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# ASIA CLEAN BLUE SKIES PROGRAM | KNOWLEDGE SHARING EVENT

## STRATEGIES FOR IMPLEMENTATION OF LOW EMISSION ZONES IN ASIA

MAY 8 - 9, 2024 | 9:30 - 16:00 (GMT +7)  
BANGKOK, THAILAND

Join via Zoom: [https://bit.ly/KSE\\_LEZinAsia](https://bit.ly/KSE_LEZinAsia)



# Establish a low emission zone in Hanoi

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# Burdens of disease from Air quality

- Air pollution is a cause of **8 million deaths** per year (\*WHO, 2014).
- Emissions from diesel engines and the ambient air are leading to lung carcinogens (WHO, 2013).



# Introduction

- ❖ Hanoi is among 2 biggest cities in Vietnam
- ❖ Area: 3.359,82 km<sup>2</sup>
- ❖ Population: 8.991.100 people
- ❖ 1.1mil. cars, 6.7 mil. motorcycles
- ❖ 10 industrial zones and 1370 craft villages

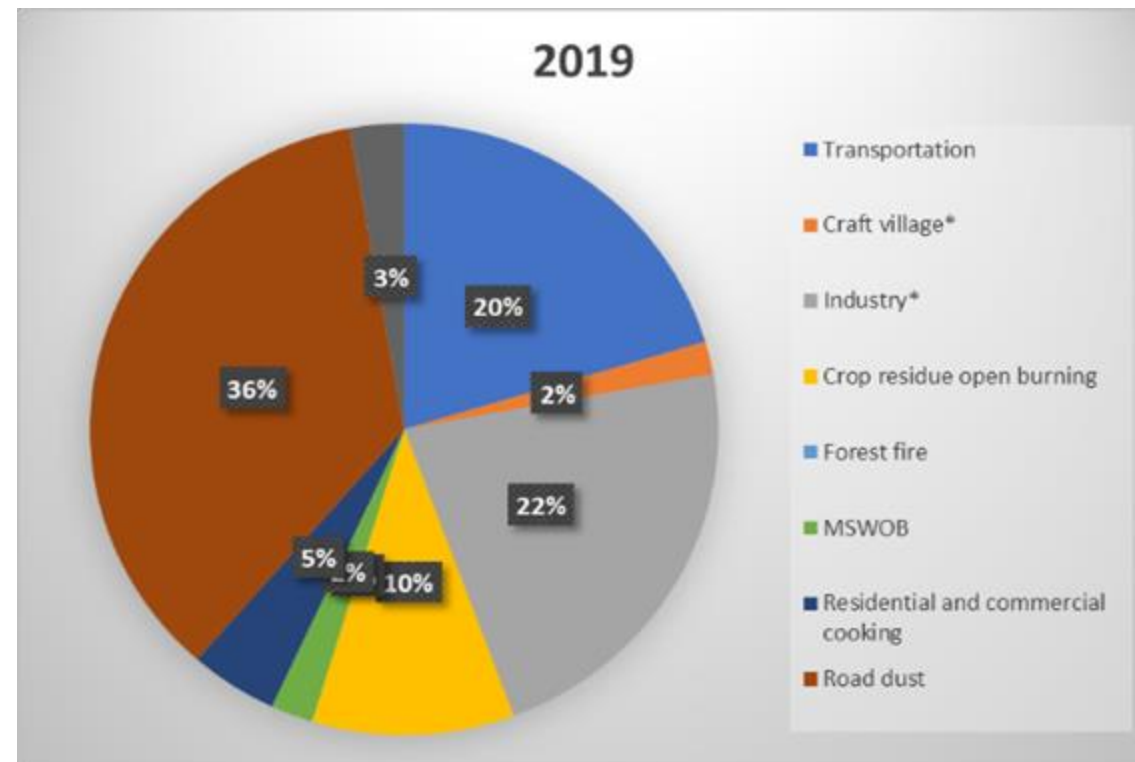
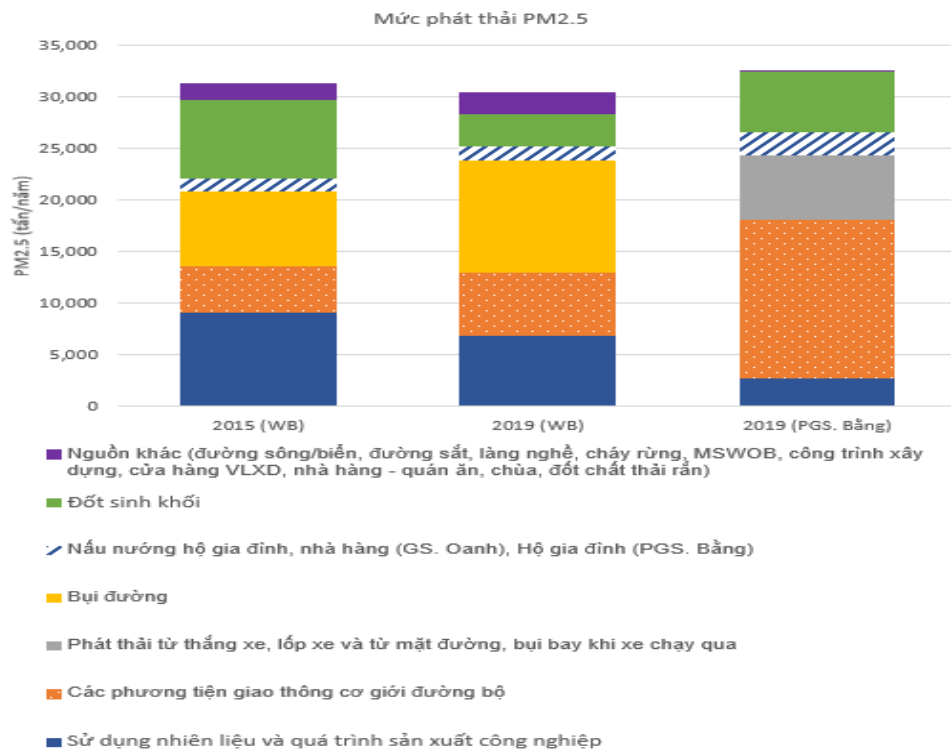


# Introduction

- ✓ Air quality in Hanoi:
  - Hanoi is polluted with PM2.5 (2 times higher than Vietnamese standard)
- ✓ Annual average concentration of PM2.5 in urban areas in Vietnam is around **28  $\mu\text{g}/\text{m}^3$**  (over 3 times higher than the recommended annual average of 10  $\mu\text{g}/\text{m}^3$ ). In Hanoi, the concentration is 38  $\mu\text{g}/\text{m}^3$ ; (WHO, 2016)
- ✓ Results of the Fulbright University study indicate that in 2013, PM2.5 caused **40,000** deaths per year and resulted in a **7% GDP loss** for the entire Vietnam, **20% loss** of total income for Hanoi(Phu, 2018).
- ✓ Study conducted by Hanoi DONRE, Hanoi University of Science and Technology, and Hanoi University of Public Health indicated that with an annual average concentration of PM2.5 at 38  $\mu\text{g}/\text{m}^3$ , there were **2,880 deaths per year** attributable to PM2.5

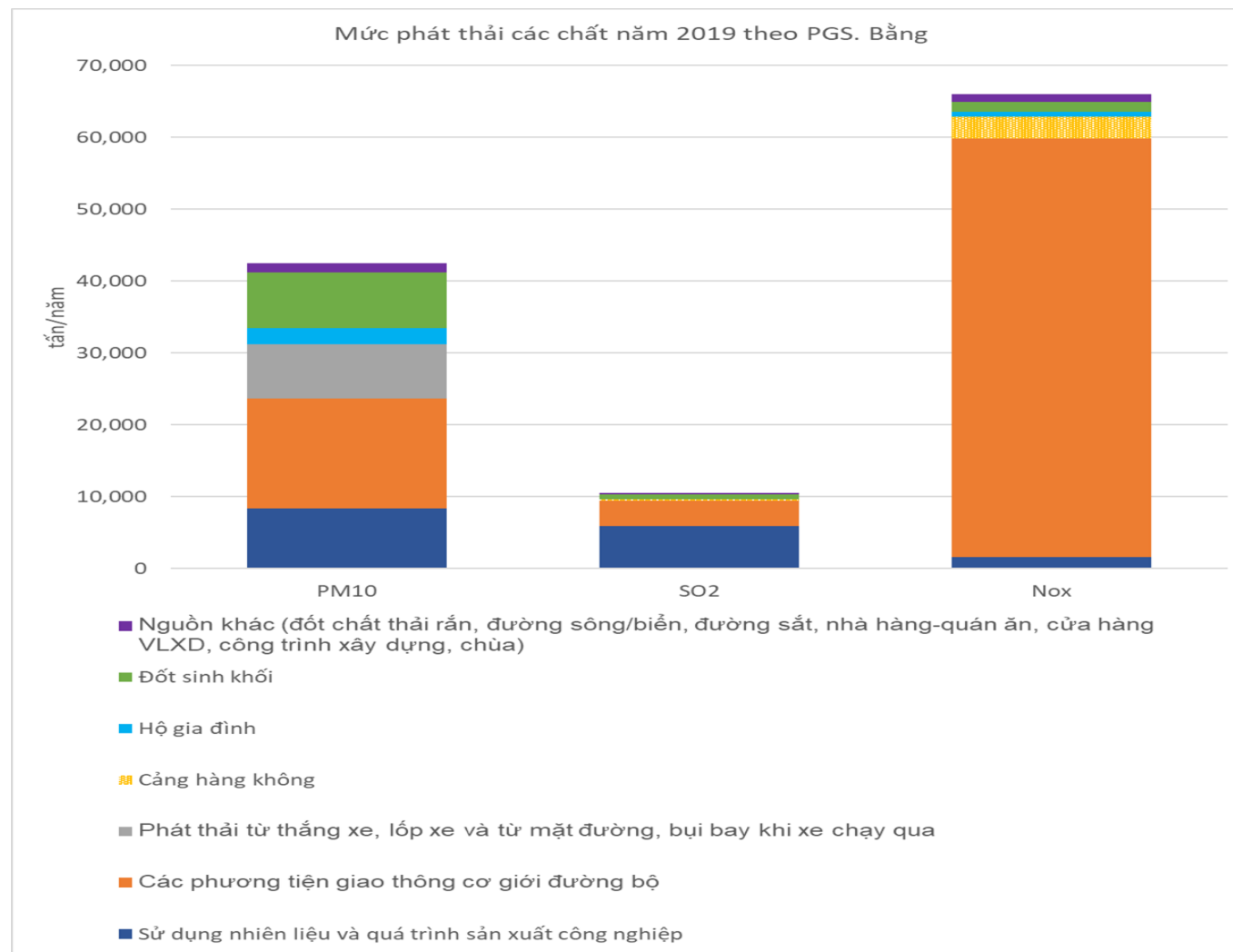
# PM 2.5 emission sources

The main emission source is from road transport vehicles and road dust, industry and biomass burning



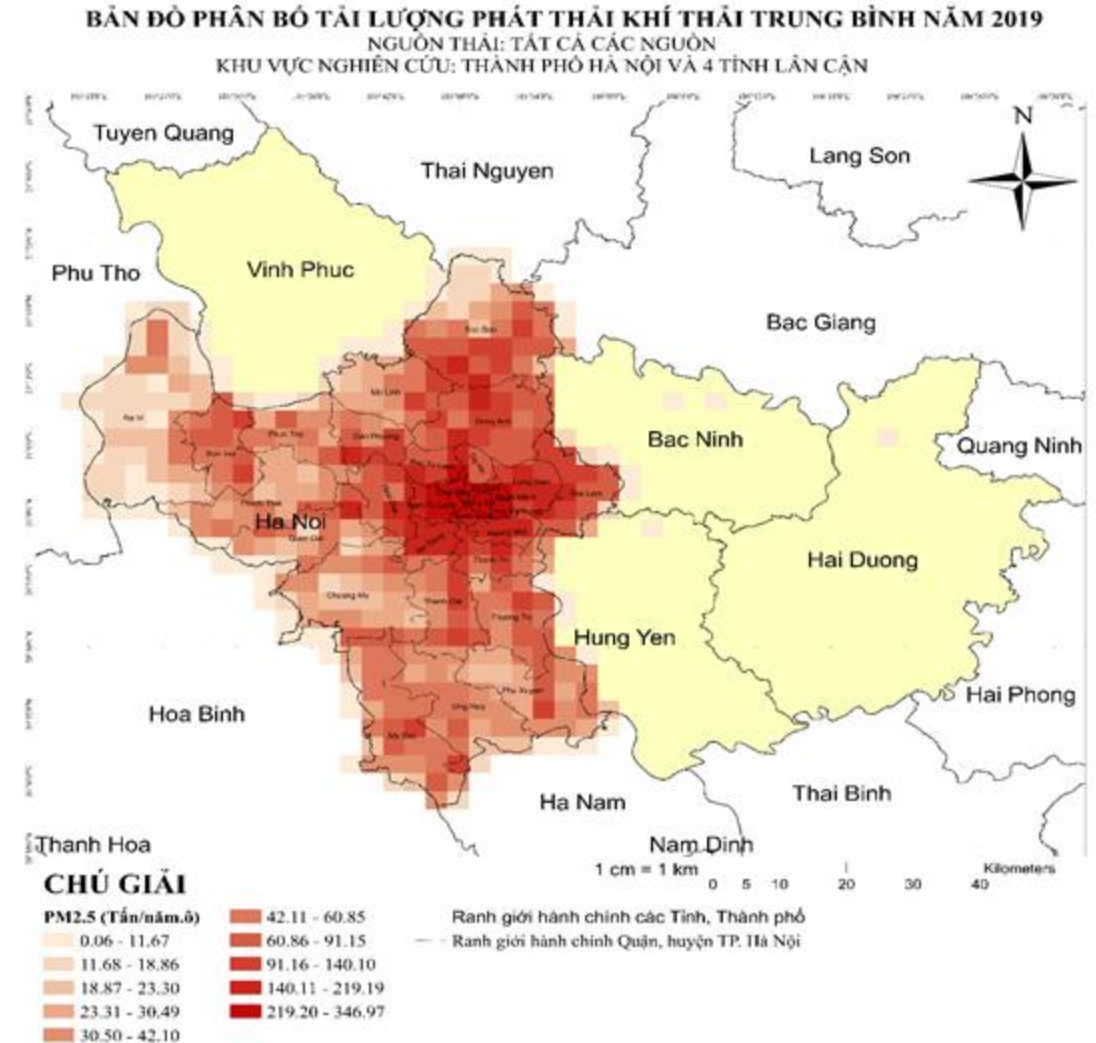
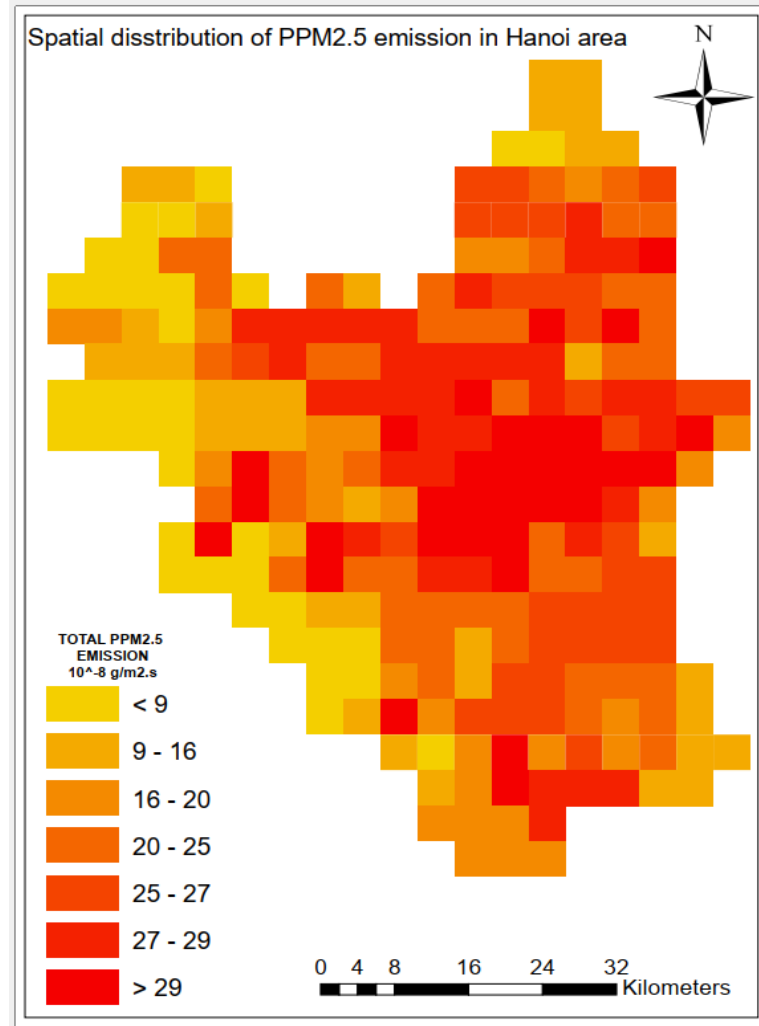
# SO<sub>2</sub>, NO<sub>x</sub> and CO emission

- **SO<sub>2</sub>**: main source is point source of using fuel and mobile source of on road transport vehicles
- **NO<sub>x</sub> và CO**: transport vehicles contribute to 94,1% NO<sub>x</sub> and 96,6% CO of total



# Spacial PM 2.5 distribution

PM2.5 is proportional to traffic density, population density, and areas with crop burning activities.





# Targets of AQMP by 2030



GOOD

AVERAGE

**70-80%**

Improve & maintain

PM<sub>2.5</sub>

SO<sub>2</sub>

NO<sub>2</sub>

CO

O<sub>3</sub>

PM<sub>2.5</sub>

< 40  $\mu\text{g}/\text{Nm}^3$  in urban areas

< 35  $\mu\text{g}/\text{Nm}^3$  in suburban areas

↓ 20% of PM<sub>2.5</sub> from main sources  
(6,200 tons of PM<sub>2.5</sub>)

# Low emission zone in Hanoi

- Low Emission Zones (LEZs) offer a proven and effective solution contributing to AQMP targets achieving by tackling interconnected issues. By strategically restricting access to designated areas based on vehicle emission standards, LEZs deliver tangible benefits:
- **Cleaner Air, Improved Health:** Studies demonstrate significant reductions in harmful pollutants within LEZ boundaries. This translates to cleaner air, improved respiratory health, and potentially reduced healthcare costs for residents.
- **Enhanced Economic Activity:** LEZs incentivize the adoption of cleaner vehicles and public transport, potentially leading to improved traffic flow and enhanced economic productivity for the city.
- **Environmental Sustainability:** Reduced vehicle emissions contribute to achieving national climate change commitments and bolstering environmental sustainability.
- **Improved Quality of Life:** Addressing air pollution and congestion fosters a more vibrant and healthier urban environment, encouraging walking, cycling, and overall improved quality of life for residents.



- **Emission Reduction:** Significantly decrease carbon emissions across Hanoi.
- **Transport Quality:** Elevate the quality and accessibility of public and informal transport.
- **Innovation:** Stimulate innovation in urban mobility through collaboration.
- **Sustainability:** Promote sustainable practices in both transport and urban freight.



## OBJECTIVES

- Develop an operational and effective LEZ framework in Hanoi, improve air quality, reduce traffic congestion, and enhance urban sustainability.
- Transform Hanoi into a sustainable urban mobility model, emphasizing environmental responsibility, technological innovation, and improved accessibility

# Outputs and activities

## Comprehensive LEZ Framework

Baseline Assessments

Best Practice Analysis

Framework Development:

Stakeholder Engagement:

## Effective Policies and Regulations

Draft Regulations

Public Consultations

Finalization and Enactment

## Enhanced Local Capacity

Training Workshops

Training material

Knowledge exchange

## Public Awareness and Support

Public Awareness Campaigns

Educational Materials

Community Engagement

## Robust Monitoring, Evaluation and reporting

Monitoring Systems

Data Collection and Analysis

Progress Reports and Impact Assessments:

# Opportunities for LEZ

## Policies

- LEZ can be conducted under model of governance characterized by "Party leadership, State management, and People's ownership,"
- Consistent from the Central to the local levels, consensus among management levels from the Central to the local levels, high determination, and close coordination among all levels of governance.
- Particularly, the success of LEZ hinges on the active support and participation of various social strata.
- It is necessary to construct and finalize a legal framework related to toll collection within LEZ.

# Opportunities for LEZ

## Law on Environmental protection 2020

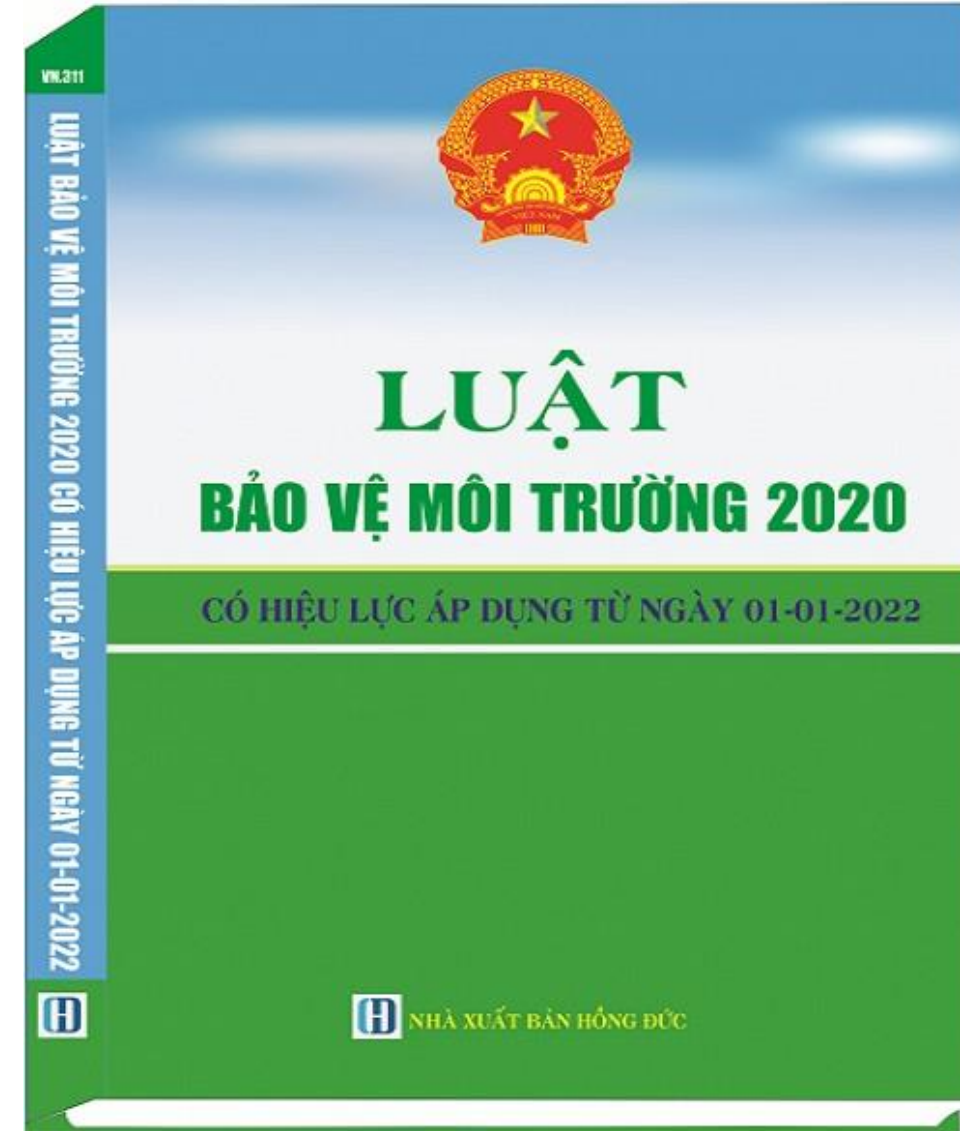
### Article 12. Air Quality Management

The provincial People's Committee is responsible for developing and implementing the AQM/CAP.

Hanoi AQMP prioritizes

1. Emission inventories, mitigating main emission sources
2. Assessing the impact of air pollution on public health.
3. Early warning and monitoring system on air quality

**Tentatively included in the City Law to be approved by 7/2024**



# Barriers for LEZ

## Citizen's awareness and economy conditions

- Educating people for mutual understanding and consensus is a challenge
- Need scientific evidence for LEZ application:
  - + Clear explanations with facts and figures to get LEZ support
  - + Air pollution is transboundary issues. LEZ may not improve air quality and adversely impact on health. -> interprovincial and regional coordination on air quality management
- Negative economic impact arises because residents do not pass through LEZ areas to shop and entertain...
- Charges mechanism or exemptions for grabbers or residents living in areas with LEZ
- A proportion of the poor can not afford the fees, limit to IT application

# Barriers for LEZ

## Technical infrastructure

- Economic, and social infrastructure in Vietnam is still relatively underdeveloped compared to countries that successfully applied LEZ like Europe, Japan, and Singapore.
- High investment cost for automatic toll collection technical infrastructure to alleviate traffic congestion: The fee collection methods need to be adapted since Vietnam is not as technologically advanced as Europe.
- Negative economic impact arises because residents who do not pass through districts with LEZ are affected differently from those living in the areas where LEZ are implemented. Ensuring fairness in enforcement is crucial, even for residents living within the LEZ.
- Ensuring digitalization and standardization of the database system and sharing traffic vehicle data.



# Barriers for LEZ

## Technical infrastructure

- Alternative electric vehicles must ensure sufficient quality, quantity, and cost-effectiveness.
- Public transportation system currently does not meet the demand for transitioning from private cars for a portion of the population.
- Public buses currently use diesel, CNG, gasoline, etc., thus investment in electric or hybrid buses is needed, which entails high costs.
- If walking replaces private cars, unfavored weather conditions and encroached pedestrian sidewalks are barriers

# Barriers for LEZ

## Fees:

- The fee calculation requires extensive research to determine the fee structure, criteria or charges. For example: 60,000 (Hanoi) or 70,000 (Ho Chi Minh City)
- The fee level must be calculated based on a sociological survey of people's ability to pay
  - + If the fee is set too low, the reduction in private car usage will not be significant, less impact on traffic congestion,
  - + If the fee is set too high, it may effectively reduce traffic congestion but could adversely affect the quality of life and the efficiency of transportation infrastructure utilization in the toll area, as well as making it difficult to maintain and operate Low Emission Zones (LEZ).
- Transparent management of toll collection requires clear mechanisms for who collects the fee and the purpose of revenue allocation, such as operating LEZ, road maintenance, public health initiatives, to gain the support of the people.

# Conclusion

- LEZ can be implemented with the governance model of "Party leadership, State management, People as masters," ensuring consistency from the central to local levels.
- Despite greater challenges than conveniences, it is essential to demonstrate in a selected area before upscaling for the sake of people's health and improved environment.
- Effective communication is needed to engage stakeholders and community's support
- . Good data base, best practices and scientific studies are crucial to ensure LEZ tailor made for Hanoi.



Thank you!

