Incident Command System in Fire Management

=Indonesia Report=

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INTRODUCTION

➢Scientific evidence show that forest fire in Indonesia is not new :

>>repeated fire had been occurred between 15510 BC and 1650 AD

>> Big forest fire for the first time occurred in East Kalimantan alone in the year 1982/1983 where 3.6 million ha of forest and land burnt.

>>The biggest fire at the 20th century in Indonesia occurred in the year 1997/1998 where 10 million of forest and land burnt.

-Economic lost predicted around US$ 10 Billion

-20-70 Million peoples affected (40,000 peoples hospitalized)

-527 persons death

-most of the fire rooted from arson during dry seasons:

>>land preparation of using fire for oil palm, forestry plantation done by companies and local peoples.

CAUSES OF FOREST FIRES

Land Conversion

- The main factors causing increased combustibility are wasteful logging and forest clearance for agricultural crops, estate crops, and forest plantations leading to build up of dry materials.
- Observation made during the fires and haze of 1997-1998 and previous cases have indicated that the intensity of the fire in logged areas was directly related to the intensity of logging.
- The land clearance and preparation activities influence the volume and condition of the fuel load, serve as the ignition source, and often cause the spread of fire.

Drought Condition

>The first is recurrent ENSO conditions, bringing extraordinarily dry weather to the region (and in the process, creating conditions ideals for disposing of biomass residue by open burning).

<< Data on rainfall in Bali, Java, Kalimantan, Sulawesi, and Sumatra, since the early 1900s show that prolonged drought occurred 17 times during the century, of which 11 corresponded with an *El Nino*.

<< When the dry season in Indonesia occurs at the same time as an *El Nino* ,the result is a prolonged drought, which extends from June to November and can continue until May of the following year.

➢**The second weather factor is that in geographic areas that lie close to the equator, there is relatively little wind.**

➢**In Indonesia, a prolonged drought as a consequence of an *El Nino* has occurred fire times over the last 30 years.**

SOURCES OF FIRES

- ***Illegal Shifting Cultivators***

<< *By burning they will got a free mineral from ash that rich of organic-carbon, phosphorus, magnesium, potassium, and sodium. The nutritional value increase temporarily after burning, however, because when rainy comes, it will be leached and decline*

<< *With the intention of planting crops at the onset of the rainy season in November and December, they usually start clearing and then burning their fields during the second half of the dry or less rainy period*

<< *one of the reasons why shifting cultivators activity become environmental problem is because of illegal shifting cultivator*

<< *They are not the real shifting cultivators but they are a new comer from other cities or region who never did shifting cultivation and without any experienced*

Forest and Oil palm plantation

- It was proved that the sources of fires were mostly from land preparation using fire for forest plantation and estate crops
- The use of fire is officially forbidden although every company uses it, because this is the only viable and economic method of reducing the huge biomass
- The government has licensed and stimulated many companies to develop new industrial plantations of rubber, oil palm and pulpwood, as well as transmigration sites.
- These activities require the clearing of hundreds of thousands of hectares of land, and fires are their cheapest option.

Logging

- By opening up the forest canopy, logging activities have greatly stimulated the growth and accumulation of plant biomass near the ground. Additional dead biomass is also provided by deformed logs and branches left behind by loggers
- When logging companies enter into a new area, they automatically bring with them the fire problem.
- They are opening up the forests and making them more susceptible to forest fires through road, logging waste, bulldozing through the stands and opening up the canopy and finally bringing in people as the source of fire

RECENTLY FIRE SITUATION

No.	Province	Number of hotspot detected		
		2005	**2006**	**%**
1	North Sumatra	3,380	3,581	-6.50
2	Riau	22,630	35,426	56.54
3	Jambi	1,208	6,948	475.17
4	South Sumatra	1,182	21,734	1,738.75
5	West Kalimantan	3,022	29,266	864.43
6	Central Kalimantan	3,147	40,897	1,199.56
7	South Kalimantan	758	6,469	753.43
8	South Sulawesi	133	1,201	803.01

> Fire incident in the year 2006 seems anti climax of fire occurred following 1997/1998 fires which burnt more than 10 million ha of forest and land.

➢To fight the fires, two BE-200 from Russian support suppression activities in Sumatra and Kalimantan and it takes around 100 days,

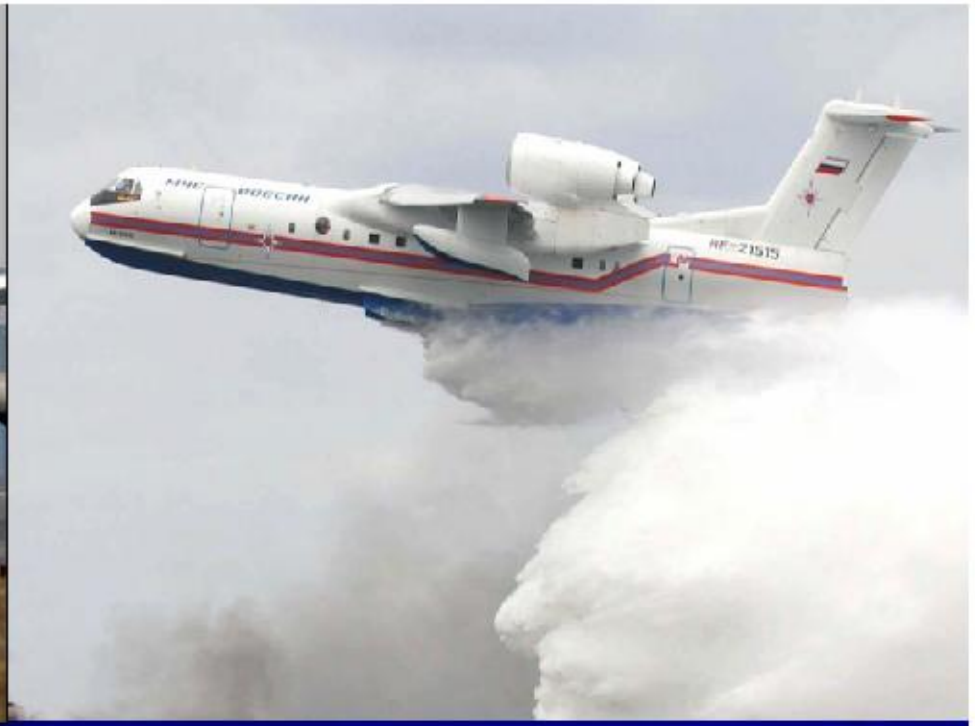
➢ helicopters, other heavy equipment provided by Manggala Agni fire brigade which separated in 30 station at fire risk provinces (under controlled by Department of Forestry), companies (oil palm and forestry plantation)

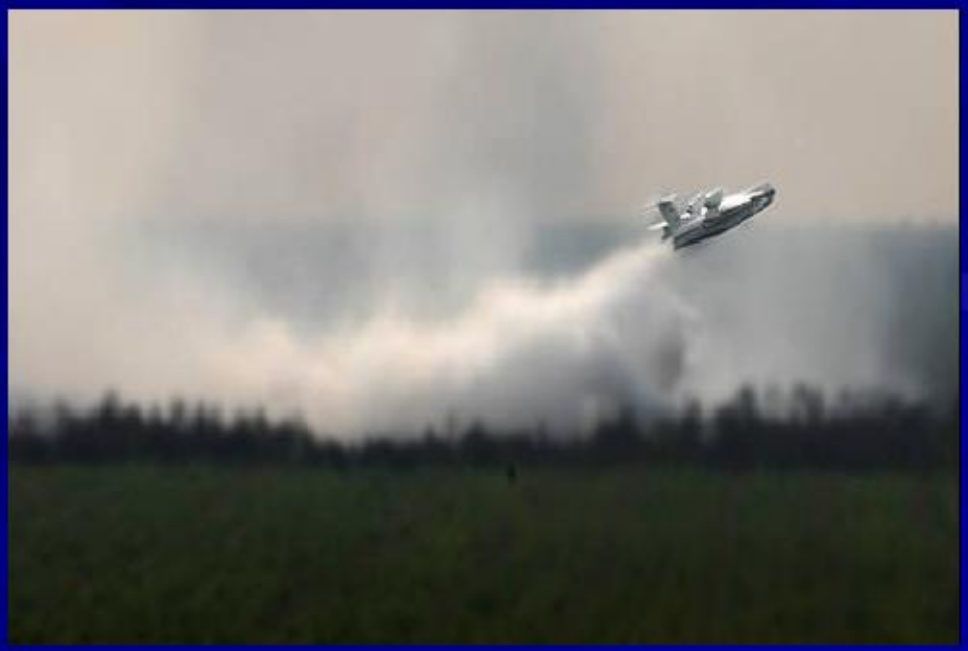
➢Suppression activities led by Coordinator Ministry for Welfare because the fire effects worsen and out of control and transboundary haze pollution occurred.

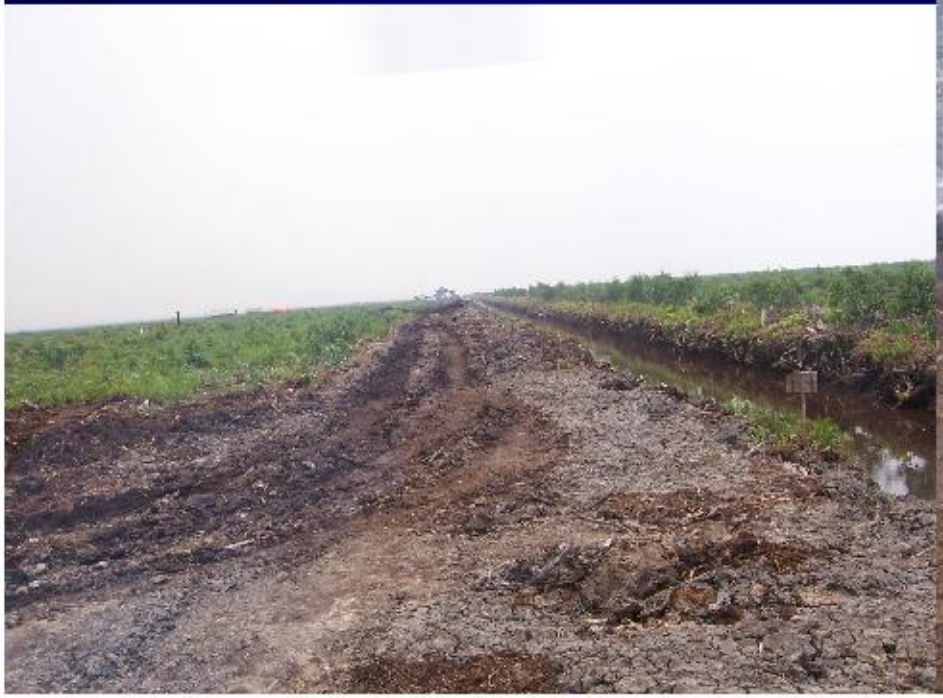
➢This command system was also based on the standard procedure regarding the fire out of control and trandsboundary haze pollution occurred then the suppression activities take over by National Disaster Management Agency.

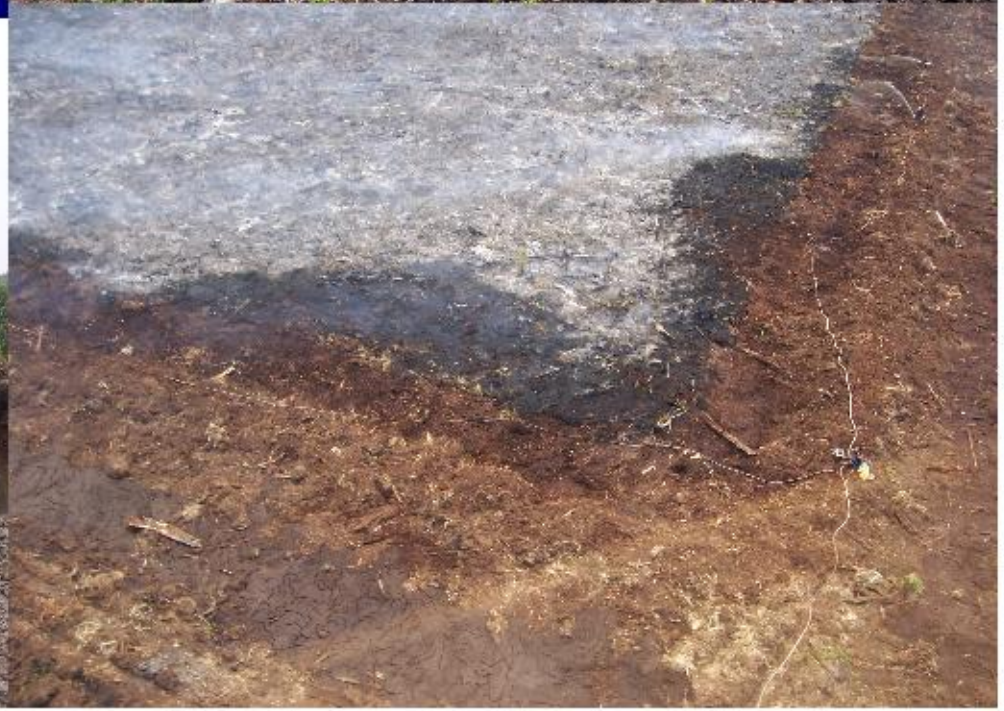
➢Department of forestry take responsibility for suppression equipment, human resource, technique and connecting with international community on fire

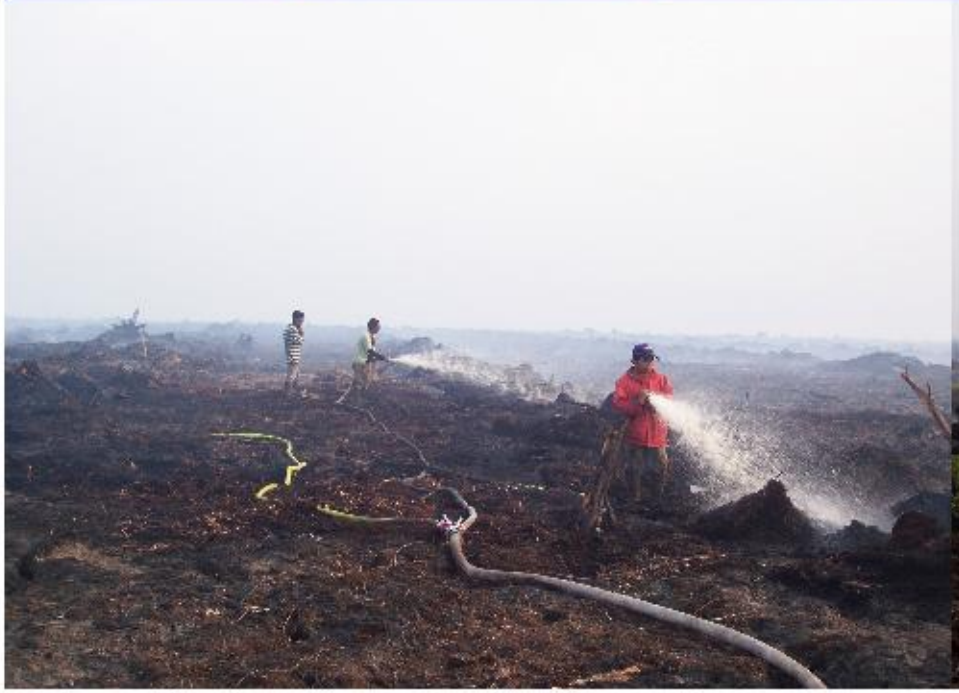
➢ while Ministry for Environment takes responsibility for advocating and environmental evaluation.

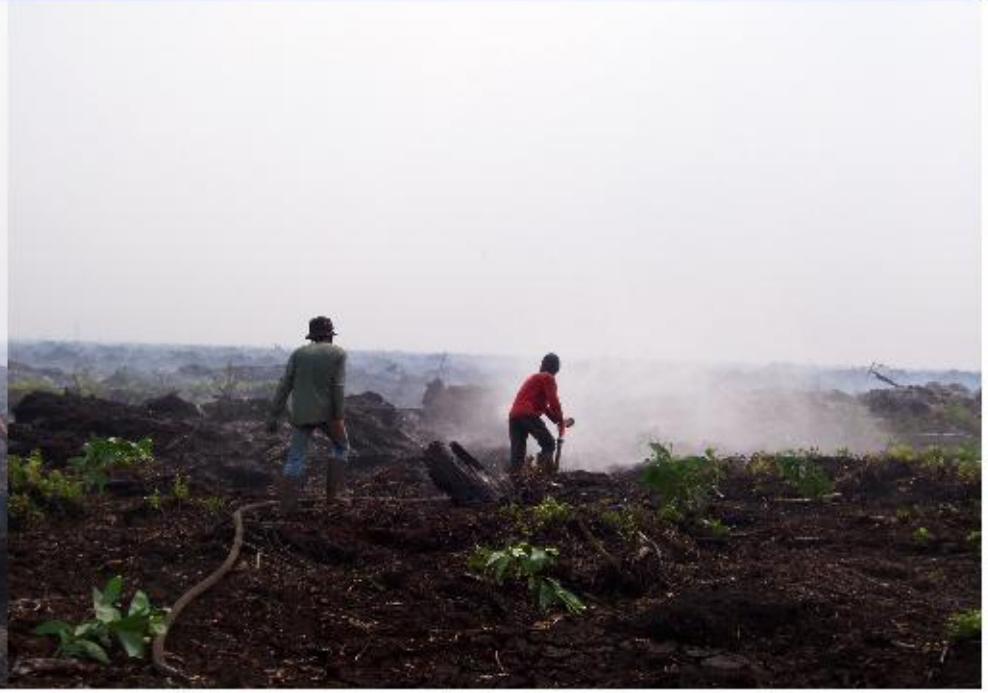










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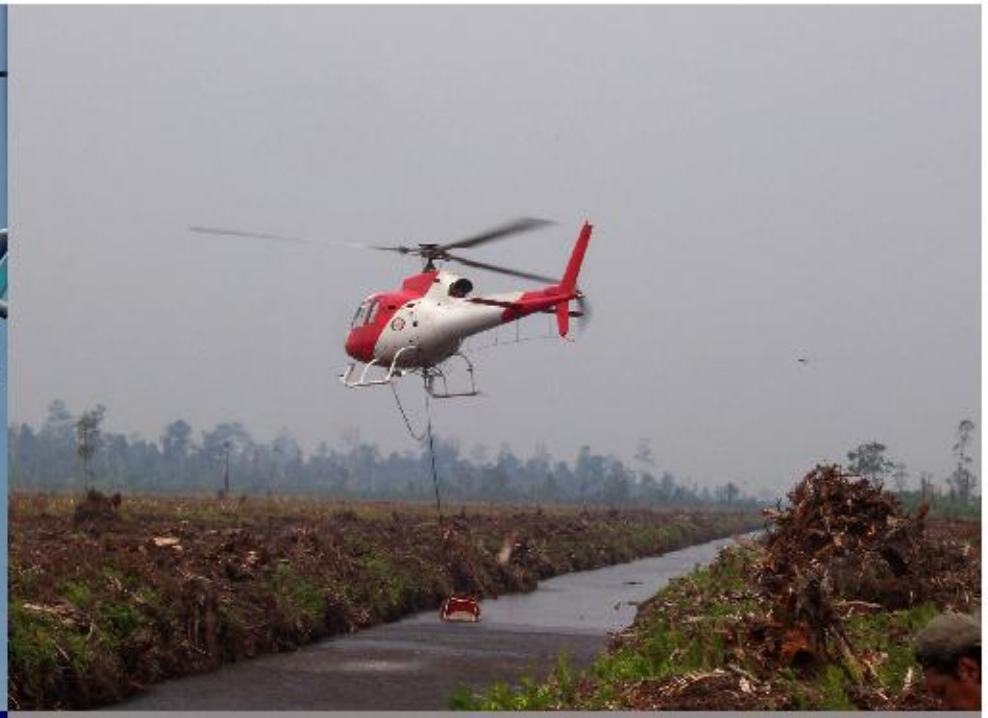

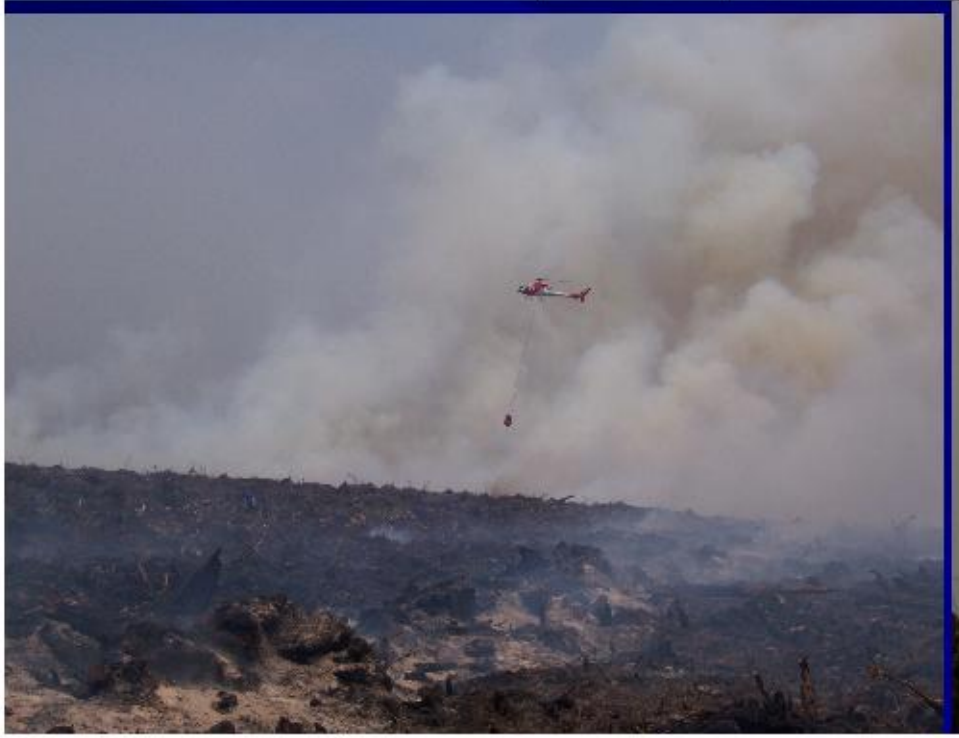

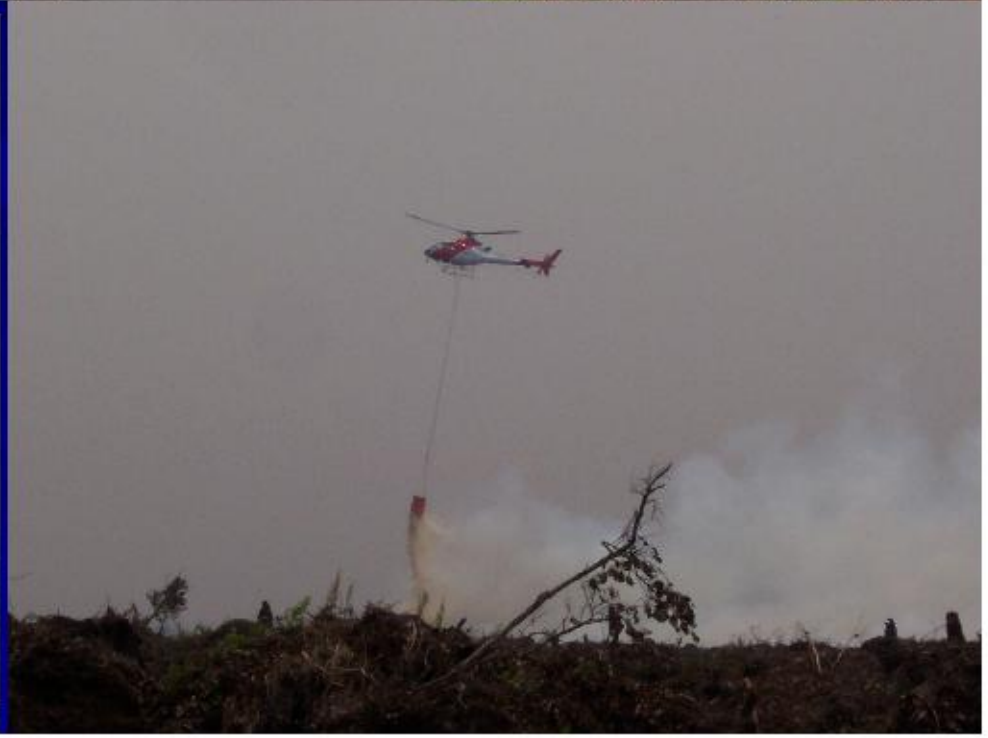

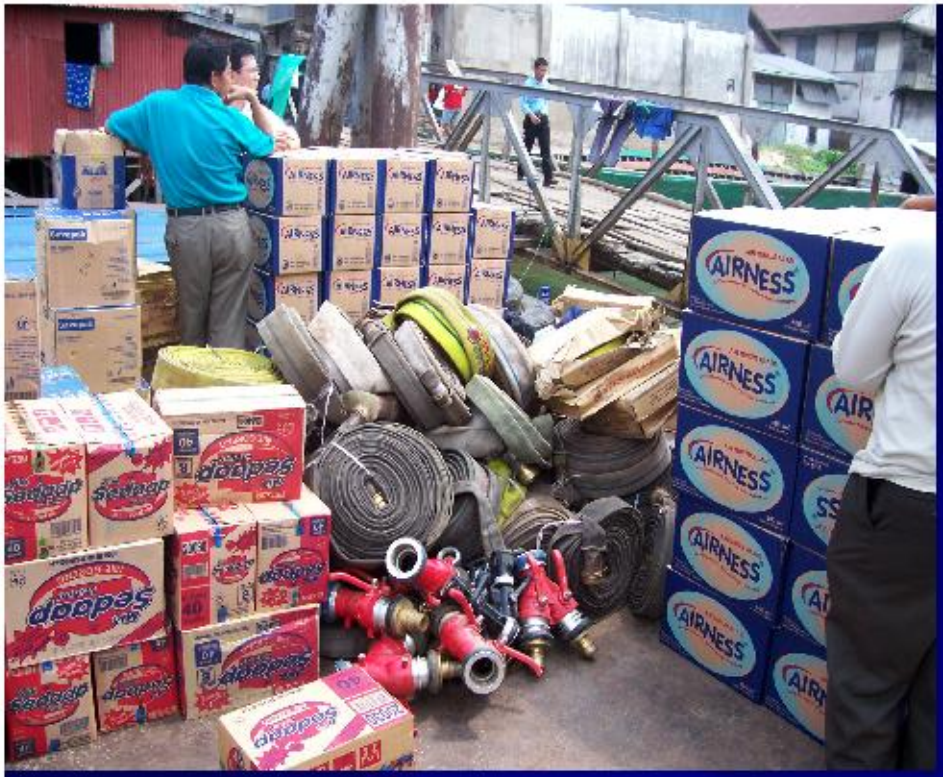
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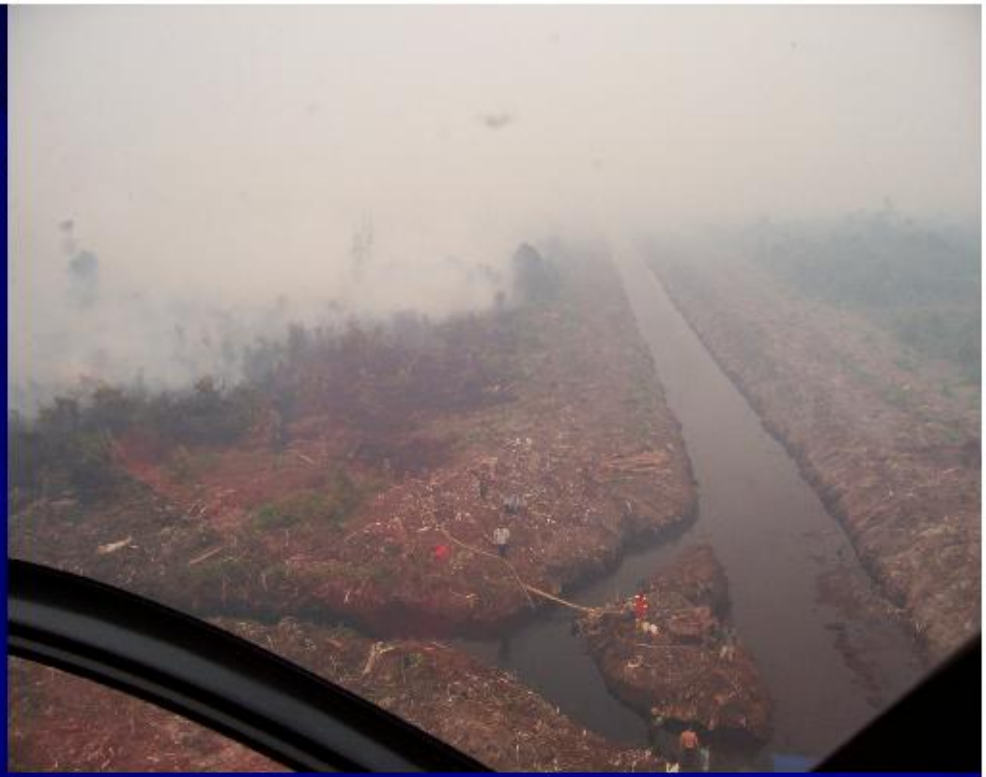

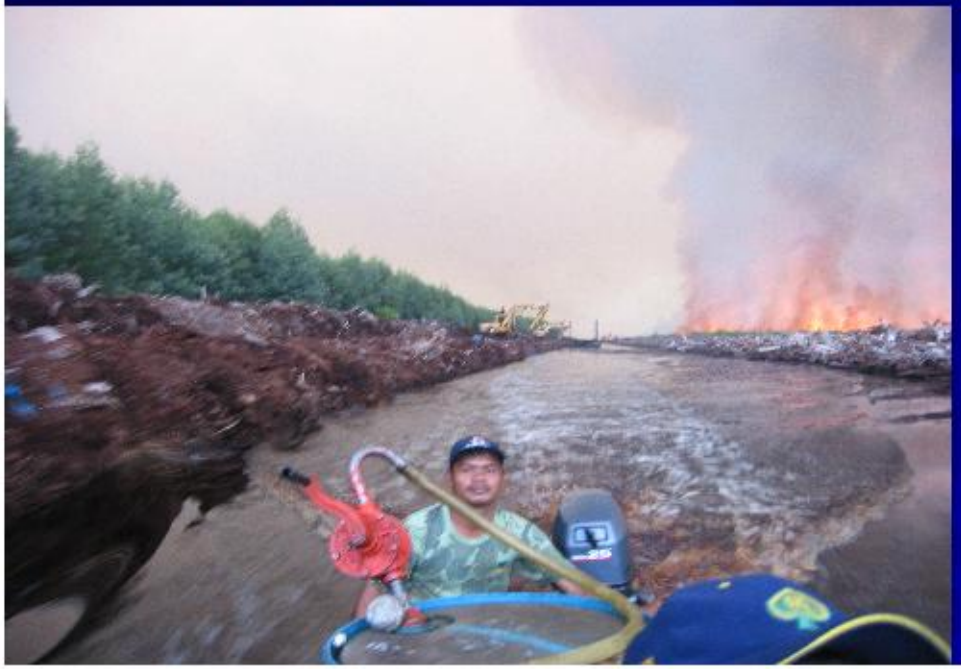

Number of hotspot detected during 2006 – 2007 taken by Department of Forestry (KNLH, 2008)

No.	Province	Number of hotspot detected		
		2006	2007	%
1	**North Sumatra**	3,581	936	-73.86
2	**Riau**	11,526	4,169	-63.83
3	**Jambi**	6,948	3,120	-55.09
4	**South Sumatra**	21,734	5,182	-76.16
5	**West Kalimantan**	29,266	7,561	-74.16
6	**Central Kalimantan**	40,897	4,800	-88.26
7	**South Kalimantan**	6,469	928	-85.65
8	**South Sulawesi**	1,201	551	-54.21
	Average			**-71.39**

Number of hotspot detected during 2006 – 2007 taken by ASMC Singapore (KNLH, 2008)

No.	Province	Number of hotspot detected		
		2006	2007	%
A	**Sumatra Island**			
1	**Bangka Belitung**	953	477	-49.95
2	**Bengkulu**	233	118	-49.36
3	**Nanggroe Aceh Darussalam**	336	172	-48.81
4	**Jambi**	2,617	1,310	-49.94
5	**Riau Island**	67	34	-49.25
6	**Lampung**	947	474	-49.95
7	**Riau**	4,654	2,361	-49.27
8	**West Sumatra**	361	181	-49.86
9	**South Sumatra**	5,057	2,532	-49.93
10	**North Sumatra**	1,015	512	-49.56
	Total Sumatra	16,240	8,171	**-49.69**

B	**Kalimantan**			
1	**West Kalimantan**	6,197	3,103	-49.93
2	**South Kalimantan**	1,079	540	-49.95
3	**Central Kalimantan**	5,580	2,801	-49.80
4	**East Kalimantan**	2,842	1,430	-49.68
	Total Kalimantan	15,698	7,874	**-49.76**
	Total A+B	31,938	16,045	

Number of hotspot detected during January-December 2007 according to land use (KNLH, 2008)

No.	Province	Forest concession	Forest plantation	Estate crop	Community	Total
A	**Sumatra Island**					
1	**Bangka Belitung**	0	0	0	477	477
2	**Bengkulu**	2	0	13	103	118
3	**Nanggroe Aceh Darussalam**	7	15	23	127	172
4	**Jambi**	72	172	119	947	1,310
5	**Riau Island**	0	0	2	32	34
6	**Lampung**	0	99	35	340	474
7	**Riau**	323	422	698	918	2,361
8	**West Sumatra**	8	1	32	140	181
9	**South Sumatra**	12	172	136	2,212	2,512
10	**North Sumatra**	6	23	34	439	512
	Total Sumatra	440	904	1,092	5,735	8,171

B	**Kalimantan**					
1	**West Kalimantan**	350	271	675	1,807	3,103
2	**South Kalimantan**	74	51	36	379	540
3	**Central Kalimantan**	598	91	430	1,682	2,801
4	**East Kalimantan**	229	113	411	677	1,430
	Total Kalimantan	1,251	526	1,552	4,545	7,874
	Total A+B	1,691	1,430	2,644	10,280	16,045
	%	10.54	8.91	16.48	64.07	100

Number of hotspot detected during January-December 2007 in peat land compared to non peat area (KNLH, 2008)

No	Province	**Peat land**	**Mineral soil**	**Number**	**%**
A	Sumatra Island				
1	Bangka Belitung	31	446	477	5.84
2	Bengkulu	3	115	118	1.44
3	Nanggroe Aceh Darussalam	44	128	172	2.11
4	Jambi	109	1,201	1,310	16.03
5	Riau Island	6	28	34	0.42
6	Lampung	73	401	474	5.80
7	Riau	1,242	1,119	2,361	28.89
8	West Sumatra	41	140	181	2.22
9	South Sumatra	580	1,952	2,532	30.99
10	North Sumatra	176	336	512	6.27
	Total Sumatra	**2,036**	**5,866**	**8,171**	

B	**Kalimantan**				
1	**West Kalimantan**	420	2,683	3,103	39.41
2	**South Kalimantan**	75	465	540	6.86
3	**Central Kalimantan**	293	2,008	2,801	35.57
4	**East Kalimantan**	124	1,306	1,430	18.16
	Total Kalimantan	**912**	**6,962**	**7,874**	
	Total A+B	**3,127**	**12,828**	**16,045**	
	%	**20.05**	**79.95**	**100**	

EFFORTS TO REDUCE THE FIRES

Law

- **Environmental Law, 1997**
- **Forestry Law, 1999**
- **Estate Crops Law, 2004**
- **Government Law, 2001 (Fire)**
- **Government Law, 2004 (Forest Protection)**

>>>>> More than 50 Cases on fire had been executed

Technical

- Forest fire brigade "Manggala Agni" Under Ministry of Forestry
- This fire brigade is supplied with forest fire equipment including hand tools, water pumps, mechanical tools, communication and transportation facilities, logistic and medical.

Education

- **Community Development (CD) program**
- The training could be given to the company staff, local peoples

CONCLUSION

- Most of the hotspot detected during January-December 2007 trend to decreased significantly (71.39 %) and it was located in the area belongs to the community that was about 64.07 % which means that the sources of the fire significantly different compared to the forest and fire incidents before.

- This situation means that the community base fire management should be put in the first priority and without any clear command during fire incident will increase the hotspot as it occurred before.