is hard to do because of broken up of coordination. For example, there is lack of information about plantation permit in District or province to MA. It is different between plantation permit and Forest concession permit. Plantation permit is enacted by local administration (District or Province) but forest concession permit is by MEF. MA only involve in regulation and monitoring the plantation

			<ul style="list-style-type: none"> - In MA forest, land and farm fires handle by a section under sub-directorate (echelon IV). So, MA has a small portion to take part in forest land and farm fires issue.
5	National Planning Agency (NPA)	<ul style="list-style-type: none"> - NPA is the initiator for grand design on of forest, land, and farm fires prevention management with 5 focus strategies during 2017-2019. The strategies are creating incentive and disincentive economics, strengthening community roles, law enforcement, and regulation permit synchronization, developing infrastructures, reinforcing early warning response - trying to integrate all institution and ministries programs 	<ul style="list-style-type: none"> - Forest fires and haze issues are become new priority agenda since 2016, before that this not being concerned - The government try to make one map policy and integrated coordination of all sectors - Palm oil do not have relation with forest fire, it just an international market to create negative argument on oil palm market. Palm oil is not considered important for GDP and not influence much for national economic growth
6	Disaster Management Office of Riau Province (DMO Riau Province)	<ul style="list-style-type: none"> - Mostly the local DMO programs are waiting for national subsidies. - Local budget is more on socialization forest fires and creating resilience village. However, the budget was being cut because to cover minus budget spending from another local government event. 	<ul style="list-style-type: none"> - Local government is cutting budget allocation of forest fires management to cover minus funding on other sectors. So, it depends on national subsidies on forest fires management. - Canal blocking is not effective, monitoring is the most important things. For example, integrated patrol that initiates by MEF. Because it also includes controlling and socialization. - Socialization itself is not important because people know that burning is wrong, but they still keep burning. For example, the arson house stamp with a sticker 'don't burn the land'. This means the arson already know that burning is forbidden. - It is found that people who burned the forest is not local people but migrants from other location. They make a village and clear the forest like in Tesselino Park.

			<ul style="list-style-type: none"> - Monitoring is the most effective way to protect the forest. So, fire brigade is the best prevention program. - The other problem is overlapping map and regulation. Local people don't understand their position on the map. Local maps are not matching with national maps. For example, the sub-district map that doesn't realize that all their land is peatland. - Giving incentive to the farmer to protect the forest is not effective because will make them lazy.
7	Disaster Management Office of Palangkaraya City (DMO Palangka Raya City)	<ul style="list-style-type: none"> - Local DMO has a low budget on socialization because there is no budget allocation for the Local DMO from local government. Local DMO only depends on national subsidies. - Local DMO responsible for fire village team because right now there are no the Local Environment and Forestry Office. - 	<ul style="list-style-type: none"> - The problem why local DMO doesn't have enough budget because when it was established The Local Medium-Term Development Plan already enacted by the Local Parliament Office. So, there is no synchronize planning management system between legislative and executive system. - A new task delegation burdensome new institution budget. - The problem in Palangka Raya City is all the land is peatland, even residential areas. But people does not understand which is protected.
8	Summary all		<ul style="list-style-type: none"> - Overlapping program in many institutions with incoordination of locus area. - Also, inconsistent program from one institution to other - Very technical program to extinguish the fire. Because to get fast result in for the target achievement

			<ul style="list-style-type: none"> - Burning is one of local wisdom activity in society. However, it should be monitoring. Communities didn't want to burn the forest sometimes they just want to clean their land. - Local government not concern on the importance of environment protection by depending on the national subsidies - Unallocated budget for forest fires management in local area. - Overlapping institution tasks and rules. For example, on peatland management between PRA and MEF - Unshared information and lack of coordination because of ego sectoral - Changing the organization structural creates obstacle to policy improvement
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Annex IV Table list of Forest Fires Policies (Law and Regulation)

No	Policy	Enacted ministry/ institution	Year	About	Status	Particular Clauses
1	Presidential Instruction no 16/2011	President	2011	Increasing Efforts on Forest Fires management	Renew	<ul style="list-style-type: none"> • Instruction on organizing the rules and tasks of institutions and ministries from local to the national level on forest and land fires management on the prevention, response, and rehabilitation phase.
2	Presidential Instruction no 11/2015	President	2015	Increasing Efforts on Forest Fires management	active	<ul style="list-style-type: none"> • Instruction on organizing the rules and tasks of institutions and ministries from local to the national level on forest and land fires management on the prevention, response, and rehabilitation phase.
3	Standard Operational Guidelines for National Prevention of Forest and Land Fires	Ministry of Internal Affairs, Ministry of Forestry, Ministry of Agriculture, Ministry of Environment and NDMO	2014	Managing the preparedness efforts in Forest and Land Fires Management like deploys national and local resources.	draft	<ul style="list-style-type: none"> • Arranging coordination action among five core ministries (Ministry of Environment, Ministry of Forestry, Ministry of Home Affairs, Ministry of Agrarian, and NDMO) anticipation, prevention, early

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						warning, stronger the action and preliminary response. Set on three differences effort ways: suitable, feasible, and acceptable.
4	the National Standard Operational Procedure on Forest Fires Prevention	Ministry of coordinator of Economics	2017	Managing operational system on the prevention action	trilateral agreement from 2017	As a multi-sectoral guideline to deal with forest fires and haze on prevention phases
5	Ministry of Environment and Forestry Regulation no P.32/MenLHK/Setjen/Kum.1/3/2016	Ministry of environment and forestry (MEF)	2016	Management Fire Forest and Land	active	Regulated all forest fires brigades from all institution/ministry and level of governance to collaboration in integrated patrol.
6	Implementation Guidance for Disaster Resilience Village	NDMO	2017	Guideline on disaster resilience village	active	Giving direction on how to provide subsidies and expertise to disaster resilience village. There are particular clauses for forest fires resilient village
7	Technical Guidance for Disaster Resilience Village	NDMO	2017	Technical program procedure on disaster resilience village	active	Instructing how to provide subsidies and expertise to disaster resilience village. There are particular clauses for forest fires resilient village
8	Guideline on Forest and land Fires based on empowerment of the villager	NDMO	2016	It used as a guideline on forest fires disaster resilience village	active	Have been used in 2015 but still in revision process until now
9	Presidential Regulation no 1 /2016	President	2016	About establishment of Peatland Restoration Agency	active	Regulated rules, roles, and tasks of Peatland Restoration Agency

No	Policy	Enacted ministry/ institution	Year	About	Status	Particular Clauses
10	The Grand Design on Forest, Land, and Plantation Fires 2017-2019	National Planning Agency, Ministry of Environment and Forestry, Ministry of Coordination of Economics	2017	a prevention and preparedness agenda for forest fire and haze problems effort	active	Guideline on multi-sectoral planning, task, and rules on forest fires
11	Palangka Raya City Regulation no 7/2003	Palangka Raya City administration	2003	Management forest and land fires in Palangka Raya City	revoked	Permitting burning biomass if this activity is monitors by local officers
12	Law no 41/1999	Parliament	1999	Forestry	active	<p>article 49: companies are legally responsible for fires within their concession</p> <p>In Chapter V explained on rehabilitation, forest protection and nature conservation are parts of forest management in Indonesia</p> <ul style="list-style-type: none"> • Article 48 paragraph 1 explains that the government regulates forest protection in all aspects both within and outside the forest area region Forest • Responsibility for forest fire incident arranges in article 49 where forest permit holders are responsible for the occurrence of forest fires in the work area.

No	Policy	Enacted ministry/ institution	Year	About	Status	Particular Clauses
						<ul style="list-style-type: none"> Forest protection efforts (including fires) are implemented by involving communities (article 48, paragraph 5). It also states everyone is forbidden to burn forest and dispose of objects that may cause fire (art. 50 paragraph 3d, l) <p>Criminal sanctions for violators of these provisions are set out in the article 78 verses 3, 4 and 11. For those who deliberately burn the forest threatened with a maximum imprisonment of 15 years and a fine at most, 5 billion rupiahs and may also be subject to additional criminal charges. When it is done by accident (because negligence) shall be punishable.</p>
13	Government Regulation no 4/ 2001	Parliament	2001	Controlling environmental degradation and pollution about forest and land fires	Active (substitution of Law No.5 Year 1967)	Giving statement that forest and land fires should be control by the local and national government because it is degrade the environment sustainability.

No	Policy	Enacted ministry/ institution	Year	About	Status	Particular Clauses
14	Central Kalimantan Governor Regulation no 15/2010	Central Kalimantan Governor	2010	Guidance on how to open land and farm for people in Central Kalimantan (all people can open the land use but the burning activity should get written permission from authorized officers - Regent or Mayor-)	Revoked by Central Kalimantan Governor Regulation no 49/ 2015 on forbidding all burning activity	Regulating on house hold burning activity
15	Law no 32/2009	Parliament		Protection and management of environment	Active	Clause 69: it is forbidden to clear the land with burning activity however if this part of local wisdom then it is allowed burns it in maximum 2 ha per head of the family and surrounded by firebreak. Clause 108: if it, not local wisdom will be finalized with 3-10 years jail and fined 3-10 billion
16	Central Kalimantan Local regulation no 5/2003	Central Kalimantan Governor		Management controlling of forest and land fires	Active	Management controlling of forest and land fires and giving permission on clearing land for household concerns. However, in reality is forbidden by Governor regulation no 49/2015

No	Policy	Enacted ministry/ institution	Year	About	Status	Particular Clauses
17	Regulation Ministry of Environment no 10/ 2010	Ministry of Environment	2010	About the Mechanism of environmental prevention on pollution and degradation of forest and land fires	Active	Article 4: Clause 1, customary law community that is burning land with max area 2 ha per head of the family shall notify the head of the village. Clause 2, this action shall be reported to the agency that organizes government affairs. Clause 3, not allowed under conditions of rainfall below normal drought long and dry climate burning.
18	Governor of Riau Regulation no 11/ 2014	Riau Governor	2014	Management forest and land fires in Riau Province	Active	This regulation about effort on response activity on forest and land fires. Also, giving permission on how people/ house hold can use burning activity if getting permission from official. However, in reality is forbidden though the regulation still active
19	Ministry of Agriculture Regulation no 47/2014	Ministry of Agriculture	2014	Guidelines of brigade establishment and the Prevention and Control of Land and Farm Fires	Active	Regulating on land fires brigade rules and tasks
20	Guidence on Controlling Land and Plantation Fires	Ministry of Agriculture	2010	Technical Guideline on controlling land and plantation fires	renew in 2012	Providing information on how to control forest fires for individual and company. Also, information on how to clear APL 'other uses land' for plantation including zero burning technic

No	Policy	Enacted ministry/ institution	Year	About	Status	Particular Clauses
21	Pocketbook on Technique of Controlling Plantation and Land Fires	Ministry of Agriculture	2016	Technical guideline for Patrol brigade	Active	This guideline provides standard information on fires extinguisher equipment
22	Governor of Riau Regulation no 5/2015	Riau Governor	2015	Forest and Land Fires Prevention Action Plan in Riau Province	Active	This policy explains about the prevention action on forest fire management include determining protected peatland area, monitoring concession holders, assuring water management and blocking the canal to keep wet on peatland, evaluation on land use and law enforcement, strengthen institution, creating MPA or community cared-fires, giving incentive to zero burning land methods, and provide prevention budget on forest fire management