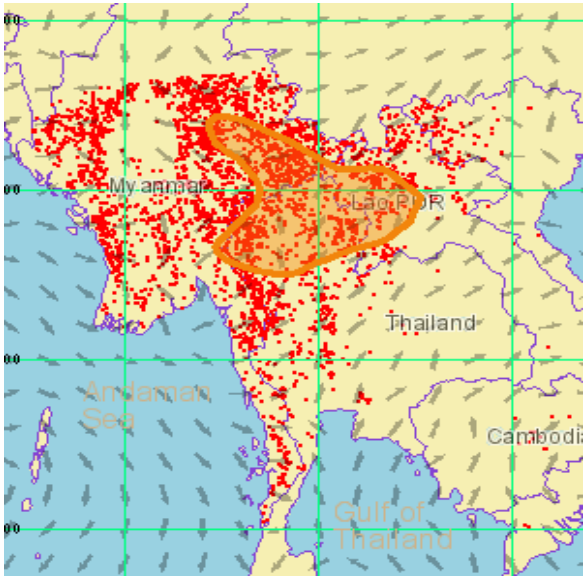
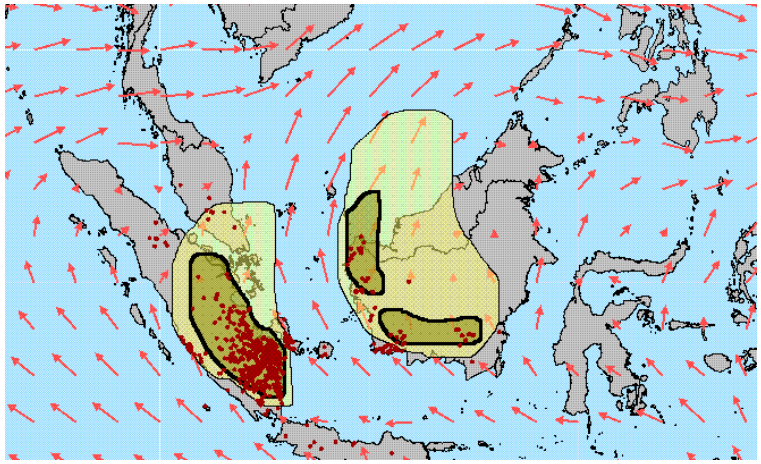
How to Reduce Open Burning in Southeast Asia

Dr. Qwanruedee Chotichanathawewong
Director of Research Center for Environmental Strategy
The National Research Council of Thailand

Haze Situation in Southeast Asia





Mekong Sub-region

- Dry season: Jan – April
- Many Red hotspots were found
- Problems: Forest fire and open burning in agricultural areas and community

Southern ASEAN

- Dry season: June - September
- Problems: Burning in peatland, agricultural land clearing
- Smoke haze in Sumatra and Borneo, Indonesia had affected Southeast Asian countries during dry seasons in 1991, 1994 1997,…, 2015, 2016…

Causes of Haze Pollution

Cannot Control

Meteorological conditions

- Cool and dry air, air high pressure
- Cool, calm wind then haze not spread Suspended dust

Topography

- Pan basin surrounded by high mountains so haze accumulates

Can Control

Human activities

- Forest fire from hunting, finding the product of Forest, invading forest area
- Agricultural residues burning
- Solid waste burning

Haze occurred from 3 main human activities

Agricultural Waste Burning

Solid Waste Burning

Forest Fire

Impact of Transboudary Haze Pollution

- The economic loss of each country during this environmental disaster was enormous and severely affected especially for tourism, transportation and agriculture.
- In Thailand health statistics indicated that respiratory diseases rank 5th in the top ten leading causes of death in Thailand in 2005 with 40.1 per 100,000 populations. An increase in number of sick people was reported from Malaysia, Singapore, Philippines,Thailand, etc.
- Poor visibility making airlines canceling flights to several airports in the region

Is it possible that

Thailand can reduce haze pollution from agricultural residues?

Number of Hotspots in Northern Part of Thailand (in 2015-2019)

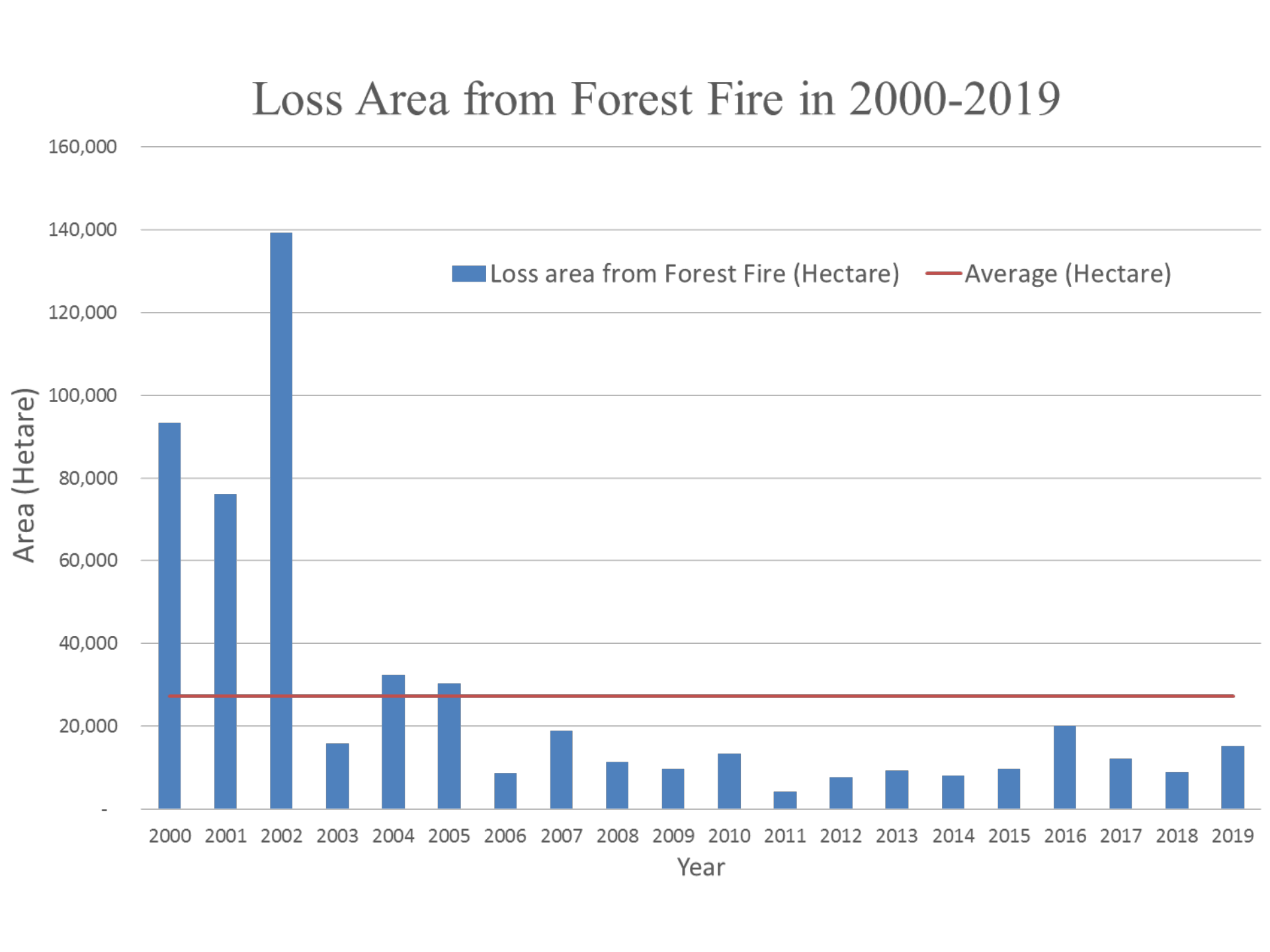
Total loss area from forest fire is 15,136 hectare in 2019

Province	Number of Hotspots (point)					
	2015	2016	2017	2018	Forecast 2019	Actual 2019
Tak	1,475	1,649	1,098	1,377	1,261	287
Mae Honson	2,349	1,401	1,188	915	838	284
Cheingmai	2,068	2,083	904	650	595	2,438
Nan	1,381	1,177	597	546	500	222
Lumpang	780	857	663	429	393	352
Lumpoon	359	258	333	258	236	350
Prae	457	802	310	235	215	133
Cheingrai	872	1,487	210	226	207	317
Payao	246	419	115	86	79	195
Total	**9,987**	**10,133**	**5,418**	**4,722**	**4,323**	**5,139**

Source: GISDA, 2019

Causes of the Forest Fires in Northern Part of Thailand in 2016

Province	Clearing out the Forest Fire (times)	Area of the Forest Fire (hectare)	Causes of Forest Fire (times)			
			Find the forest products	Burning of agricultural residues	Hunting	Other
Tak	1,659	3,817.8	1,280	105	191	83
Mae Honson	391	768	175	89	37	90
Cheingmai	469	552.6	289	55	104	21
Nan	322	841.6	242	22	44	14
Lumpang	202	505.2	85	26	32	59
Lumpoon	131	224	63	2	51	15
Prae	140	352.2	137	3	0	0
Cheingrai	149	290.4	115	5	9	20
Payao	373	423.8	292	26	12	43
Total	3,836	8,775.1	2,678	333	480	345
Percentage			69.81	8.68	12.51	8.99


Loss Area from Forest Fire in 2000-2019
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
Area (Hetare)
Loss area from Forest Fire (Hectare)
Average (Hectare)
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Year


How has Thailand reduced open burning from agricultural residues???

Haze Pollution Prevention and Mitigation for Provinces in the Northern Part of Thailand

1. **Policy package**
2. **Single Command Approach and Institutes**
3. ***60 Day*** **- Control Burning (no burning policy) including Supporting Zero Burning Villages**
4. **Forest Fire Prevention and Control**
5. **Public Dissemination of Forest Fire Data**
6. **Promotion of Public Awareness, Education and Public Participation**
7. **Building the Forest Fire Control Network**
8. **ASEAN Agreement onTransboundary Haze Pollution**

1. Policy Package (Policies/Plans/Regulations)

National Disaster Prevention and Mitigation Plan

National Master Plan for Open Burning Control

National Master Plan on Forest Fire Control

Action Plan on Fire and Haze Control

Haze Pollution Prevention and Mitigation for Provinces in the Northern Part of Thailand

Provincial Regulations

Community Rules

2015	2016	2017
Action Plan for Haze Pollution in Northern Part	Action Plan for Haze Pollution in Northern Part	Action Plan for Haze Pollution in Northern Part

Single Command in National level (Minister of NRE) **, Regional level** (Army Area Commander 3) **and Provincial level** (Governor)

- Divided responsibilities by area: forestry, agriculture, road, community and
- work as synergy and mobilize power from all sectors for survey and fire

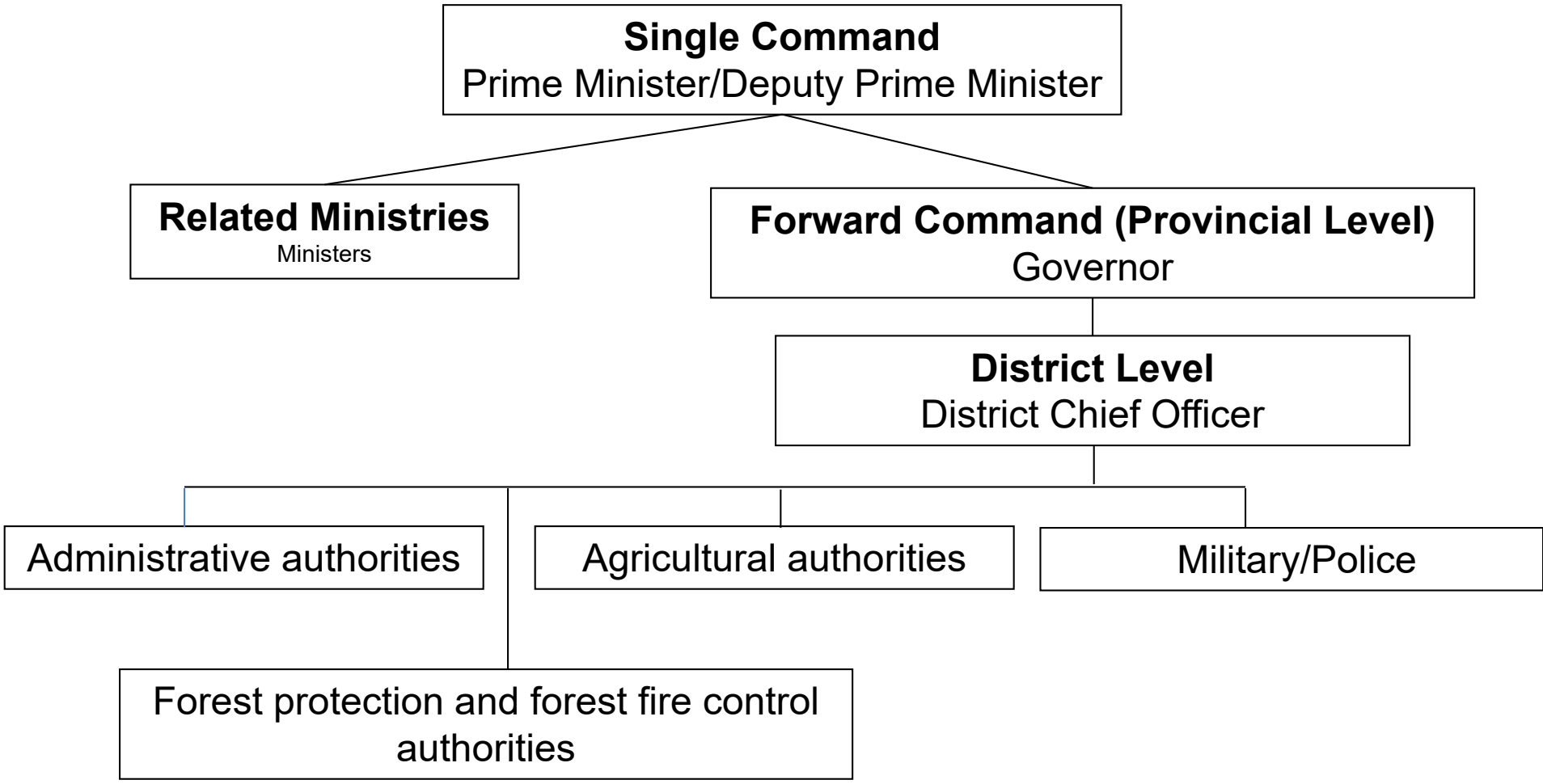
Minister of the Interior is Main Host

Single Command is Governor

Supported by Min. of Defense, Min. of Science and Technology, Min. of Transport & Min. of NRE.

Budget 2.75 Mill USD for 9 provinces	Budget 2.81 Mill USD for 9 provinces	Budget 4.81 Mill USD for 9 provinces

2. Single Command Approach and Institutes



Institutions

- **Single Command**
  - **National Level:** Prime Minister/ Deputy Prime Minister
  - **Provincial Level:** Governor
- **Committee**
  - National Disaster Management Committee chaired by Prime Minister
  - National Committee on Fire and Haze Control: chaired by Minister of Natural Resources and Environment
- **Stakeholders**
  - Private sector/Community/Academic/Public

3. 60 Day - Control Burning (no burning policy) including Zero Burning Villages

- Strictly prohibited burning in forest areas and control burning in communities, agricultural areas and roadside during *Jan – April*
- Issued provincial regulations to control burning by the Governors
- Strictly enforce law and regulation related to fire and haze control

4. Forest Fire Prevention and Control

Fuel management strategy:

Early burning, Fire brake construction

Fire detection and suppression:

Satellite, ground survey and hotline

5. Public Dissemination of Forest Fire Data

Public Dissemination of Forest Fire Data

http://www.dnp.go.th/forestfire

Data on DNP Website: Daily hotspot number, forest fire forecast and fire weather index

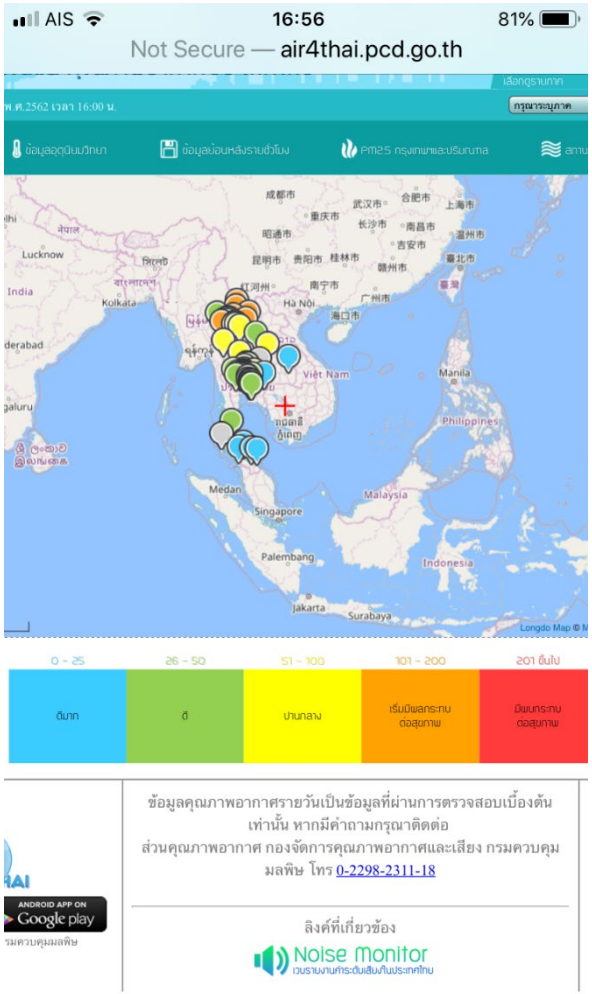
Public Dissemination of Air Quality Data

Realtime Data Monitoring | Map and Data Monitoring

ID	Station	Last Date	Last Hour	Automatic Measurement Data (hourly). CO (ppm)	NO2 (ppb)	O3 (ppb)	SO2 (ppb)	Moving AVG 24Hour PM10 (ug/m3)	PM2.5 (ug/m3)
Realtime Hourly Data									
02t	Hiran Ruchi, Thon Buri, Bangkok	2019-05-07	15:00:00	1.28	20	8	-	57	-
03t	Samae Dam, Bang Khun Thian,Bangkok	2019-05-07	15:00:00	0.59	48	8	-	77	49
05t	Bangna, Bangna, Bangkok	2019-05-07	15:00:00	0.23	10	42	-	54	24
08t	Song Khanong, Phra Pradaeng, Samut Prakan	2019-05-07	15:00:00	0.09	18	35	3	No Data	No Data
10t	Khlong Chan, Bang kapi, Bangkok	2019-05-07	15:00:00	-	13	49	-	51	26
11t	Din Daeng, Din Daeng, Bangkok	2019-05-07	15:00:00	-	-	52	4	No Data	27
13t	Bang Kruai, Bang Kruai, Nonthaburi	2019-05-02	15:00:00	-	13	39	1	No Data	9
14t	Om Noi, Krathum Baen, Samut Sakhon	2019-05-07	15:00:00	0.71	28	40	6	63	35
17t	Residence for Dept. of Primary Industries and Mines, Samut Prakan	2019-03-02	06:00:00	-	0	-	-	32	24
18t	Pak Nam, Mueang, Samut Prakan	2019-05-07	15:00:00	-	7	39	2	58	31
19t	Bang Sao Thong, Bang Sao Thong, Samut Prakan	2019-05-07	15:00:00	0.63	15	51	4	62	22
20t	Khlong Nueng, Khlong Luang, Pathum Thani	2019-05-07	15:00:00	-	2	54	0	86	41
21t	Pratu Chai, Phra Nakhon Si Ayutthayal, Ayutthaya	2019-05-07	15:00:00	0.53	3	48	1	70	29
22t	Bang Phut, Pak Kret, Nonthaburi	2019-05-07	15:00:00	0.30	3	47	3	59	-
24t	Na Phra Lan, Chaloem Phra Kiat, Saraburi	2019-05-07	15:00:00	0.14	13	65	3	100	43
25t	Pak Phriao, Mueang, Saraburi	2019-05-07	15:00:00		3	27		76	30
	Standard Hourly			30.00	170	100	300	-	-
	Standard 24 Hour			-	-	-	-	120	50

www.aqmthai.com

Real-time air quality data from PCD monitoring stations and AQI



Application: Air4Thai

6. Promotion of Public Awareness, Education and Public Participation

Press conference/interview

Zero Burning Campaign and Caravan

Content in Public Relations

- Seeking Cooperation, and network
- Sources and health impact of haze
- Non –burning techniques

Channel of Public Relations

- By man
- Village Radio Speaker
- Newspaper, Radio and Television
- Other media

Types of Public Relations

- Brochures
- Animations and video
- Spot and short advertisement

Evaluation of Public Relations

- Evaluation of perception and understanding of the publics (receiving, knowing and performing)

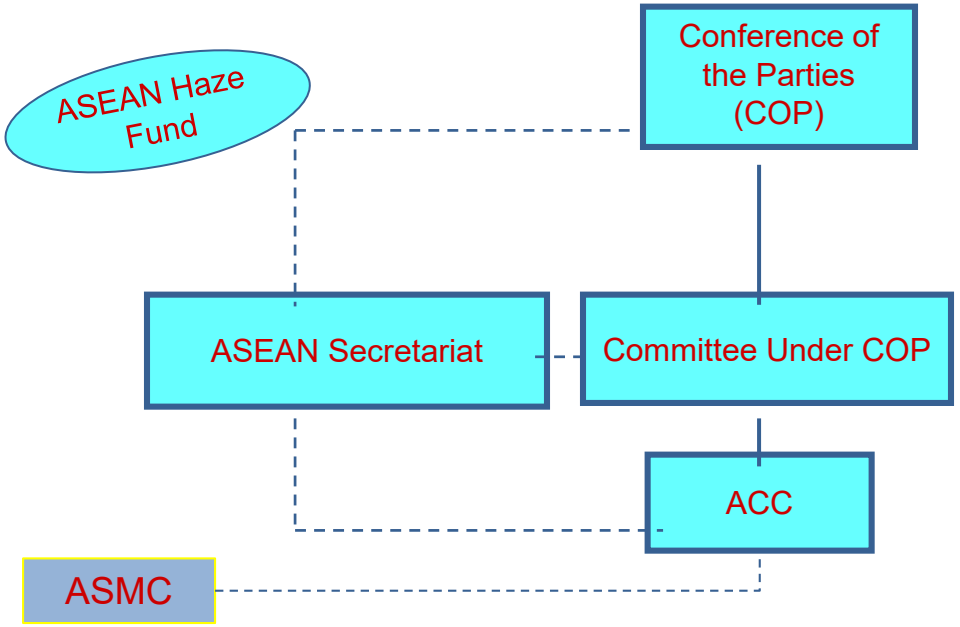
7. Building the Forest Fire Control Network

- Invite private sector to support and cooperate on fire and haze control
- Create forest fire control networks consist of academic sector, private sector, NGOs, local authorities and local communities

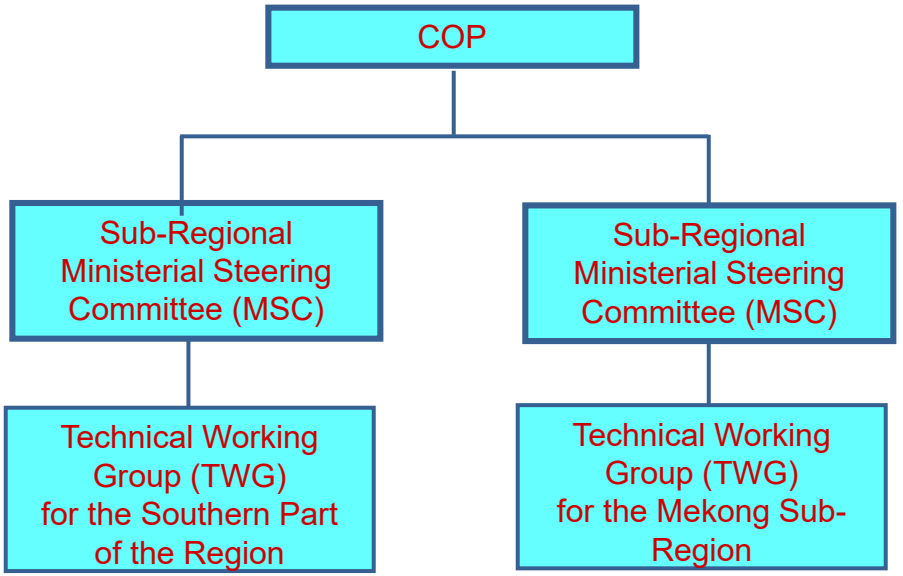
8. ASEAN Agreement on Transboundary Haze Pollution

The Agreement aims to prevent and monitor transboundary haze pollution as a result of land and/or forest fires which should be mitigated, through concerted national efforts and intensified regional and international co-operation

Mechanism under ASEAN Haze Agreement



Sub-Regional Arrangement




Thank You