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AN INTEGRATED MANAGEMENT OF FOREST AND LAND FIRES

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INTRODUCTION

From the scientific perspective, forest fires are a horrible threat to the environment because they can reduce soil fertility, threaten biodiversity, decrease forest assets, and amplify the global warming. According to FAO, forest fires take place in almost 95 countries and damage an area of approximately 500 million hectares each year. In addition to natural factors, the human agency, especially agricultural activities, has also greatly contributed to the occurrence of forest fires. Field burning is the most ancient, most economical, and most effective land clearing method

which has been performed by a great number of farmers, breeders, and plantation owners for thousands of years.

Indonesia is one of the ten countries mostly afflicted by forest and land fires, which tend to increase in terms of intensity and the number of locations. According to WRI (World Resource Institute), forest fires in Riau Province, for example, have been identified as having the largest pattern of fire occurrences and recorded as one of the worst instances of fire incidences

since 2001. In spite of the fact that the fires were not as intense as it had been in 2014, the 2015 fires could nevertheless be considered as severe in terms of area of lands afflicted, duration of the fires, and material losses incurred. In Jambi Province, for instance, the total area of peatlands

destroyed by the fires reached 33,000 hectares within a period of mere two weeks (*Kompas*, 9 September 2015). The same was also true in Central Kalimantan Province, in which the fires cover a total area of 1,220.40 hectares.

TABLE I. NINE INDONESIAN PROVINCES WITH THE WIDEST AREA AFFLICTED BY FOREST/LAND FIRES IN 2015

No	Province	Land Area (ha)		
		2013	2014	2015
1	Jambi	199.10	3,470.61	2,217.00
2	Riau	1,077.50	6,301.10	2,643.00
3	South Sumatera	484.15	8,504.86	476.57
4	West Java	252.80	552.69	1,029.70
5	East Java	1,352.14	4,975.32	553.30
6	West Kalimantan	22.70	3,556.10	995.32
7	South Kalimantan	417.50	341.00	185.70
8	Central Kalimantan	3.10	4,022.85	1,220.40
9	North Sumatera	295.40	3,219.90	146.00

Source: Ministry of Environment and Forestry, 2015

PROBLEMS AND CHALLENGES

In spite of the fact that they also afflict many countries, from the political perspective, forest and land fires reflect the inability of Indonesia to overcome this problem, which remains prevalent, especially in Sumatera and Kalimantan Islands. This constant inability may damage Indonesia's reputation at international level. In 2015, 23 thousand hotspots were identified by Terra and Aqua satellites throughout the Indonesian archipelago, which were spread over 11 provinces. The highest number of hotspots were identified in Central Kalimantan Province (11,000 hotspots in average), which was followed by South Sumatera (10,000 hotspots in average), Riau, Papua, West Kalimantan, and Jambi

(approximately 3,000 hotspots). By the end of August 2015, more than 4,000 hotspots had been identified in those six provinces. Moreover, the number of hotspots in those 11 provinces increased as the year passed because the dry season in 2015 was relatively longer than it had been in the previous year. In general, fires start to break out and spread in June. Only in Riau Province does this "fire period" occur twice a year, which is from February to March and from July to September.

Indonesia has declared its commitment in front of all nations to reducing its greenhouse gas emission: 26% by its own effort and 41% through international aids by 2020. However, years of observation show that the intensity of forest and

land fires in Indonesia has not declined; if any, the situation has gotten worse with each passing year. Because of this, the government may not be able to achieve its own designated targets, while the prevention of forest and land fires should have been one of the most important forms of intervention which the government must make in order to reduce the greenhouse gas emission, especially the one which is generated by forest and peatland industries (Presidential Regulation No. 6 of 2011 regarding the National Action Plan for Reducing Greenhouse Gas Emission).

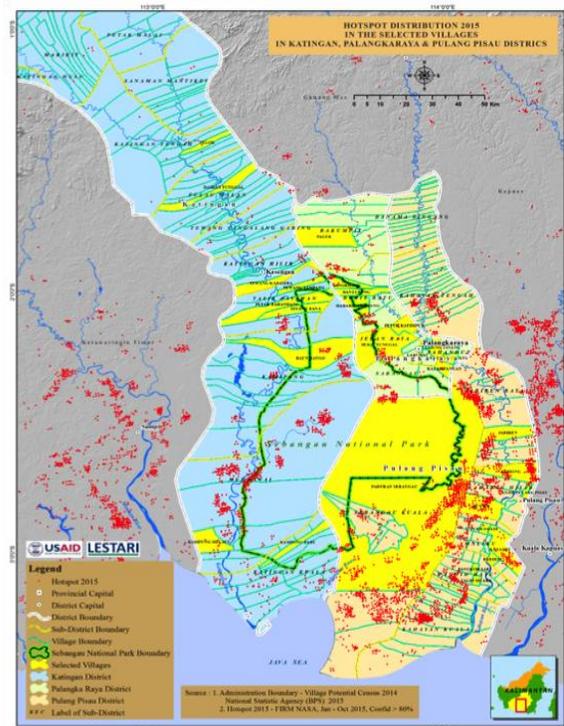
Central Kalimantan is the region with the highest intensity of forest and land fires, and the total area afflicted by the fires keeps increasing with many different hotspots spread over all of its regencies. Data from the Ministry of Environment and Forestry show that in 2015, out of 14 regencies in Central Kalimantan, 5 regencies had the largest number of hotspots and the widest total area of afflicted lands, as shown in the table below.

No	Regency	Month and Number of Hotspots in 2015		
		August	September	October
1	Kapuas	661	1,782	2,213
2	Katingan	280	803	1,540
3	East Kotawaringin	871	1,533	1,022
4	Pulang Pisau	1,224	3,803	2,507
5	Seruyan	576	1,524	1,728

Many studies of the causes of fires in Indonesia conclude that human activities are the most significant contributor to forest and land fires. This is strongly related to the local people's practices of land management which still largely relies on land burning as the most economical, easiest, and quickest method of clearing lands. Such burnings have long become the main source of fires. In addition to that, there are also various region-specific factors in forest and land fires,

with their own characteristics and patterns. For example, fire occurrences may be related to certain conflicts over land acquisition and the conversion of lands into plantations. However, the most contributing factor is the inconsistent application of land use policies. There are even regulations which explicitly *encourage* land burnings, such as the Governor of Central Kalimantan's Regulation No. 15 of 2010 which allows forest burnings, providing that a government's permit has been acquired.

Forest and land fires exert an enormous impact on the social and economic conditions of the people who live near the afflicted areas. The USAID LESTARI Project carried out a study of the impacts of forest fires in Central Kalimantan in 2015, particularly in the Katingan-Kahayan Landscape. The results show that the total area of afflicted lands within the scope of our project site reached 304,113 hectares.



Economic losses suffered by local people's rubber plantations reached 821 million rupiahs or 7.5 million rupiahs per hectare. In addition to

that, the volume of production from local fields and plantations decreased up to 40%, which suggests a significant decline of approximately 75% in local people's income. Meanwhile, health expenses incurred by asphyxia and respiratory problems, headache, diarrhoea, and various other diseases soared by 207%.

The findings of a study conducted by the USAID LESTARI Project also indicate that the land fires have also increased the poverty rate. Households with a monthly income of approximately 1 to 2 million rupiahs decreased up to 75%. This situation typically continues until the new crops start producing yields. The impact of the fires on people's health was also quite significant. For example, up to 4,377 cases of diarrhoea were found around the afflicted areas, and this number includes 1,843 cases in Katingan, 1,287 cases in Pulang Pisau, and 1,247 cases in Palangkaraya. Another important impact of the fires was a reduced quality of water.

POLICY RECOMMENDATIONS

Forest and land fires which took place in Central Kalimantan from April to October 2015 have incurred a considerable loss in social, economic, and environmental terms. A report from the Bank of Indonesia (BI) reveals a decline of 0.04 to 0.10% in the annual economic growth of Central Kalimantan Province (September, 2015).

According to the report, almost 100% of the fires were caused by human activities and the conversion of peatlands into fields and plantations. In order to prevent fires, the government issued a policy which stops the granting of concession licenses for converting peatlands into fields or plantation areas. In spite of this "no-new-license" policy, forest and land fires continues to expand because of the ineffectiveness of the current schemes of land usage and irrigation systems, which do not seem to support the policy.

In addition to these weaknesses, another contributing factor to the policy's inability to combat fires is the ineffective coordination amongst relevant institutions in terms of fire prevention and containment. In consideration of these facts, we think that the government needs to apply the **Integrated Fire Management Program** or IFM. In general, IFM consists of these following components.

I. IFM BACKGROUND IDEA

There are many resources for fire prevention available today, such as the information technology, physical tools or equipment, funds, and labour. However sophisticated, such resources will not produce any effective results if there is no good coordination amongst all relevant stakeholders. This situation is aggravated by the fact that the available preventive measures are not always seriously implemented. Because of this, a holistic approach is required to manage fires in which all parties concerned (government institutions, the private sector, and the local community) must be able to work together and support each other at all stages of a fire management initiative: fire prevention, fire containment, and recovery. Such cooperation is essential, considering that (a) fire, due to its nature, cannot be managed by a single body or landowner and (b) fire management is the collective responsibility of all land managers, both the public and the private sectors, as well as both small-scale and and large-scale landowners.

2. IFM PRINCIPLES

The success of IFM application depends on two factors. *Firstly*, all relevant stakeholders must be willing to work together in all projects dedicated to fire prevention and containment in a cooperative and collaborative way. *Secondly*, a task force or committee must be formed to monitor and gather all resources which can promote a stronger collaboration. It must be

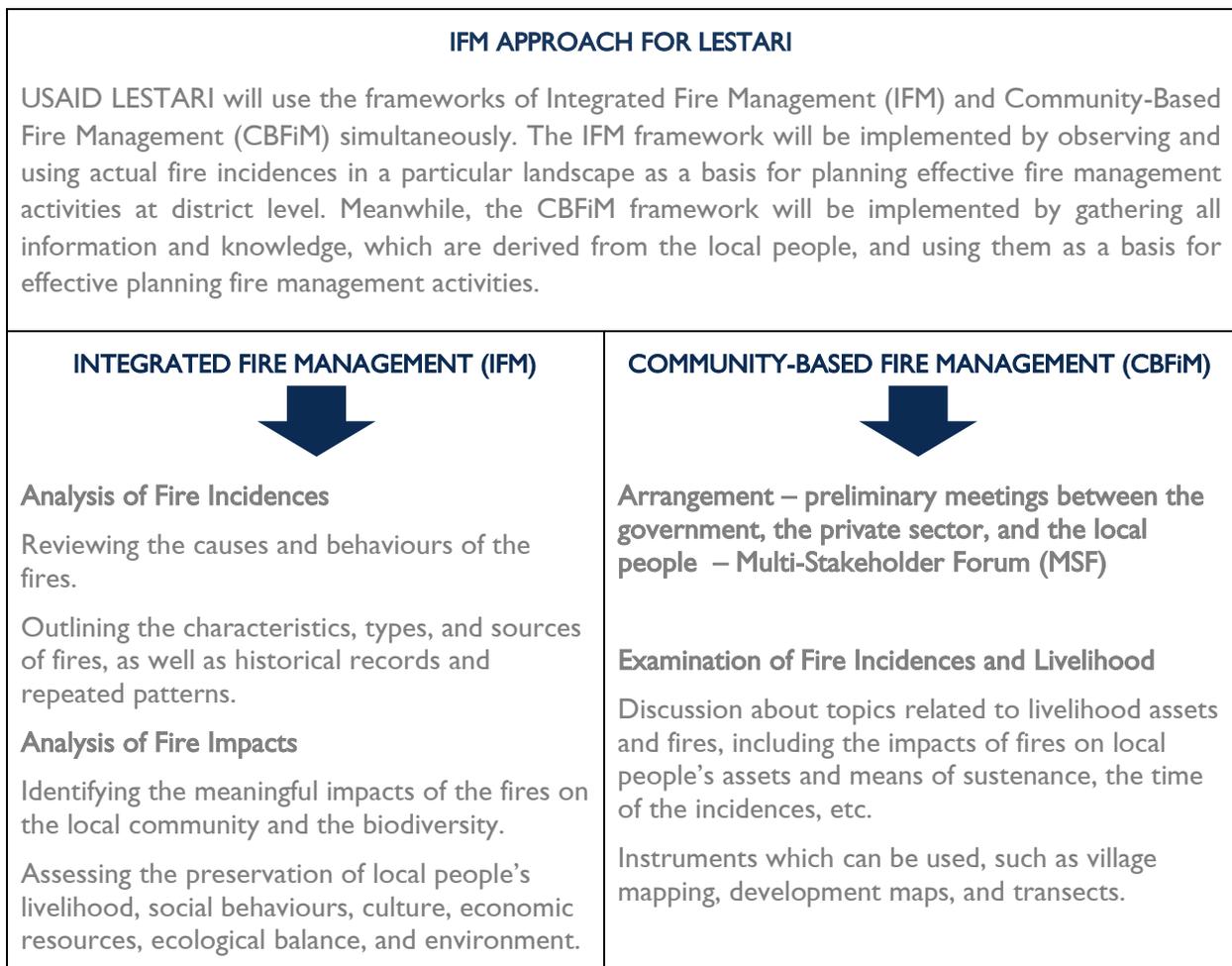
emphasized that the responsibility of fire management must not be borne by only a single institution, be it governmental, private, or community-based, but distributed proportionately amongst all of the stakeholders according to their own capacity and resources.

3. THE RELATIONSHIP BETWEEN IFM AND COMMUNITY PARTICIPATION

The members of local community are those most negatively affected by the fires, as well as those most knowledgeable about the sources or causes of the fires. Besides that, the local or customary community also possesses the necessary knowledge, skills, and institutions which can play

an important role in controlling fires. Because of this, it is imperative that any policies on fire management involve the local community, starting from the prevention stage to the recovery stage. In the past, the local people tend to simply ignore the fires and the afflicted areas, thinking that fire management and containment are the government’s responsibility. Greater involvement of the local people helps to ward off such apathy.

In operational terms, the relationship between the concepts of integrated fire management and community participation is outlined in this following schema.



<p>Analysis of Context</p> <p>Analysing the current and the planned patterns of land use; predicting future outcomes and the consequences of changes.</p>	<p>Analysis of susceptibility and resistance in terms of assets and means of sustenance</p>
<p>Stages in IFM strategies and plan</p> <ul style="list-style-type: none"> • Prevention • Preparation • Measures and actions • Recovery 	<p>Community-Based Action Plan</p> <p>Implementation of the fire prevention program at local level in conjunction with the regional government’s IFM plan as a joint initiative.</p>
<p>Approval and Budgeting</p> <p>These include supports from the government or the private sector in the forms of funds and relevant resources for implementing the action plan.</p>	<p>Onsite dissemination and preparation of the work plan which can also encourage participation and develop sense of belonging amongst the members of the local community to the action.</p>

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