

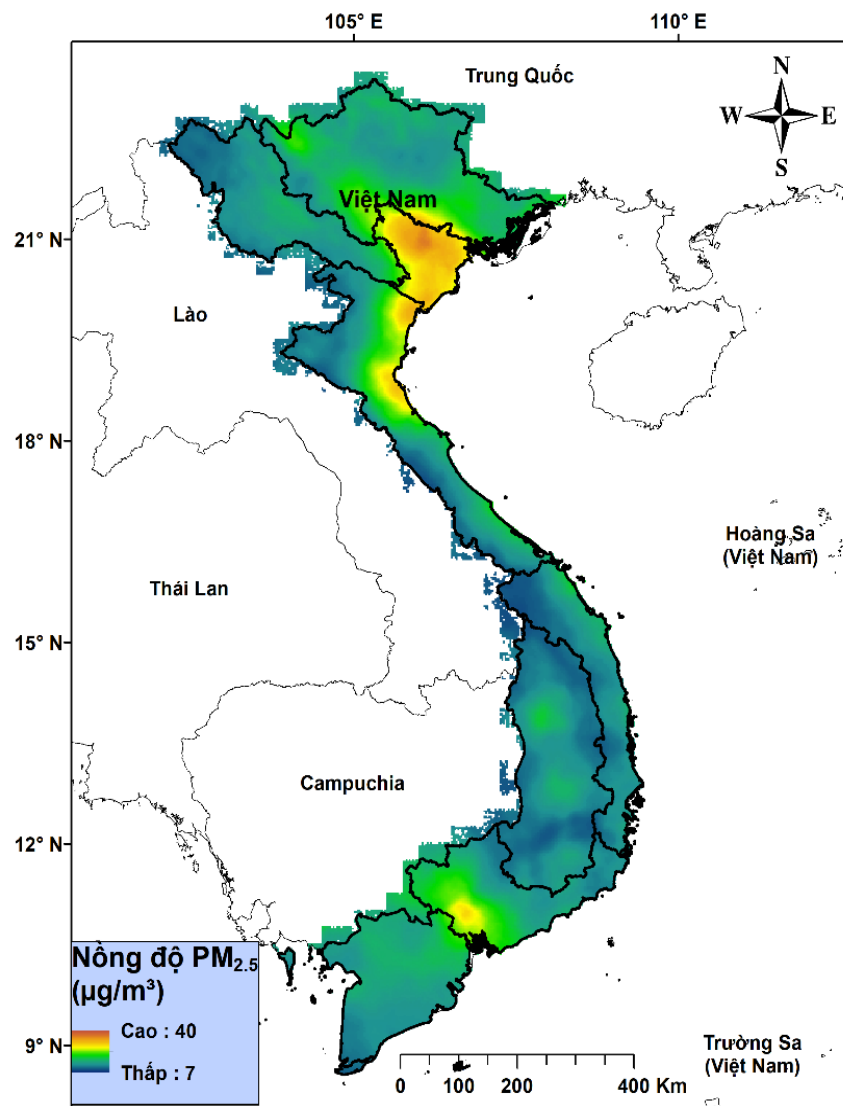
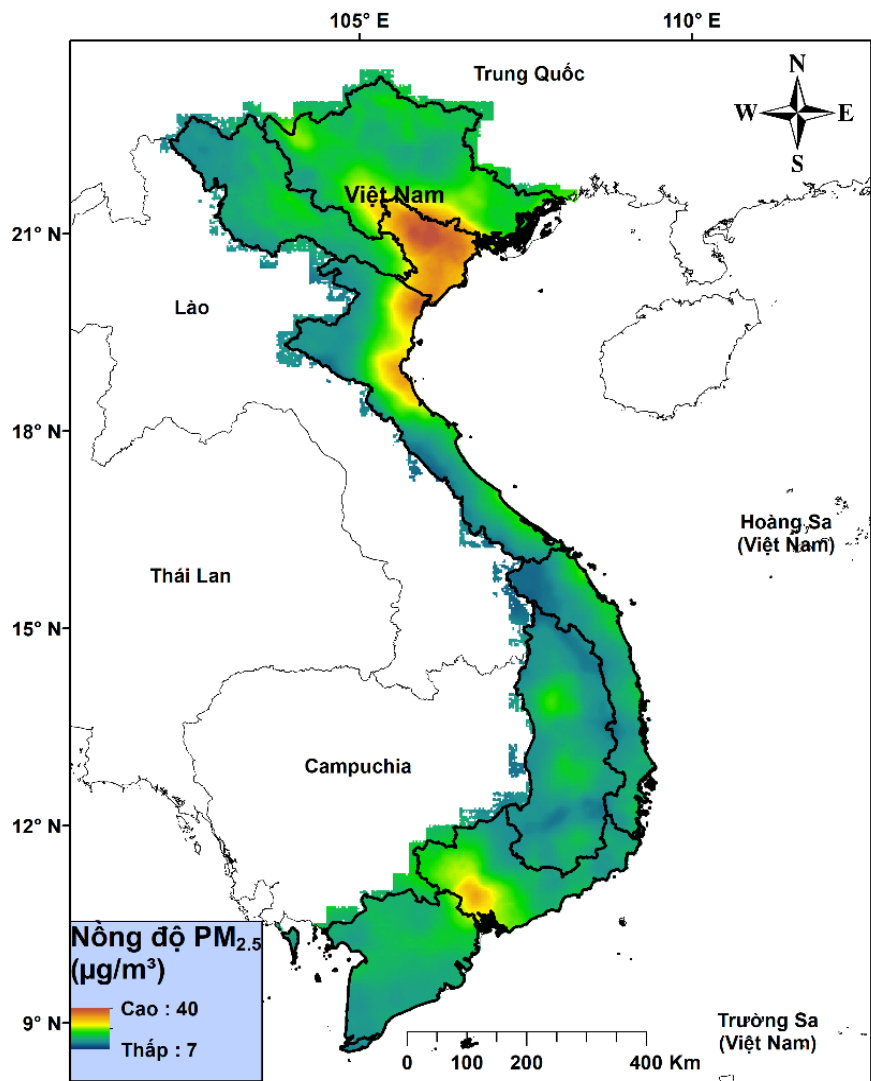
AIR QUALITY POLICY IN VIETNAM: how to tackle with PM_{2.5}



Hoang Duong TUNG,
Vietnam Clean Air Partnership (VCAP)
August, 2023

PM2.5 concentration for 2019 and 2020

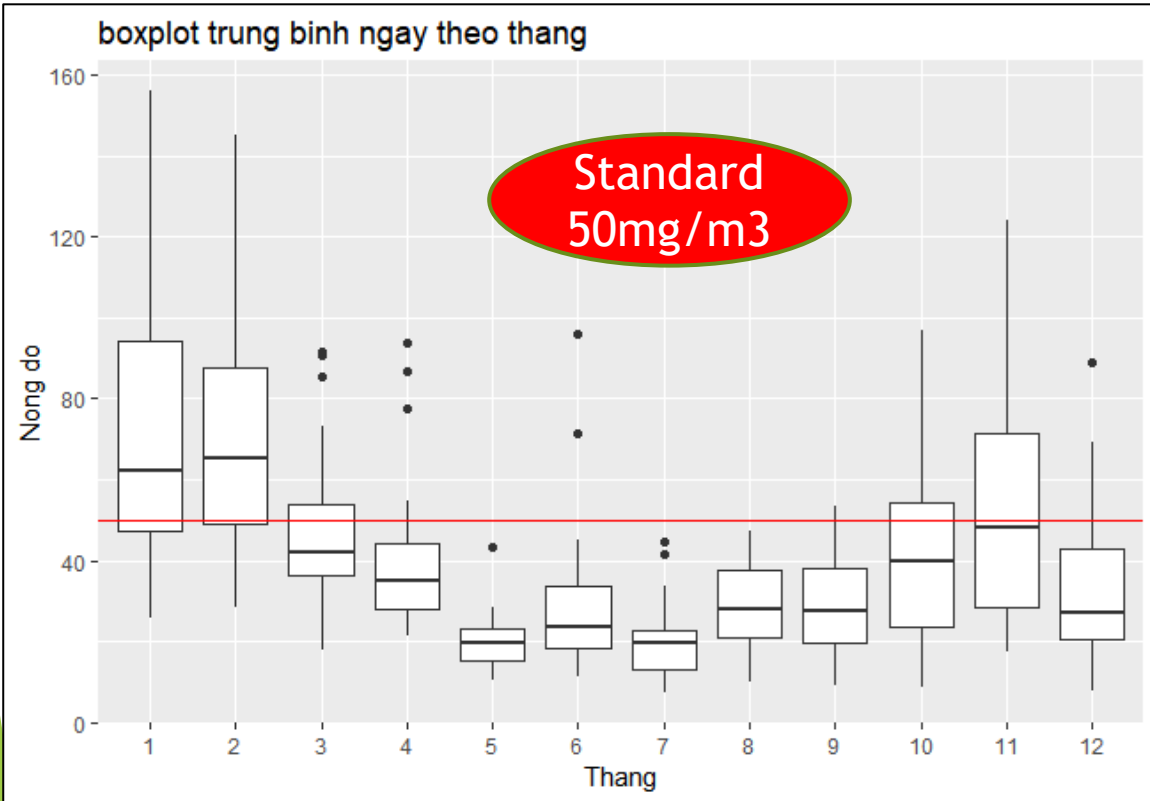
(source: Nguyen Thi Thanh, Hanoi University)



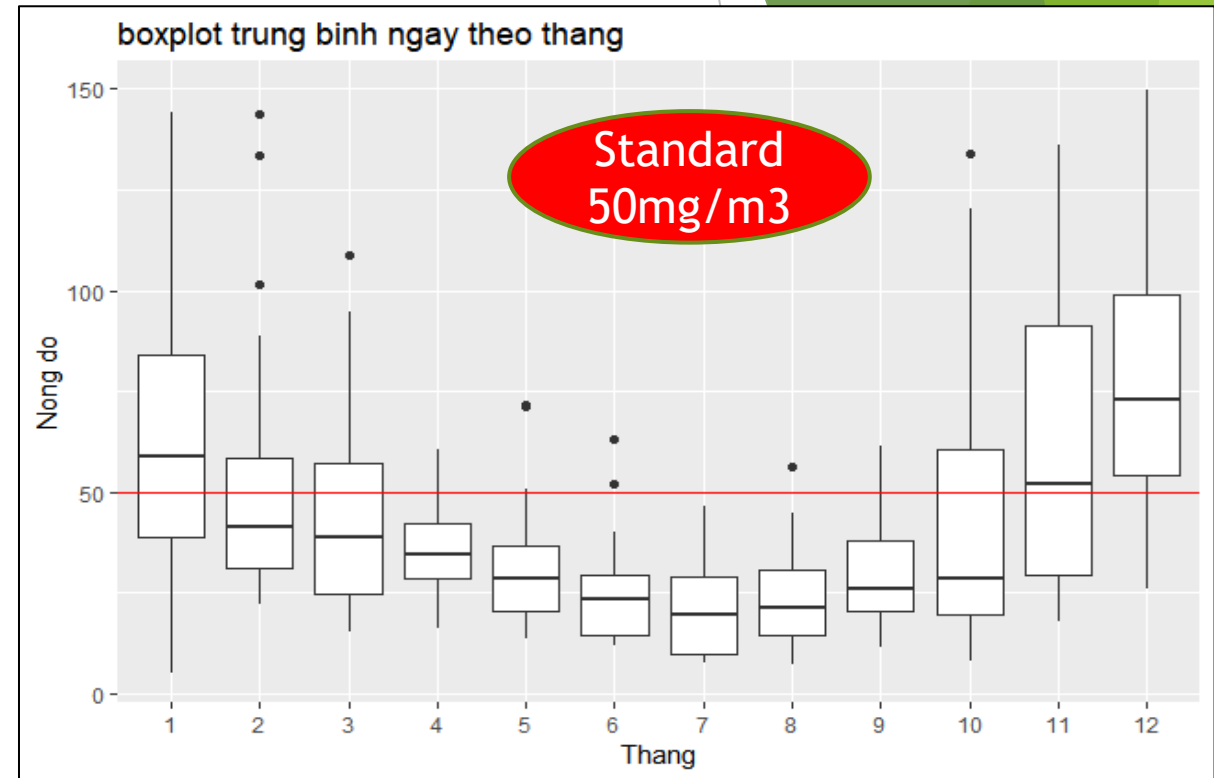
PM_{2.5} for 2019: 13,4 - 38,3 $\mu\text{g}/\text{m}^3$

PM_{2.5} for 2020: 11,5 - 33,3 $\mu\text{g}/\text{m}^3$

Hanoi Air quality



PM2.5 daily average per month of 2018
(source: Hanoi Embassy Monitoring station)



PM2.5 daily average per month
of 2017
(source: Hanoi Embassy Monitoring station)

Main Pollution Sources

1. Point sources

- ▶ Coal fired power plants (29): dust, ash, SO₂, NO_x, CO₂
- ▶ Cement plants (60): dust, SO₂
- ▶ Steel plants (35) : dust, SO₂, NO₂, CO
- ▶ Chemical industries (24)
- ▶ Coal mines, mines
- ▶ Small Recycle (paper, plastics, metal cans, lead...) Industries in country sites

2. Mobile sources: dust, CO, NO₂, SO₂, VOC

- ▶ Number of cars and motorbike increased very quickly: Hanoi with 6 ML motorbikes, 0.7 ML car, HCMC with 7 ML motorbikes, 1 ML cars
- ▶ Many old motorbikes not having regular maintenance, not yet motorbike inspection



Pollution Sources

3. Construction activities:

- ▶ Dust from construction activities (building, road, ...)



4. Open burning: PM_{2.5}, black carbon ...

- ▶ Straw burning
- ▶ Household solid waste burning
- ▶ Small incinerators: PM, Dioxin/furan



6. Agriculture

Pig farming, chemical fertilizers in cultivations

Institutional framework for air quality management

Central level:

MONRE/ PCD, Department for Environment (before 203: VEA)

Policy, legal documents development

Enforcement: EIA, permit, standard monitoring, inspection

Provincial level (63 provinces/cities)

Department of National Resources and Environment (DONRE): EIA, permit, monitoring, inspection ...

District level (705 districts/cities)

Division of National Resources and Environment: permit, inspection ...



Ministry of Science and Technology

- Environmental technology assessment
- Provide fund for research program

Legal Framework for Air Quality Management

Law on Environmental Protection (LEP)

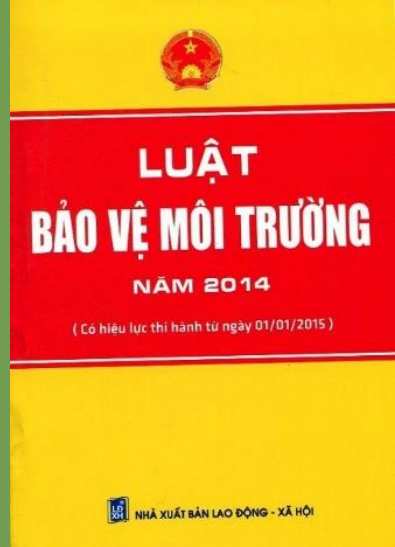
1993, 2005, 2014 and new 2020 (effective from 1/1/2021) with new policies

- Environmental permit
- Strengthen emission standards
- Automatic air monitoring for big point sources
- Inspections
- BAT, air emission fee
- AQM plan for provinces/cities
- Public disclosure of monitoring results

There are decrees and circulars to guide law implementation

Action plans

- ✓ National Action Plan on air pollution control (Decision of PM 985a/2016)
- ✓ Prime Minister's Directive, 2021 on enhancing air pollution control
- ✓ Action Program for Transition to Transition to green energy and mitigation of carbon dioxide and methane emissions from transportation , 2022



Environmental Standards

Ambient quality standards QCVN 05/2023 ($\mu\text{g}/\text{m}^3$)

TT	Parameters	1 hour average	8 hour average	24 hour average	Annual average
1	SO ₂	350	-	125	50
2	CO	30.000	10.000	-	-
3	NO ₂	200	-	100	40
4	O ₃	200	120	-	-
5	TSP	300	-	200	100
6	PM ₁₀	-	-	100	50
7	PM _{2,5}	-	-	50 (45 from 2026)	25
8	Pb	-	-	1,5	0,5



Environmental Standards

Current Emission standards for:

Chemical Fertilizer manufacturing (QCVN 21/2009)

Coal fired power plant (QCVN 22/2009)

Steel (QCVN 51/2013)

Cement (QCVN 23/2009)

Refining and petrochemical Industry and inorganic substances (QCVN 34/2010)

Industrial Incinerators (QCVN 30/2010)

Domestic solid waste incinerators (61/2016)

Hospital incinerator (QCVN 02/2012)

New proposal:

National Technical Regulation
on Air Industrial Emission with

+ New structure

+ Revised limit

4.	Sulfur dioxide (SO ₂) ppm	1. General boilers (industrial boilers) (excluding boilers specified in other emission facilities or using fuel recovered from waste)	
		1.1. Liquid-fuel boilers (including equipment using liquid fuel and gas fuel)	
		1.1.1. Boilers with steam capacity of 40 tons/hour or more or with a heat of 24,760,000 kilocalories / hour (Kcal / hour) or more	270 (4)
		1.1.2. Boilers with steam capacity from 10 to less than 40 tons / hour or with a calorific value of over 6,190,000 Kcal / hour and below 24,760,000 Kcal / hour	400 (4)
		1.1.3. Boilers with a steam capacity of less than 10 tons / hour or a calorific value below 6,190,000 Kcal / hour	540 (4)
		1.2. The boiler uses solid fuel (included liquid fuel mixing)	250 (6)
		1.3. The boiler uses gas fuel	100 (4)
		1.4. Boiler using biogas	180 (4)
		2. Thermal power plant	
		2.1. Equipments using liquid fuel	270 (15)
2.2. Equipments using solid fuels (including liquid fuel mixing)	270 (6)		

Mobile sources

For cars, trucks:

- ▶ EURO 5 for new vehicle from 1/1/2021
- ▶ Yearly inspection for all cars/trucks.

For motorbikes:

- ▶ EURO 3 for new motorbikes
- ▶ Not yet inspection for old motorbikes. Not limit age of motorbikes.

Fuel:

- ▶ E5 gasoline from 2018
- ▶ CNG, LPG for buses, taxi in HCM, Hanoi
- ▶ Electric motorbike, electric car in public places

Problems

- Number of cars and motorbikes increased
- Not yet control air emission from motorbikes (there was a road map but not implemented yet)
- Use of clean energy: limited

Air Monitoring System

National Ambient Air Monitoring System

Automatic Monitoring System for ambient air: to date, 7 AMS in 7 cities

Periodical Monitoring at sites

Ambient Provincial Monitoring

AMS at 20 provinces Hanoi, Vinh Phuc, Quang Ninh, Dong Nai, Bac Ninh, Hai Duong, Tay Ninh, Long An, Vung Tau

Monitoring at sites within province

Emission monitoring:

Monitoring required by EIA, permit

From 2015, all main point sources must have AMS and transfer online data to DONRE



Air Monitoring Information to public

Government sources

National wide: Website quantracmoitruong.gov.vn and app envisoft

For Hanoi: moitruongthudo.gov.vn

(Note: monitoring data from regulatory monitoring stations and low cost sensors)

There are some apps (international and local) provide AQI

AirVisual, Windy, PAM air (local)...

Economic tools

Policy:

- BAT application
- Some policies for renewable energy, energy, energy efficiency
- Eco label, energy efficiency label

Air Emission Fee: in the stage of drafting. To be approved

Environmental tax:

- On fuel
- On coal mining

Environmental Fund:

- For air pollution control systems
- Support for wind power



Challenges

1. No law on clean air yet, not enough legal documents for air, lack of efficient tools
2. Institutional framework: weak, no organization/unit specialized on air issues. Lack of professional staff on air quality at central and provincial levels
3. Ambient Monitoring System development: not enough. Data sharing is weak.
4. Point source control: Standards not updated regularly; Fines system not strong (fines for violation, not daily based as other countries applied); monitoring data not shared and analyzed; not yet emission inventory
5. Mobile source: public transport system not well developed; large number of motorbikes; clean energy not popular used
6. Week Open burning control (straw after harvest and solid waste)
7. Lack of financial resources for air improvement
8. Some issues not covered yet: VOC, NH₃ ...
9. Public participation and awareness: need to improve

Proposed Solutions

1. Improve legal and institutional framework
Tools, legal document
Standard improvement, AQM for provinces and Vietnam
2. Institutional improvement. Budget increase for air quality improvement
3. Enhance monitoring and inventory. AMS and online transferred, public disclosed for 4 industries: coal fired power, steel, cement and chemical
4. Point source control: inspection, change penalty system
5. Mobile source: more public transportation, clean energy, urban planning, motorbike control, improve fuel quality, EURO 4,5 ...
6. Open burning: technology solutions
7. Public disclosure

Thank you

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect. The rest of the background is plain white.