

THE 2015 LAND AND FOREST FIRE IN INDONESIA, THE EFFORT TO OVERCOME AND POLICY TO PREVENT ITS OCCURRENCE IN THE FUTURE



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Republic of Indonesia
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I. INTRODUCTION

A. The enormous land and forest fire in Indonesia:

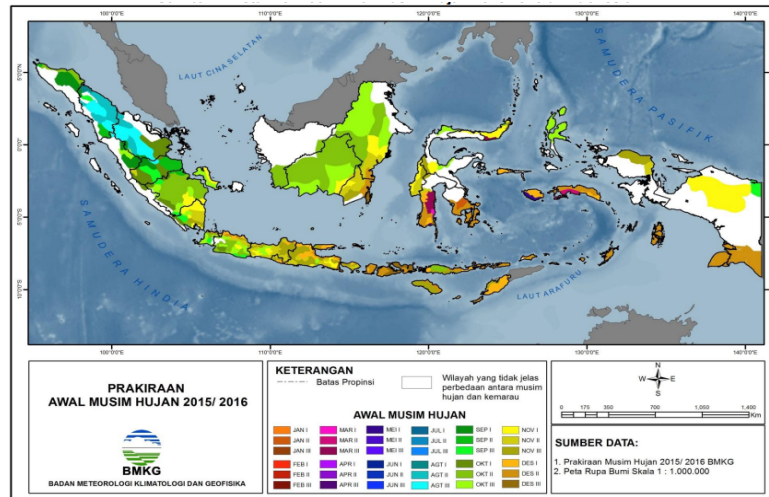
- in 1982/1983, nearly 3.6 million ha of tropical rain forest in East Kalimantan was burnt;
- In 1997/1998, during which El-Nino phenomenon re-occurred, total burnt area in Indonesia was recorded as much as 11,698,379 ha;
- In 2015, lengthy dry season and El-Nino phenomenon had triggered land and forest fire in Indonesia, total burnt area in Sumatera and Kalimantan had reached 1,697,002 ha;

B. The number of hotspots in Indonesia until 5 November 2015 were 21,633 spots (NOAA-18);

C. Fire in peat land, besides damaging the peat ecosystem, also produces haze that could reach across the neighboring country ➡ transboundary haze pollution.

II. WEATHER AND EL NINO CONDITION

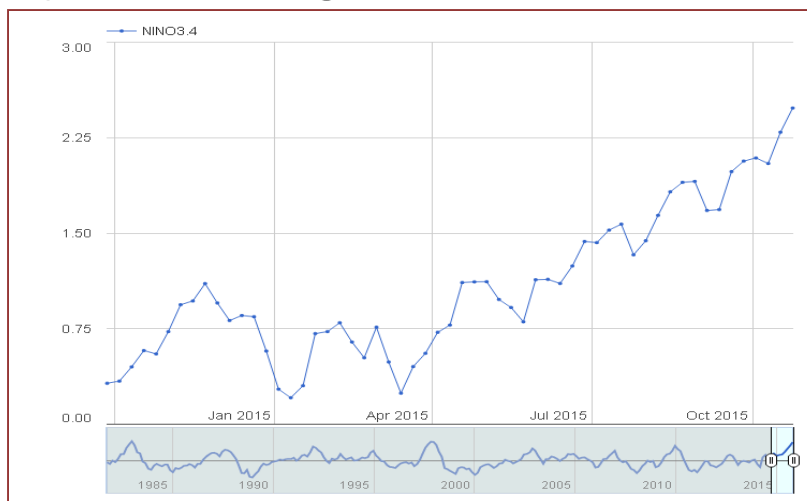
A. Weather



Source: BMKG, 2015

Most part of Indonesia will start to have rainy season in October and November

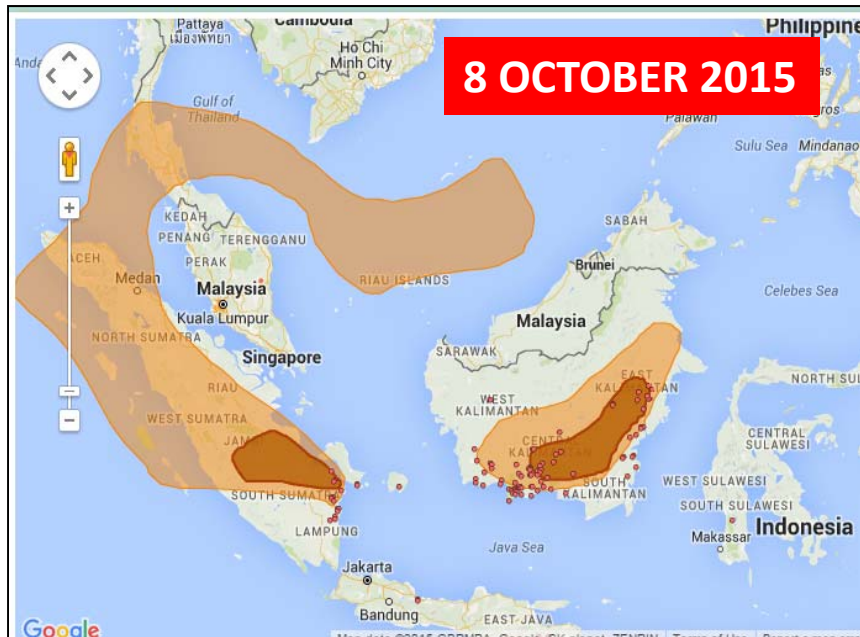
B. El- Nino



Source: BMKG, 2015

- Monthly rainfall in most of Indonesia had been decreasing starting from June 2015 as the beginning of dry season
- BMKG (*Indonesian Agency for Meteorology, Climatology and Geophysics*) predicted that El Nino intensity could still likely to strengthen until the end of 2015
- it was predicted that drought condition resulted from El Nino will not continue pass the beginning of 2016.

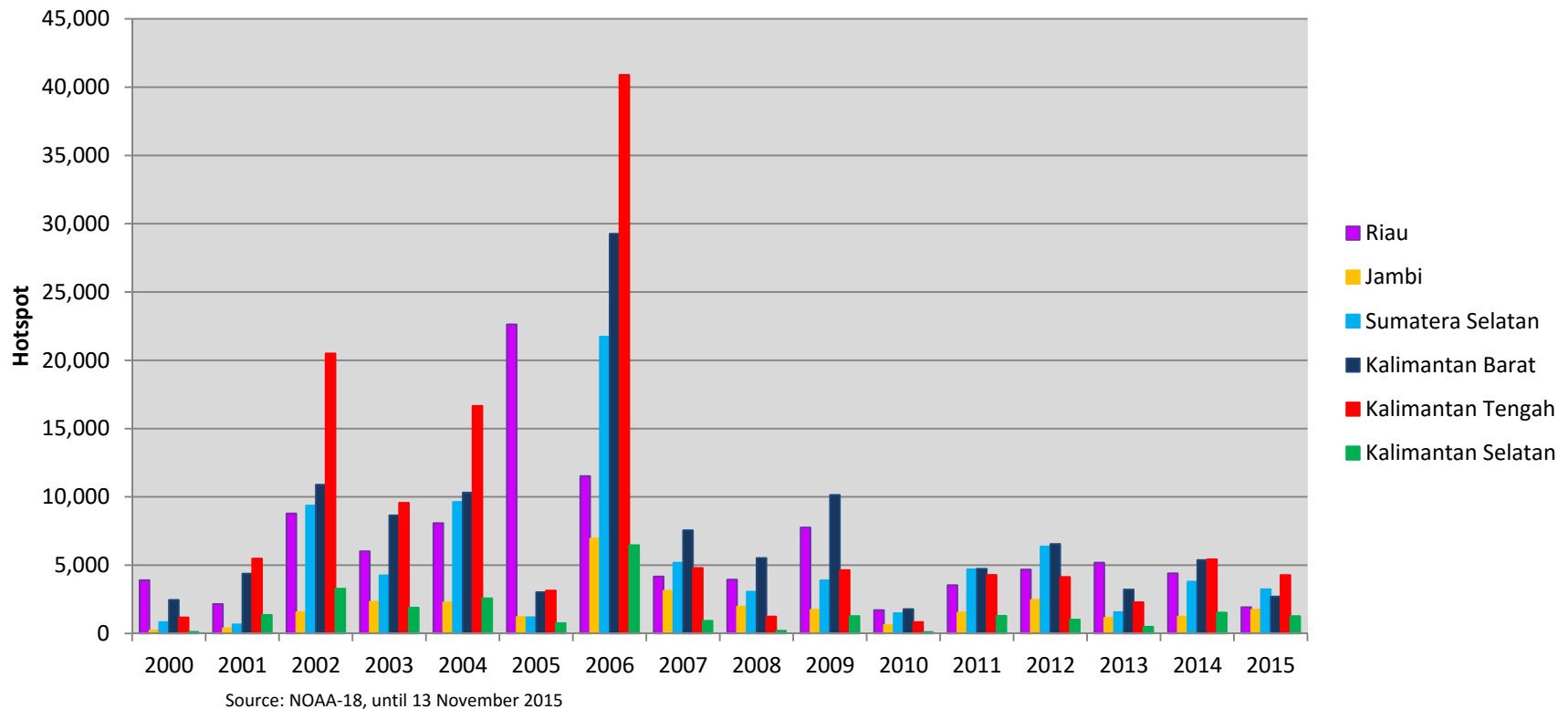
C. Haze Trajectory



(source: asmc.asean.org)

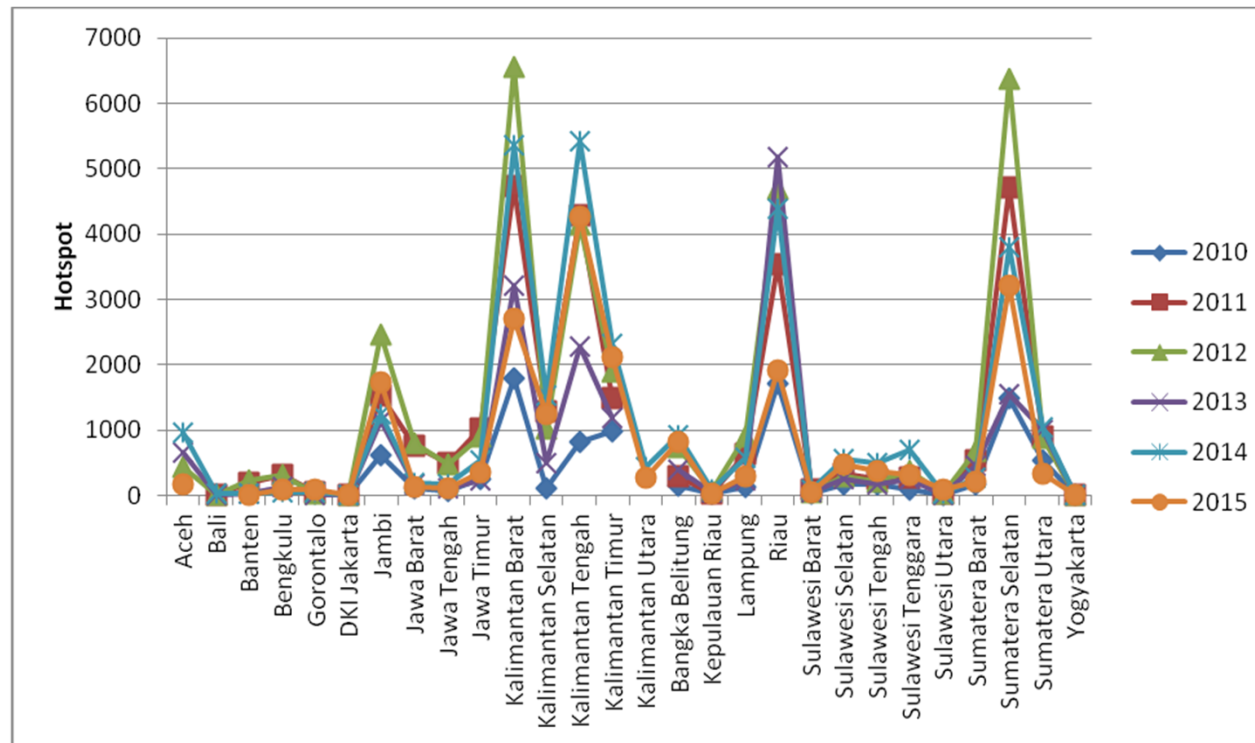
III. LAND AND FOREST FIRE CONDITION IN FIRE-PRONE PROVINCES IN 2015

A. Hotspot Condition in 6 fire prone provinces (2010-2015)



- The graph showed that the highest number of hotspots occurred in 2006

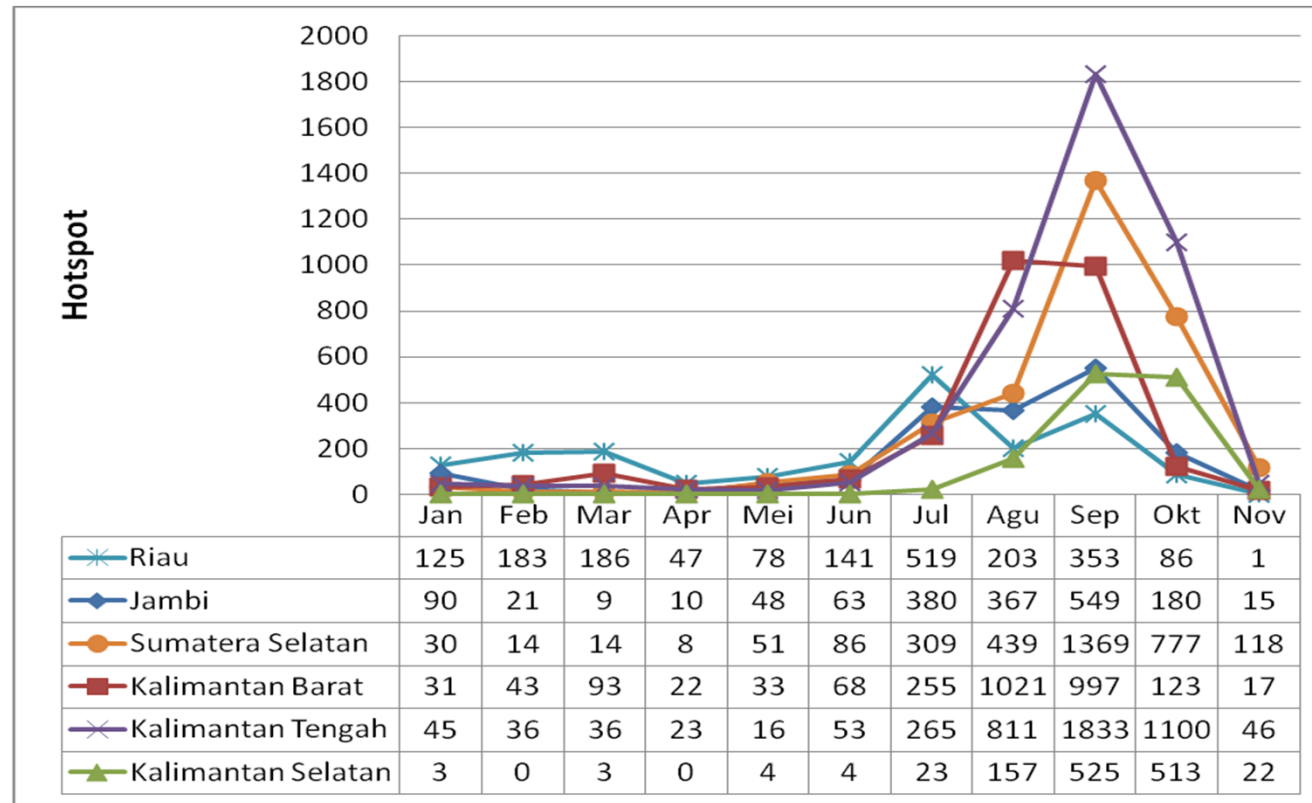
B. Hotspot Condition in Indonesia (2010-2015)



Source: NOAA-18, until 5 November 2015

- The graph showed that there were 6 provinces with high number of hotspots, consecutively Central Kalimantan, South Sumatra, West Kalimantan, Riau, Jambi, and South Kalimantan.
- The six fire-prone provinces should receive more attention in 2015 since the provinces also covered by peat land, which are more prone to fire and has the potential to cause haze disaster

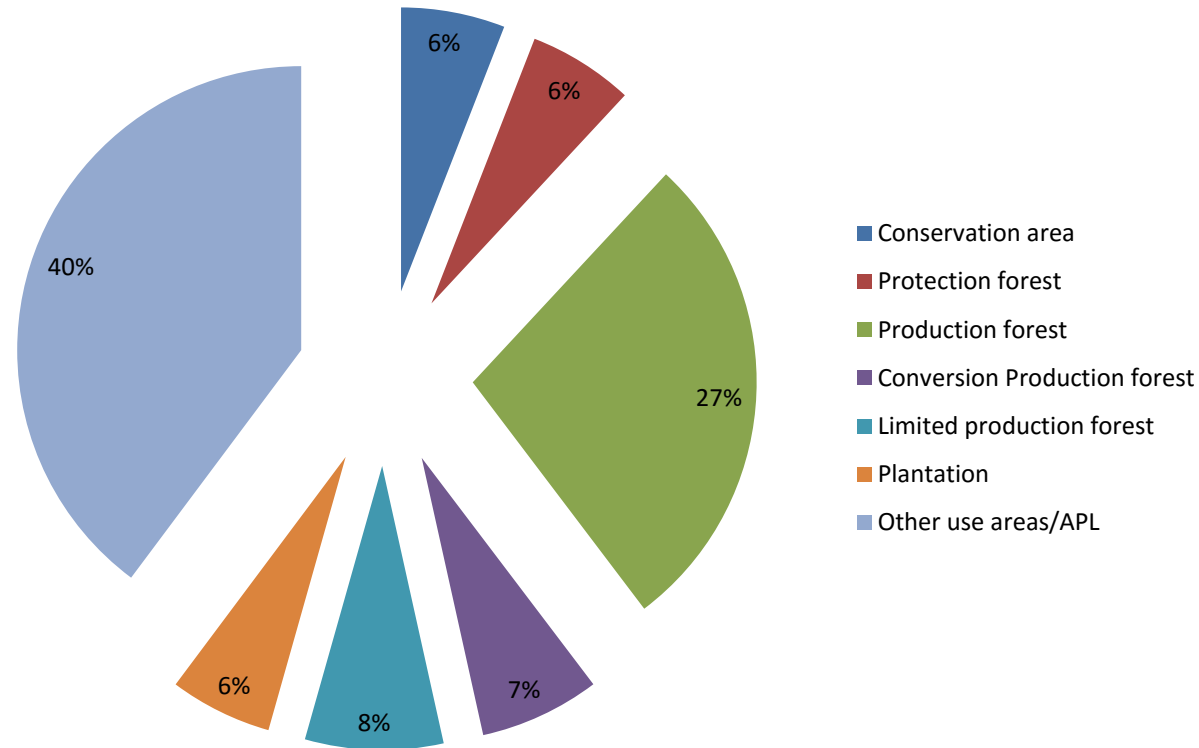
C. Hotspot Condition in Six Fire-Prone Provinces in 2015



Source: NOAA-18, until 5 November 2015

- In the beginning of the year (January – March), there had been an increase of hotspot number in Riau Province, while there were relatively small number of hotspot in other provinces.
- The increase of hotspot number at 6 fire-prone provinces occurred in July – October 2015, which means that the increase of hotspot number in Riau Province occurred in two periods of time in a year.

D. Hotspot based on land use in Indonesia (2015)



The highest number of hotspot is recorded in other use areas/APL

IV. EFFORTS HAS BEEN CONDUCTED

A. Prevention

The following are several prevention efforts that has been conducted:

A.1. Coordination Meeting

(Work meeting on Parties, South Sumatera, West Kalimantan, Jambi, and Riau during January – March 2015)



A.2. Utilization of Social Media and Website Monitoring Hotspot

1. Establishment of web based forest and land fires early warning system in Ministry of Environment and Forestry (SiPongi).

- Website : *sipongi.menlhk.go.id* (it was launched on March 12th, 2015) and Karhutla Monitoring Sistem/KMS (Land and Forest Fire Monitoring system)
- SipongiKMS is an integrated system (Sipongi from Ministry of Environment and Forestry and KMS from BP REDD/National REDD Agency) which provides prevention information (near real time) regarding land and forest fire.
- Data taken from NASA that uses the MODIS instrument (Moderate Resolution Imaging Spectroradiometer) installed on the Terra satellite (EOS.AM)
- Data in KMS is updated every 1 hour, where every hour the displayed data is an aggregate of data over the past 24 hours.
- KMS data in reference to Western Indonesia Time.
- KMS can be accessed from any source which is connected to the Internet.
- New features from KMS: 24 hours monitoring, weekly dashboard, annual tabulation and graph
- Designed to be accessed using smart phone and tablets

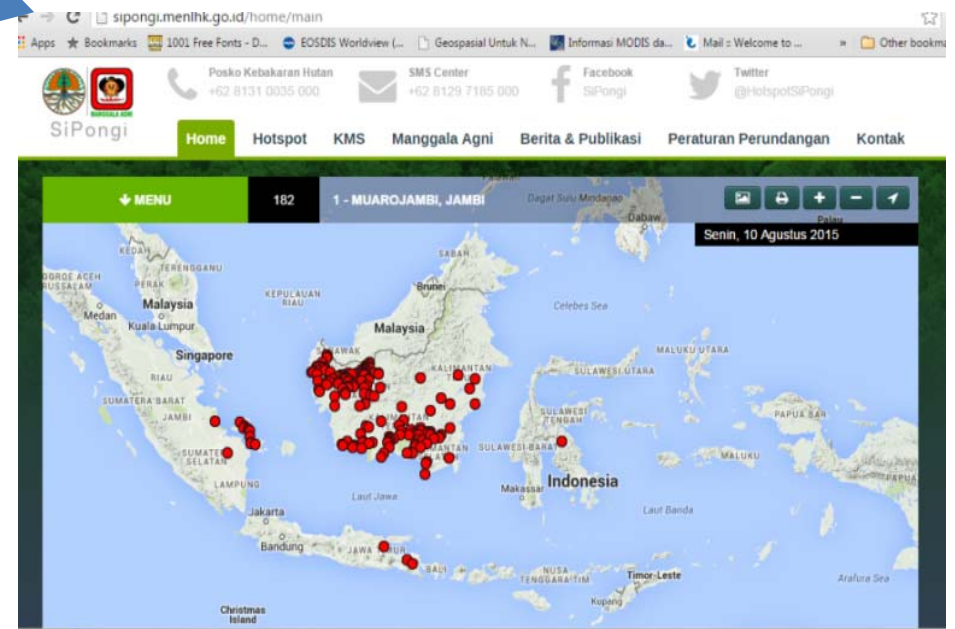
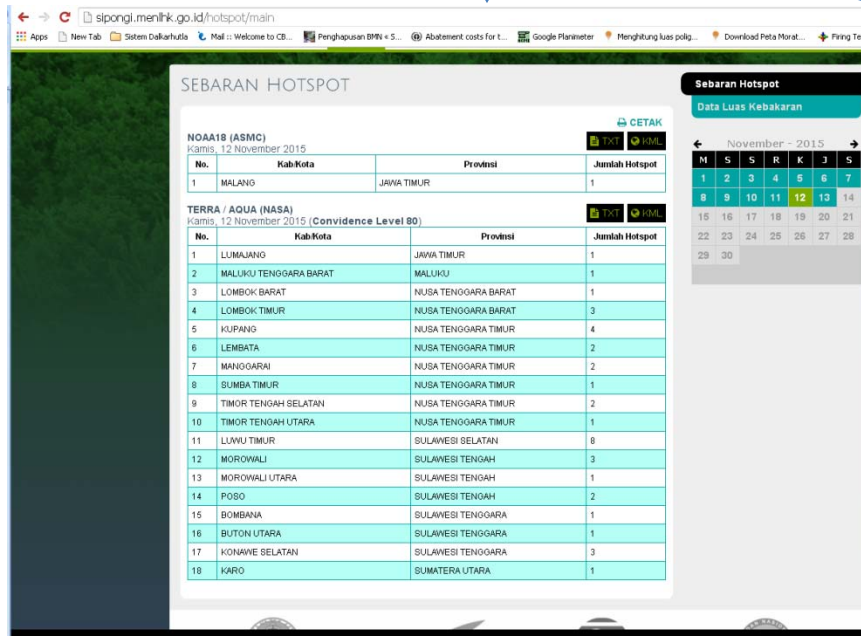
sipongi.menlhk.go.id

Continue... (prevention)

Launched by Minister of
Environment and Forestry



Features of sipongi



2. Dissemination of information regarding land and forest fire, through:

- Facebook, Whatsapp, Twitter (@HotspotSiPongi),
- SMS Center (+62 8129 7185 000) and Commando Call Center (+62 8131 0035 000)
- Mailing List of SiPongi (sipongi@yahoogroups.com)-> 1,423 members

A.3. Work Visit at Fire-Prone Province



President and Minister of Environment and Forestry coordinated with local government of West Kalimantan Province

A.5. Hydrology Restoration in Peatland

Continue... (prevention)

1. Riau Province:

- a. Construction of canal blocking in Sungai Tohor Village, Kepulauan Meranti Regency (13 locations), aids from President of RI
- b. Funded by National Board for Disaster Management (BNPB)
 - a. Target until the end of 2015: 629 Unit in 7 districts
 - b. Realization up to July: 103 Unit (was verified)
- c. Canal Closing and Canal blocking (21 units) in Giam Siak Kecil Conservation Area for rewetting peatland area.

2. Jambi Province:

Canal block development in 3 locations, which included Manis Mato, Sei Cemara, and Betara Villages.

3. South Kalimantan Province:

Canal block development (10 units) by BNPB, Ministry of EF, and local government

4. Central Kalimantan Province:

Construction of canal blocking, dams and rewetting burnt area in Tumbang Nusa Village, Jabiren Raya Subdistrict, Pulang Pisau District.

Canal block development process



Continue... (prevention)

Canal block development process in the beginning of the rainy season (early November)

Continue... (prevention)



A.6. Awareness Campaign

1. SMS Broadcasted to 5 provinces
2. Police Notice from Head of Provincial Police
3. Intensive fly-over controlling
4. Intensive ground patrol and extension conducted by 35 Forest Fire Office in 10 provinces.
5. Community empowerment, capacity building of Fire Fighter Community (*Masyarakat Peduli Api*)



A.7. Moratorium of License on Primary Forest on Peatland

1. President Instruction on No. 8/2015 on 13 May 2015 concerning ban of new issuance of concession license on Primary Forest on peatland.
2. The new Instruction is an extension of the previous Instruction No. 10 Year 2011 and No. 6 Year 2013.
3. The Instruction will be forced in 2 years since it was enacted.



B. Fire Suppression

B.1. Ground Suppression

Ground suppression was carried out by 1,758 personnels of Manggala Agni distributed at land and forest fire-prone provinces in cooperation with other institution and the community, as follow:

- Troops of Army /TNI: 9,523 personnels
- POLRI : 4.377 personnels
- Government institutions : 1.972 personnels
- Company Fire Fighter Brigade : 563 personnels
- Community (including MPA, fire fighter community) : 3.953 orang persons

The operation of ground suppression involving TNI/POLRI has been conducted since August 2015.



B.2. Weather Modification Technology (WMT)

WMT had been conducted in all fire-prone provinces using 4 aircrafts (3 units of Casa 212-200 and 1 unit of CN-295), and an additional 1 unit of Hercules C-130 (1 November 2015) with the following details (until 15 November 2015):

Riau	: 165.46 tons
South Sum.	: 87.80 tons
Jambi	: 6.70 tons
Central Kal.	: 12.60 tons
West Kal.	: 35.94 tons
South Kal.	: 32.50 tons
=====	
Total	: 341 tons



B.3. Water Bombing

Land and forest fire suppression from air using water bombing was implemented by BNPB and Ministry of Environment and Forestry since July 2015. Water bombing was implemented using 23 units of helicopter, in which 17 units were provided by BNPB, 2 units by Ministry of EF, and 4 units by private companies. In addition, there was also aircraft BE-200 from Russia rented by PT. BAP. Water Bombing had been conducted in 6 land and forest fire-prone provinces with the following detail (until 15 November 2015):

• Riau	29,365,800 liter
• South Sum.	57,252,700 liter
• Jambi	6,385,600 liter
• West Kal.	10,216,600 liter
• Central Kal.	23,423,350 liter
• South Kal.	7,857,800 liter
• =====	
<i>TOTAL</i>	<i>: 134,501,850 liter of water</i>

Foreign aids for air suppression operation were provided by 3 countries, i.e.:

- Singapore, provided 1 unit of Chinook Mustang 93 CH47 and 1 unit of TC 690, with 48 personnels (the mission finished on 24 October 2015).
- Malaysia, provided 1 unit of Pelican CL 415 and 1 unit of AS 365 Dolphin Seagull 01 aircrafts with 16 personnels (the mission finished on 20 October 2015).
- Australia, provided 1 unit of Hercules C130 (the mission finished on 20 October 2015).



B.4. Chemical Substance Suppression

Various suppression efforts had been done to prevent the expansion of burnt area, including the use of environmentally-friendly chemical substance for ground suppression and air suppression. A total of 1,000 liter (liquid) of flame freeze chemical substance and 581.4 kg peat fire X powder had been used for land suppression by Manggala Agni. In addition, there was a total of 2,000 liters of Miracle Foam Alpha Plus from Japan



Air Operation Using Chemical Substance (Flame Freeze) in South Sumatra: Before using Flame Freeze (left) and After Using flame Freeze (right)

C. Law Enforcement

Ministry of Environment and Forestry used two approach in the effort to enforce law, i.e.:

- a. Multi Law Instrument implementation, i.e.: Administrative Law, Criminal Law, and Civil Law.
- b. Multidoors Law Enforcement, that was by implementing all regulation in one case, which include the enforcement of Environment Protection and Management Act, enforcement of Forestry Act, enforcement of Estate Act, and enforcement of other criminal laws.



Administrative sanctions towards companies suspected:

No.	Date	Company	Penalty
1.	22 September 2015	PT. HSL (Forest Concession/HPH)	Permit revocation
2.		PT. TPR (Estate)	Permit suspension
3.		PT. LIH (Estate)	Permit suspension
4.		PT. WAJ (Estate)	Permit suspension
5.	19 November 2015	PT. BSS (Estate)	Government pressure
6.		PT. KU (Estate)	Government pressure
7.		PT. IHM (Industrial Plantation Forest/HTI)	Government pressure
8.		PT. WS (HTI)	Government pressure
9.		PT. SBAWI (HTI)	Permit suspension
10.		PT. PBP (HPH)	Permit suspension
11.		PT. DML (HPH)	Permit suspension
12.		PT. RPM (Estate)	Permit suspension
13.		PT. MAS (HTI)	Permit revocation
14.		PT. DHL (HTI)	Permit revocation

V. IMPACTS

A. Health

The main components of haze that impacted health are poisonous gas and particulates. A total of 78,232 cases of respiratory tract health disturbance occurred in Riau Province, 129,229 cases in Jambi Province, 115,484 cases in South Sumatera, 60,225 cases in Central Kalimantan, 46,672 in West Kalimantan, and 98,029 cases in South Kalimantan.

B. Education

Data from Ministry of Education and Culture (2015) showed that there were 19,716 schools closed due to the haze, which made 2,394,030 students could not join learning activities at school.

C. Transportation

The flight schedules in several fire-prone provinces were disturbed and canceled due to the low of visibility, which was caused by haze.

D. Politic

Several fire-prone provinces that also had peat lands are located in the country boundary and adjacent to the neighboring country such as Malaysia and Singapore that the haze could reach across the neighboring country (transboundary haze pollution).

E. Economic

Fire in peatland was obstructing daily activities and resulted economic losses, BNPB recorded that economic damaged was more than Rp. 20 trillion.

F. Ecosystem

Forest and land fires cause serious destruction of vegetation and the bio-community.

VI. POLICY AND MEASURES FOR RECOVERY AND PREVENTION

A. President's Instructions

Land and forest fire in 2015, until 30 September 2105, had covered 1.7 million ha (Ditjen Planologi dan Tata Lingkungan, KemenLHK). In relation to that, the President of Republic of Indonesia had provide directives related to measures that should be taken in managing fire, particularly in peatland, i.e.:

- One Map Policy which aimed to integrated data of peatland use permit distribution and provide reference for peatland governance.
- Moratorium of peatland use permit.
- Conduct review/evaluation toward old permits.
- Conduct peatland recovery effort through hydrology restoration and rehabilitation.

B. Ministry of Environment and Forestry had formulated 10 (ten) measures to prevent re-occurrence of forest and land fire, i.e. to:

1. Prepare technical guidance of peatland governance and hydrology at peatland/concession
2. Prepare zonation of protected area in peatland (including inside concession areas)
3. Encourage Governor to ask Regent/Mayor and Head of Subdistrict and Head of Villages to invite the community and empathy of authorities toward the community
4. Compose timely-base monitoring system of land governance and fire potential
5. Encourage Governor to ask the community and business ventures to develop canal blocks and dam/water source/artesian well (using radiogram and telephone)
6. Conduct study and support for the preparation of revision of Act No. 32 year 2009 about the Protection and Management of Environment.
7. Prepare personnel detasering for surveillance activity of burnt areas returned to the country or the government
8. Compose socialization materials in the form of brochures, booklet, posters, comics, films, psa, etc., for the local government to conduct socialization to the community
9. Compose masterplan and operational plan of Permanent Settlement of Land/Forest Fire in accordance with economic perspective (land/forest fire economic incentive and disincentive) coordinated by Ministry Coordinator of Economic
10. Develop a system of community resilience in areas prone to land/forest fire through massive local community institutions, such as Masyarakat Peduli Api (fire fighter community), Environment-concerned School (Adiwiyata), Fire-concern and controller Teenagers, etc.