

# RAQM-5 Hong Kong Forum

Opportunities in the Greater Bay Area –  
Regional Collaboration & Exposure  
Management Breakthrough



# Efforts to Tackle Air Pollution in China

-- Summary of the 5<sup>th</sup> RAQM Symposium

Prof. Zibing Yuan

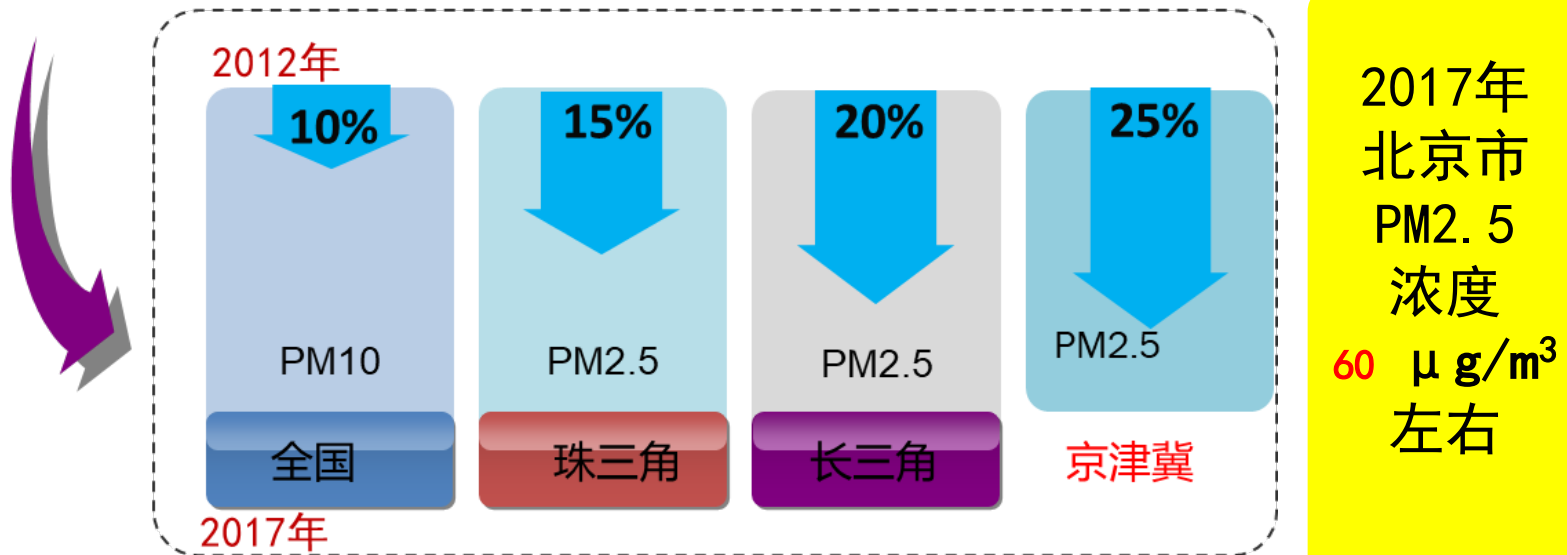
On behalf of Local Organizing Committee of 5RAQM

20 November 2017, Hong Kong

# Air Pollution Prevention Action Plan

**奋斗目标：**经过5年努力，全国空气质量总体改善，重污染天气较大幅度减少；京津冀、长三角、珠三角等区域空气质量明显好转。力争再用5年或更长时间，逐步消除重污染天气，全国空气质量明显改善。

**具体指标：**到2017年



建立区域协作机制。建立京津冀、长三角区域大气污染防治协作机制，由区域内省级人民政府和国务院有关部门参加，协调解决区域突出环境问题，组织实施环评会商、联合执法、信息共享、预警应急等大气污染防治措施。



# 中华人民共和国 大气污染防治法

## Law on the Prevention and Control of Air Pollution

### 1987年版

- 第一章 总 则
- 第二章 大气污染防治的监督管理
- 第三章 防治烟尘污染
- 第四章 防治废气、粉尘和恶臭污染
- 第五章 法律责任
- 第六章 附 则 （共41条）

### 1995年版

- 第一章 总 则
- 第二章 大气污染防治的监督管理
- 第三章 防治燃煤产生的大气污染
- 第四章 防治废气、粉尘和恶臭污染
- 第五章 法律责任
- 第六章 附 则 （共50条）

### 2000年版

- 第一章 总 则
- 第二章 大气污染防治的监督管理
- 第三章 防治燃煤产生的大气污染
- 第四章 防治机动车船排放污染
- 第五章 防治废气、尘和恶臭污染
- 第六章 法律责任
- 第七章 附 则 （共66条）

### 2015年版

- 第一章 总则
- 第二章 大气污染防治标准和限期达标规划
- 第三章 大气污染防治的监督管理
- 第四章 大气污染防治措施
  - 第一节 燃煤和其他能源污染防治；
  - 第二节 工业污染防治；
  - 第三节 机动车船等污染防治；
  - 第四节 扬尘污染防治；
  - 第五节 农业和其他污染防治
- 第五章 重点区域大气污染联合防治
- 第六章 重污染天气应对
- 第七章 法律责任
- 第八章 附则（共129条）

●国家建立**重点区域大气污染联防联控机制**，统筹协调重点区域内大气污染防治工作。

●国务院环境保护主管部门划定国家大气污染防治重点区域，报国务院批准。省、自治区、直辖市可以规定划定本行政区域的大气污染防治重点区域。

●重点区域内有关省、自治区、直辖市人民政府应当确定**牵头的地方人民政府**，定期召开联席会议，按照**统一规划、统一标准、统一监测、统一的防治措施**的要求，开展大气污染联合防治，落实大气污染防治目标责任。**国务院环境保护主管部门应当加强指导、督促。**

●国务院环境保护主管部门会同国务院有关部门、国家大气污染防治重点区域内有关省、自治区、直辖市人民政府，**制定重点区域大气污染联合防治行动计划。**

●重点区域内应当实施更严格的机动车大气污染物排放标准，**统一在用机动车检验方法和排放限值，并配套供应合格的车用燃油。**

●可能对重点区域的大气环境造成严重污染的规划和项目，通报有关信息，进行会商。**会商意见及其采纳情况作为环境影响评价文件审查或者审批的重要依据。**

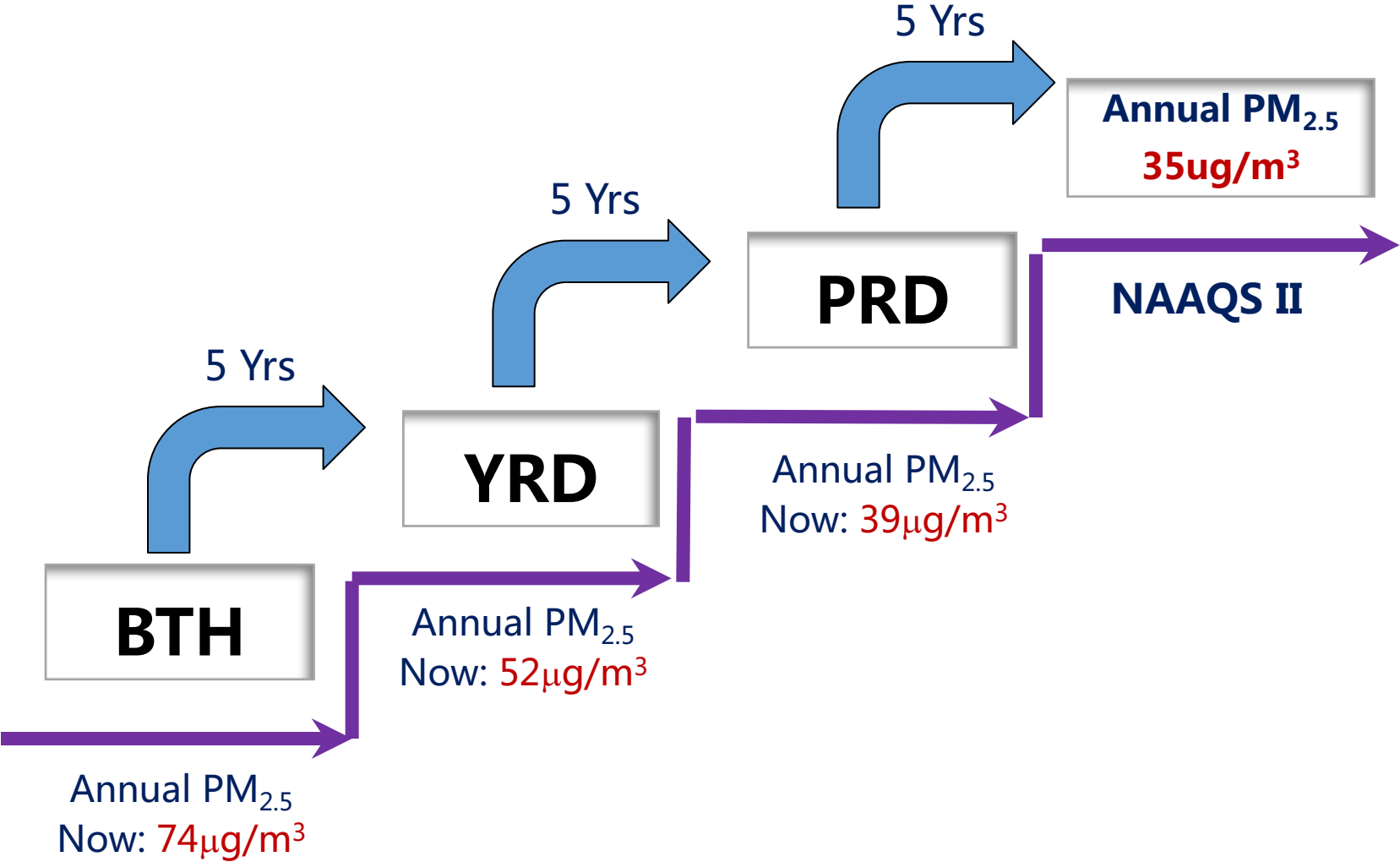
●国家大气污染防治重点区域内新建、改建、扩建用煤项目的，**应实行煤炭的等量或者减量替代。**

●国务院环境保护主管部门应当组织建立国家大气污染防治重点区域的大气环境质量监测、大气污染源监测等相关信息共享机制，利用监测、模拟以及卫星、航测、遥感等新技术分析重点区域内大气污染来源及其变化趋势，并向社会公开。

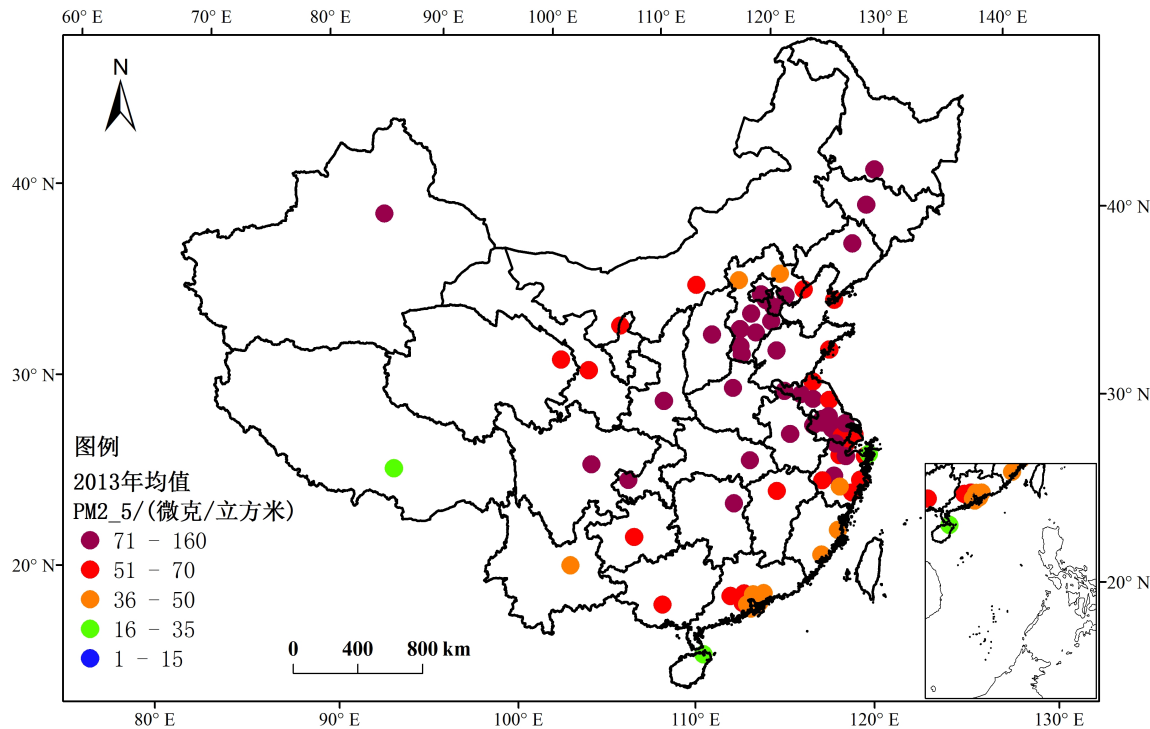
●国务院环境保护主管部门和国家大气污染防治重点区域内有关省、自治区、直辖市人民政府可以组织有关部门开展**联合执法、跨区域执法、交叉执法。**



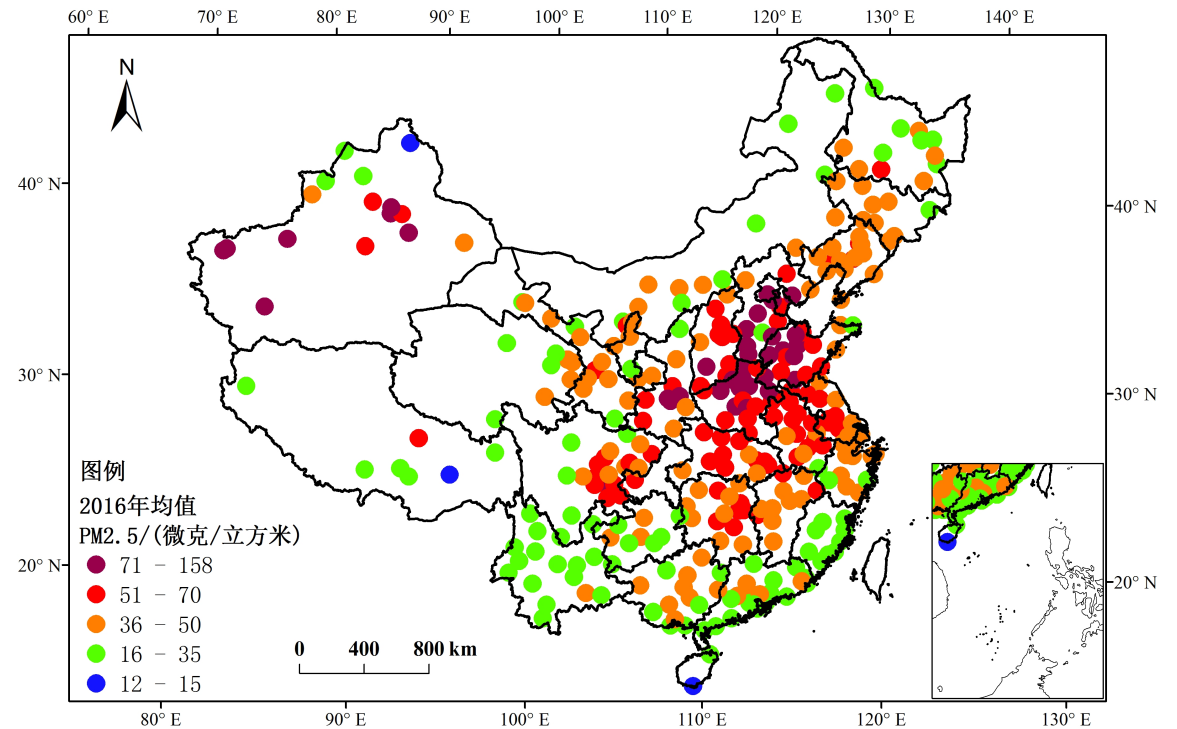
**Step-wise Attainment:** to make the AQ in the PRD, YRD and BTH area to reach attainment in the 13<sup>th</sup>, 14<sup>th</sup>, and 15<sup>th</sup> five-year plan, respectively.



# Enhancement of Air Quality Monitoring Network

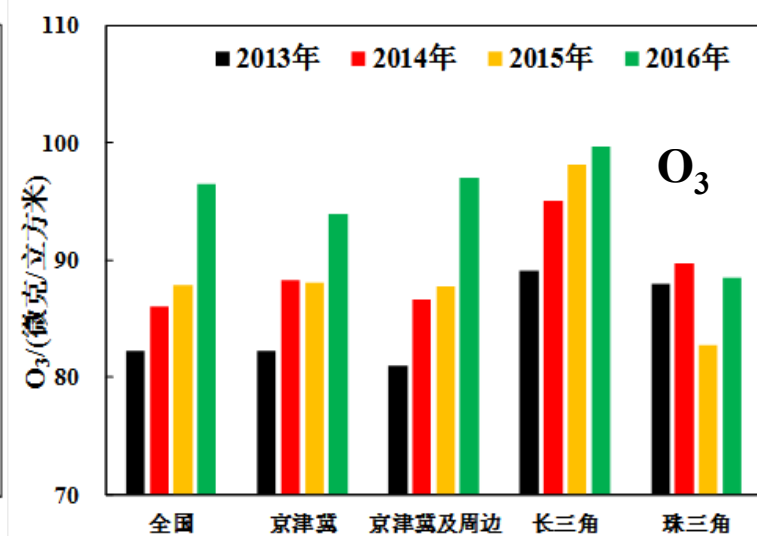
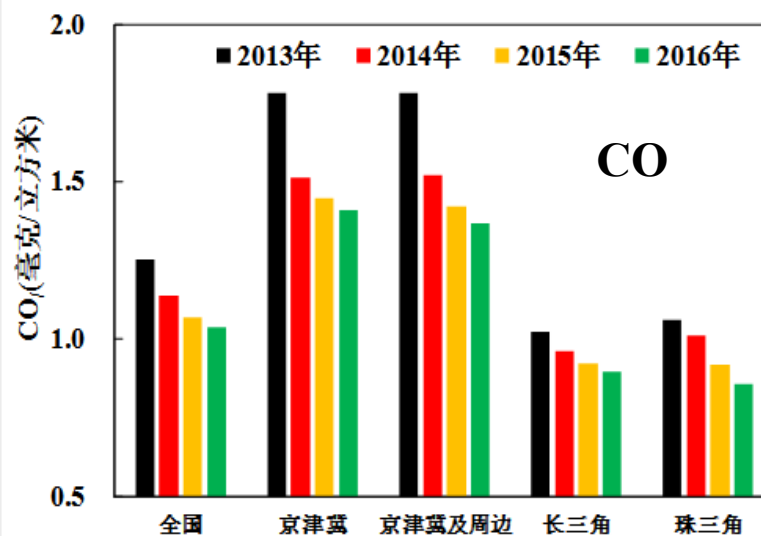
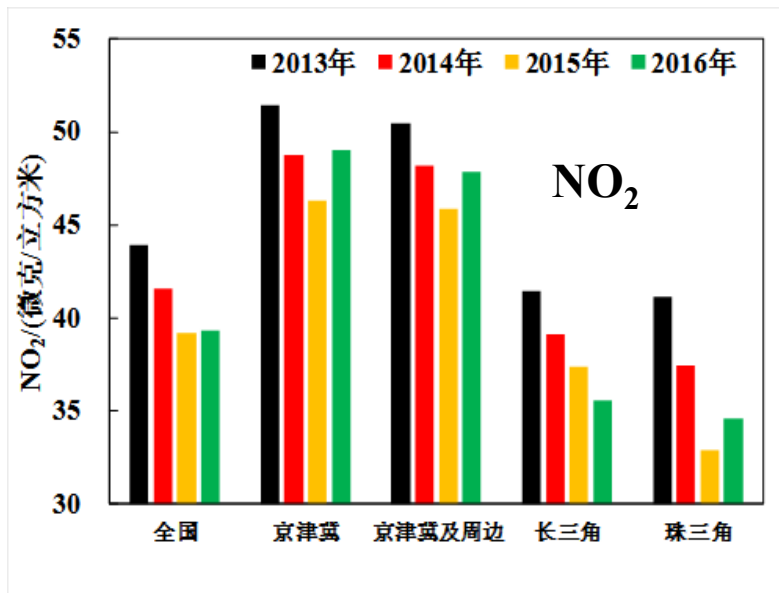
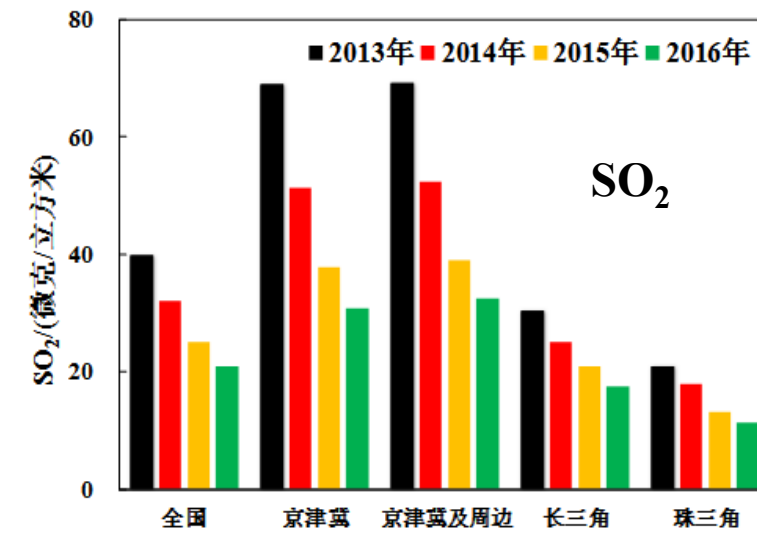
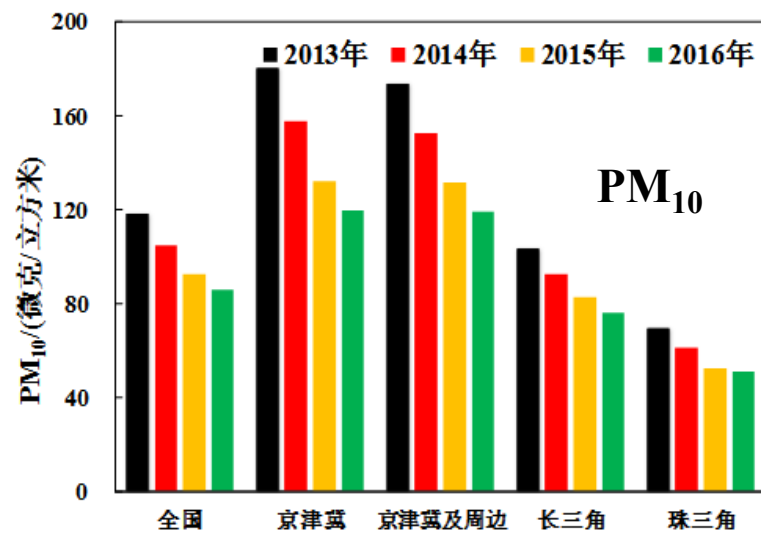
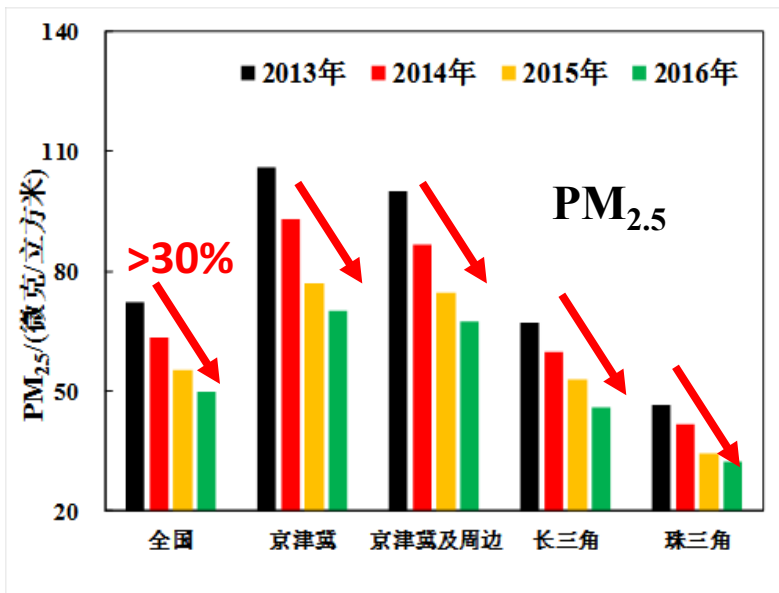


**74 cities in 2013**



**338 cities in 2016**

# Air Quality Trend in China

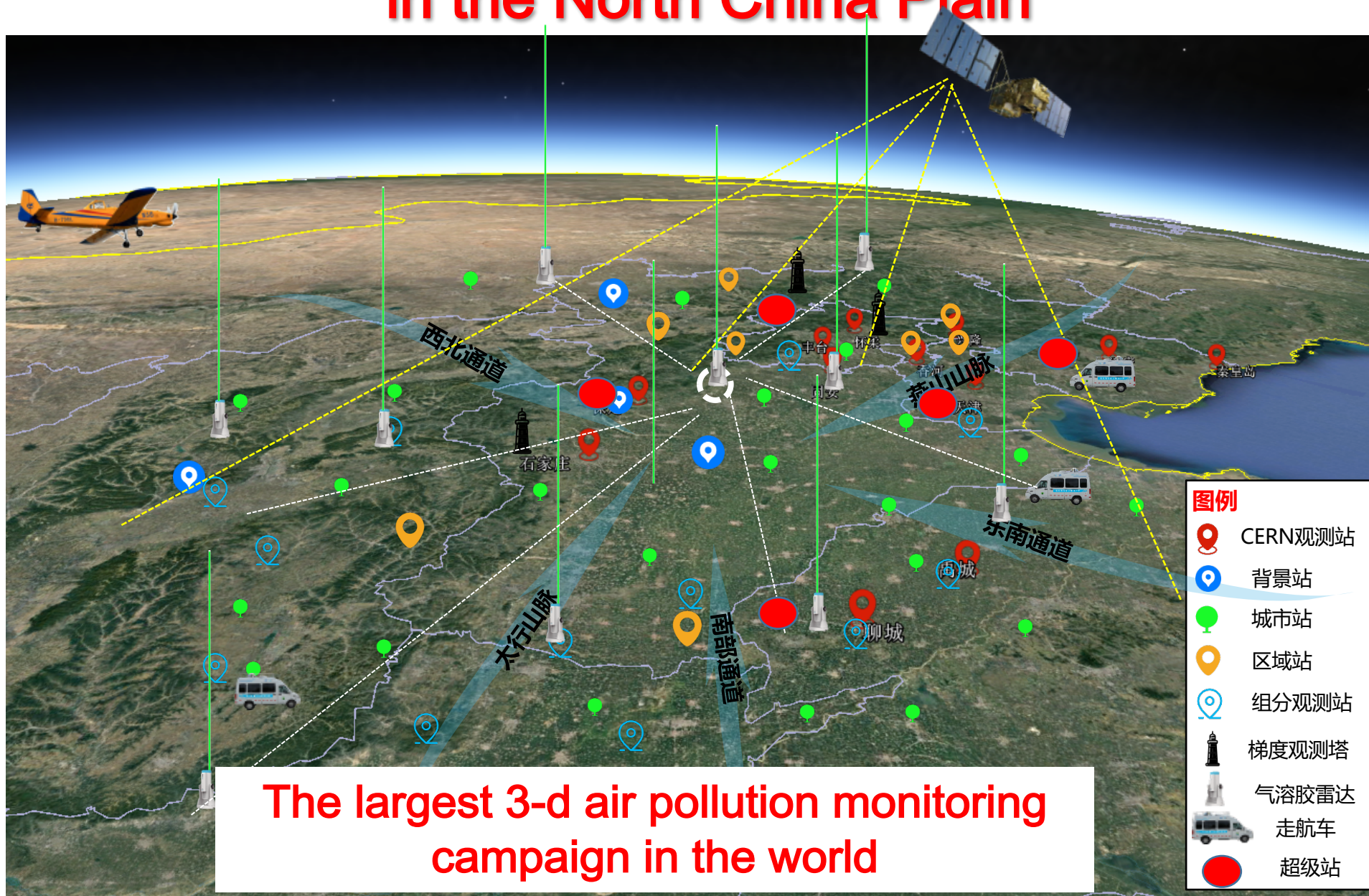




# A series of Key Research Program in relation to AQM

Project	Source	Main Target
雾霾追因与控制（200 million RMB）	中国科学院战略先导	成因机制与控制途径
蓝天科技工程（1 billion RMB）	科技部十二五863计划	监测、机制与控制技术研发
清洁空气研究计划（1 billion RMB）	环保部	决策支持导向相关研究
大气污染机理研究（200 million RMB）	基金委重大科学计划	大气化学-气象过程机制
大气污染防治（2.5 billion RMB）	国家重点研发计划	监测-机制-技术-示范-管理全链条
京津冀大气攻关（500 million RMB）	总理基金	大气重污染应对
京津冀重大工程（15 billion RMB）	国家专项工程	解决传统的污染和生态修复问题

# Regional Monitoring Network and Comprehensive Campaign in the North China Plain



# Technological Needs for AQ Continuous Improvement

为实现空气质量达标，需要在以下方面加强科技创新：

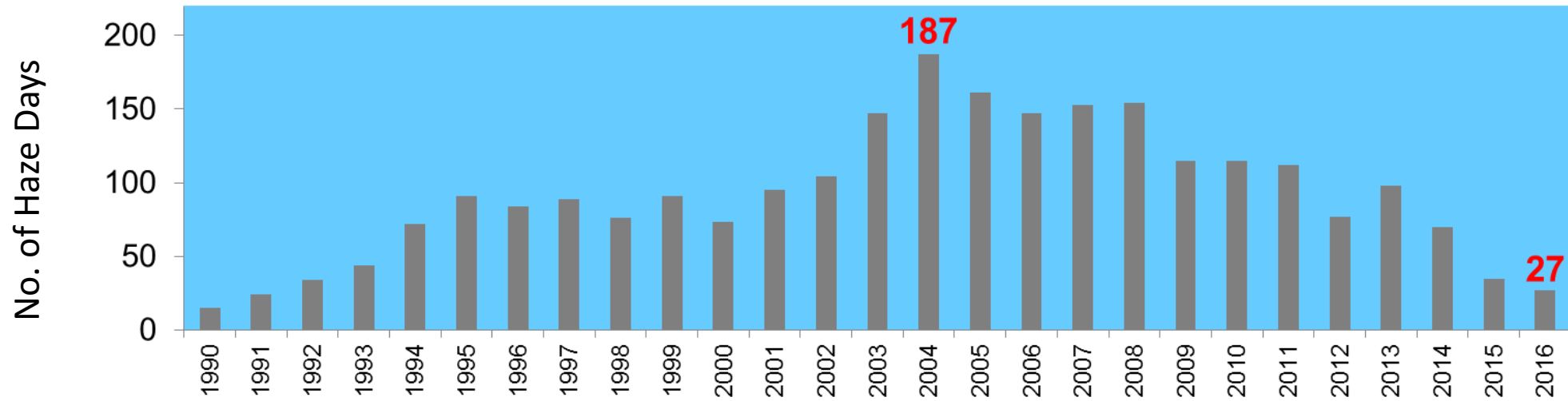
- **防治重点**：从应对雾霾天气**转向**PM<sub>2.5</sub>和臭氧的协同防控
- **减排途径**：从末端控制为主**转向**全过程控制的深度净化
- **管理决策**：从总量减排为主**转向**多目标约束的目标管理
- **技术装备**：从松散技术合作**转向**全创新链条的深度融合



Establish Innovation Chain of **Basic Research – R&D – Application Demonstration**

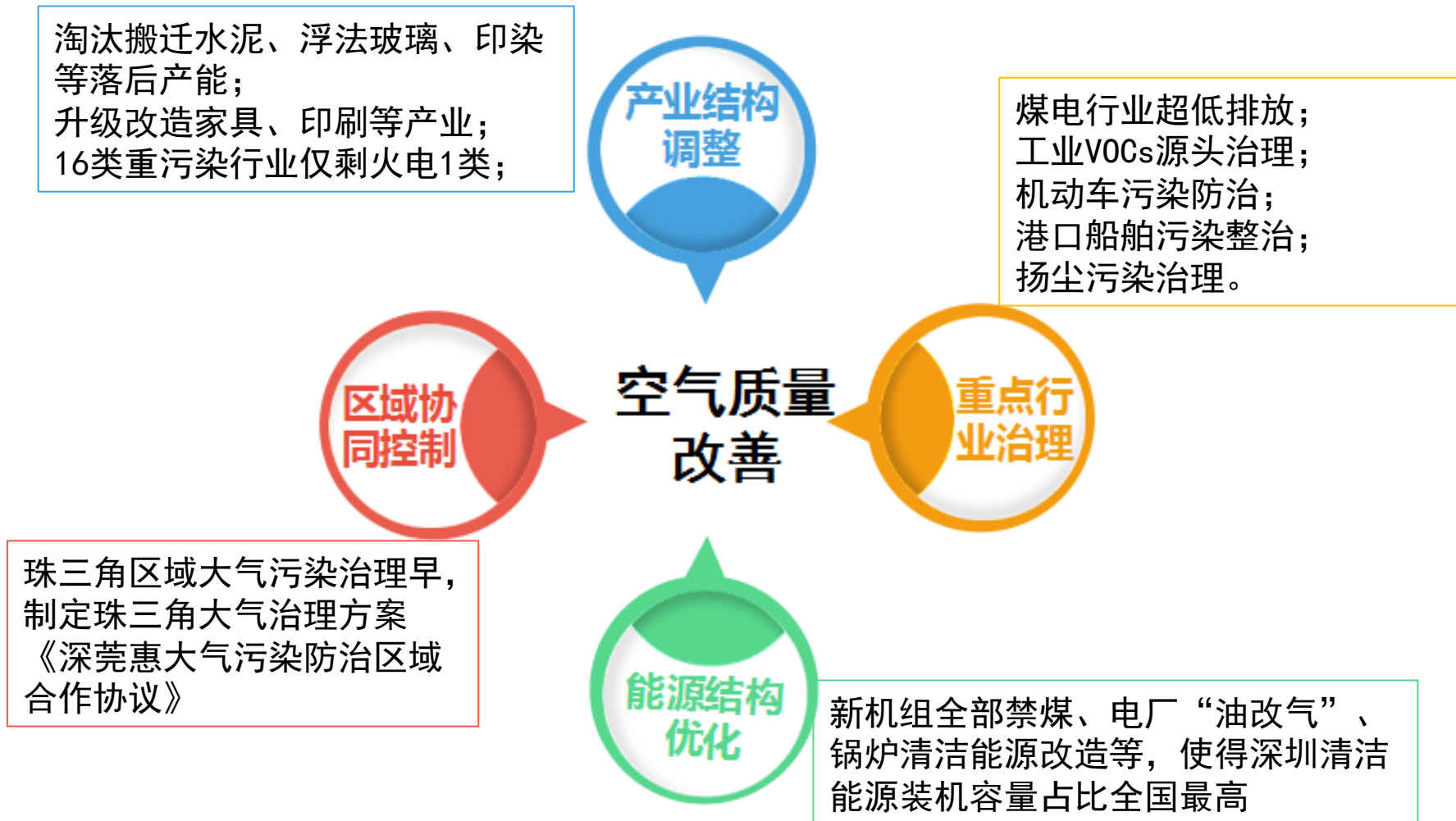


# Evolution of Air Pollution in Shenzhen



Air Quality deteriorated before 2004 and improved gradually afterwards.

# PM<sub>2.5</sub> as the Core of Air Quality Management



# Air Quality Target in the 13<sup>th</sup> Five-year Plan

Agreement between MEP and GD Provincial Government: PM<sub>2.5</sub> Concentration to achieve WHO IT-2 by 2020

## 大气“一号文”

科学测算、专家论证、征求意见

- **目标：**2020年PM<sub>2.5</sub> < 25微克/立方米；
- **措施：**7大领域30条“升级版”措施；
- **效益：**在国内一线城市中率先达到世卫组织空气质量准则的第二阶段过渡目标值，并可带来健康效益80亿元/年。



## 深圳市人民政府文件

深府〔2017〕1号

### 深圳市人民政府关于印发大气环境质量提升计划（2017—2020年）的通知

各区人民政府，市政府直属各单位：

现将《深圳市大气环境质量提升计划（2017—2020年）》印发给你们，请认真组织实施。实施中遇到的问题，请径向市人居环境委反映。

深圳市人民政府  
2017年2月13日



# Vehicle Emission Control



## Eliminate Yellow-label Cars

淘汰全部近39.2万辆黄标车及老旧车。



## Clean Fuel Vehicle

公交车100%电动化；  
累计推广新能源车7.4万辆。



## Upper limit

小汽车限购，轻型柴油车禁止登记注册。



## Regulate Diesel Trucks

逐步淘汰国III标准柴油车，  
新车实施国V标准。



## Improve Fuel Quality

分阶段逐步提高燃油标准。

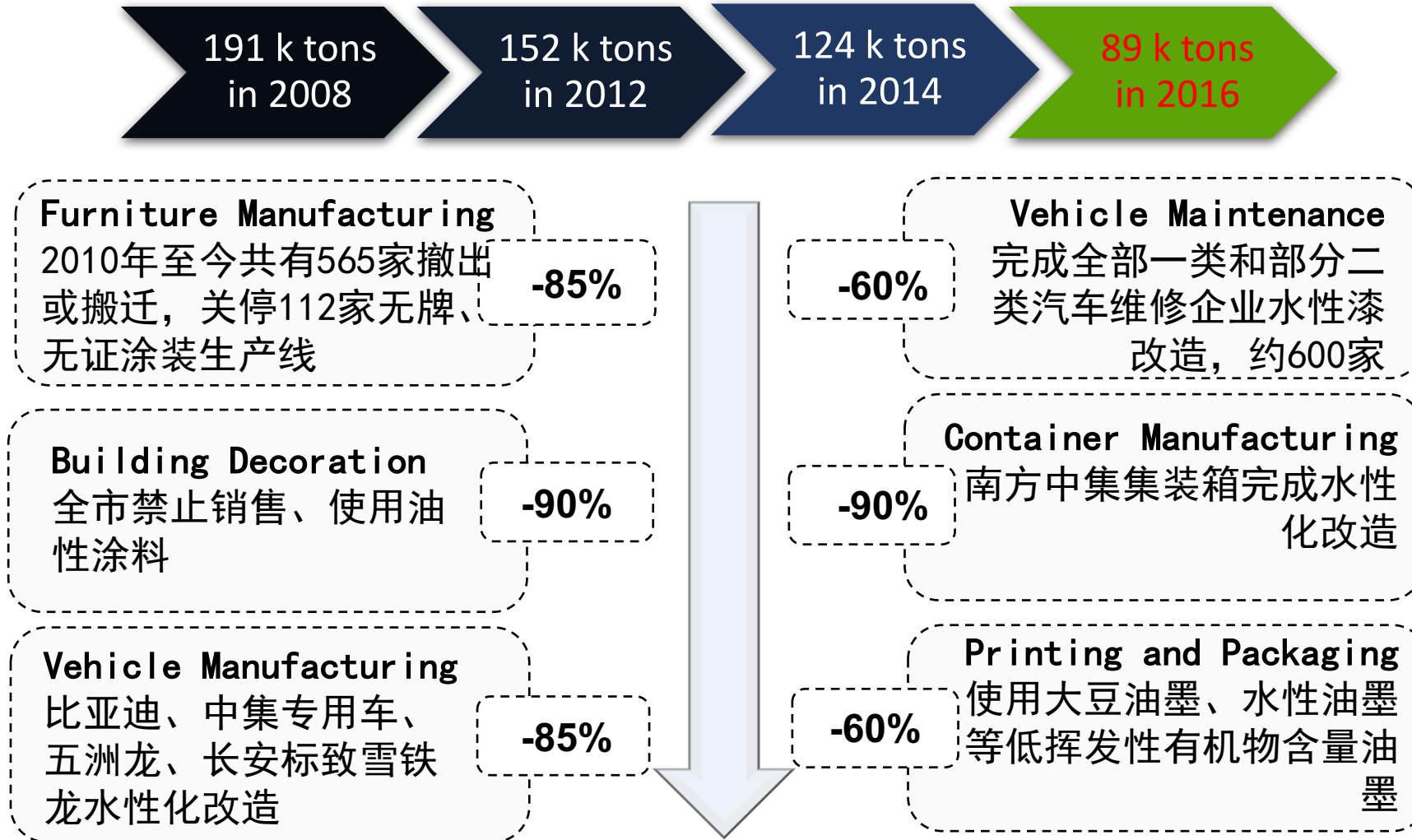


## Traffic Restriction

黄标车全市全天限行；  
异地车部分时段路段限行。

减排量：NO<sub>x</sub> 10万吨，PM<sub>2.5</sub> 2.8万吨，VOCs 3.5万吨。

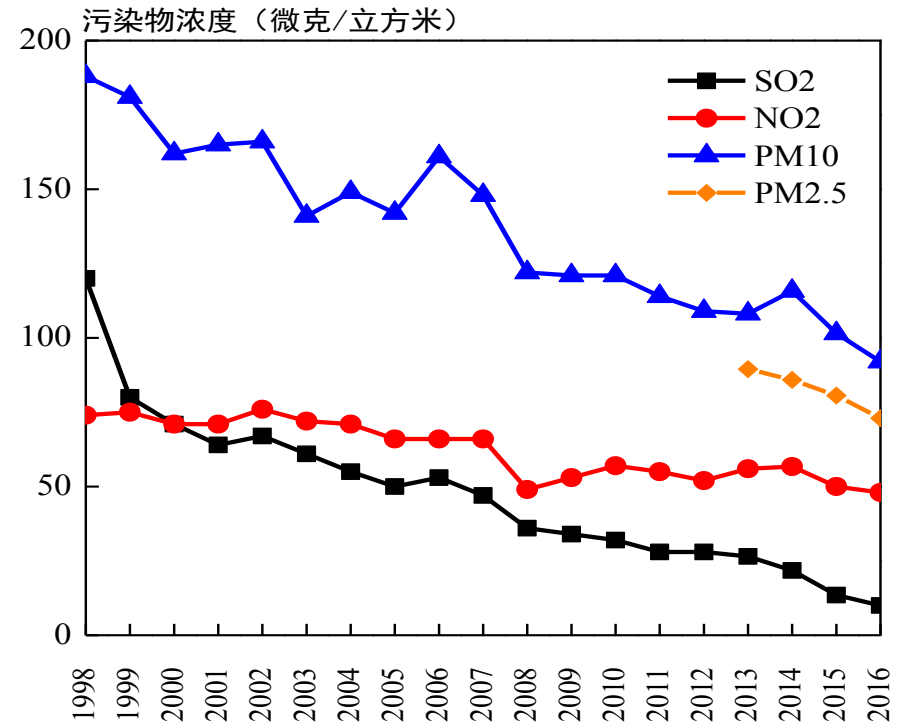
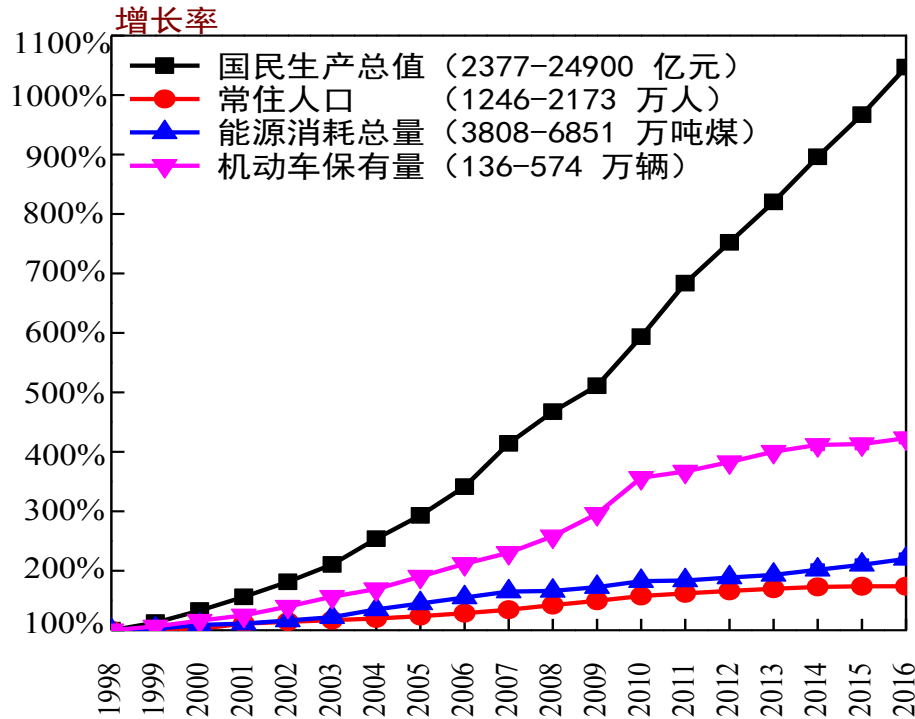
# VOCs Control



# 治理历程：北京的努力

## Governance History: Beijing's Efforts

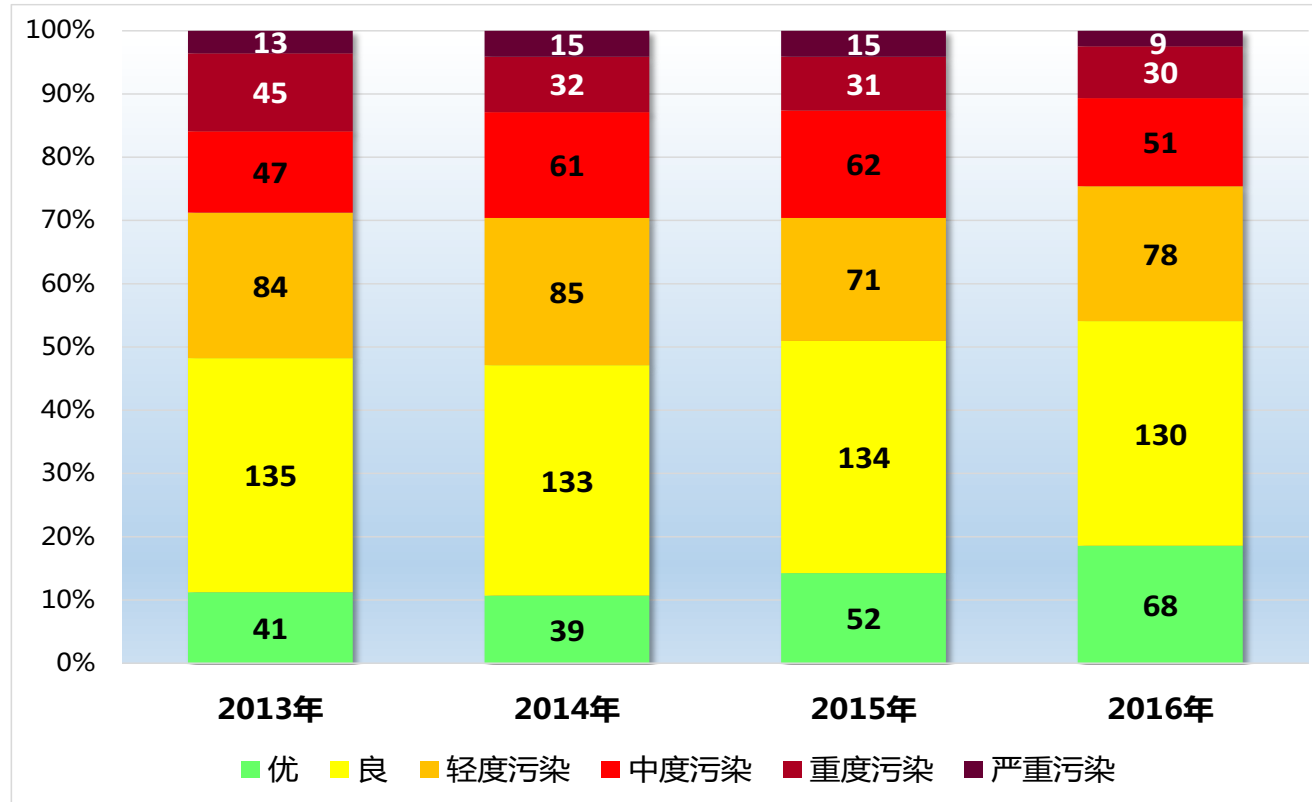
UNEP Executive Director Achim Steiner: **in the face of huge challenges, Beijing has succeeded in improving the air quality while maintaining the rapid development of the city, and its experience is definitely worth sharing with other developing economies and emerging cities.**





# 近四年空气质量状况

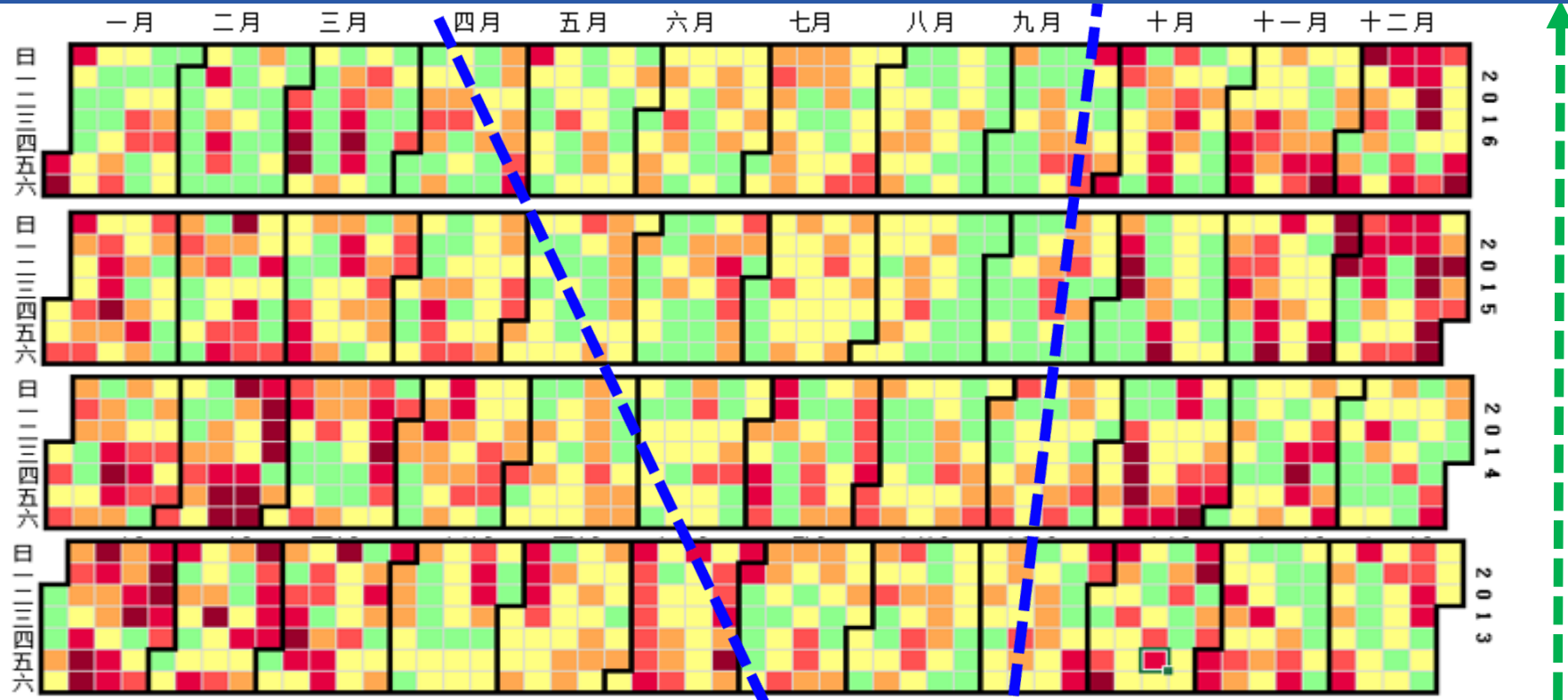
## Air Quality Status in Recent 4 Years



- ❑ **198 compliance days in 2016**, accounting for 54%, 12 days more than 2015 (16 more Class 1 excellent days), 22 days more than 2013, with a compliance rate up by 6%;
- ❑ **39 heavy pollution days in 2016** (38 days for PM2.5 and 1 day for O3), accounting for 11%; 7 days less than 2015, 19 days less than 2013;
- ❑ Among air quality exceedance days in 2016, **64.9% for PM2.5**, 31.5% for O3, and 3.6% for PM10.

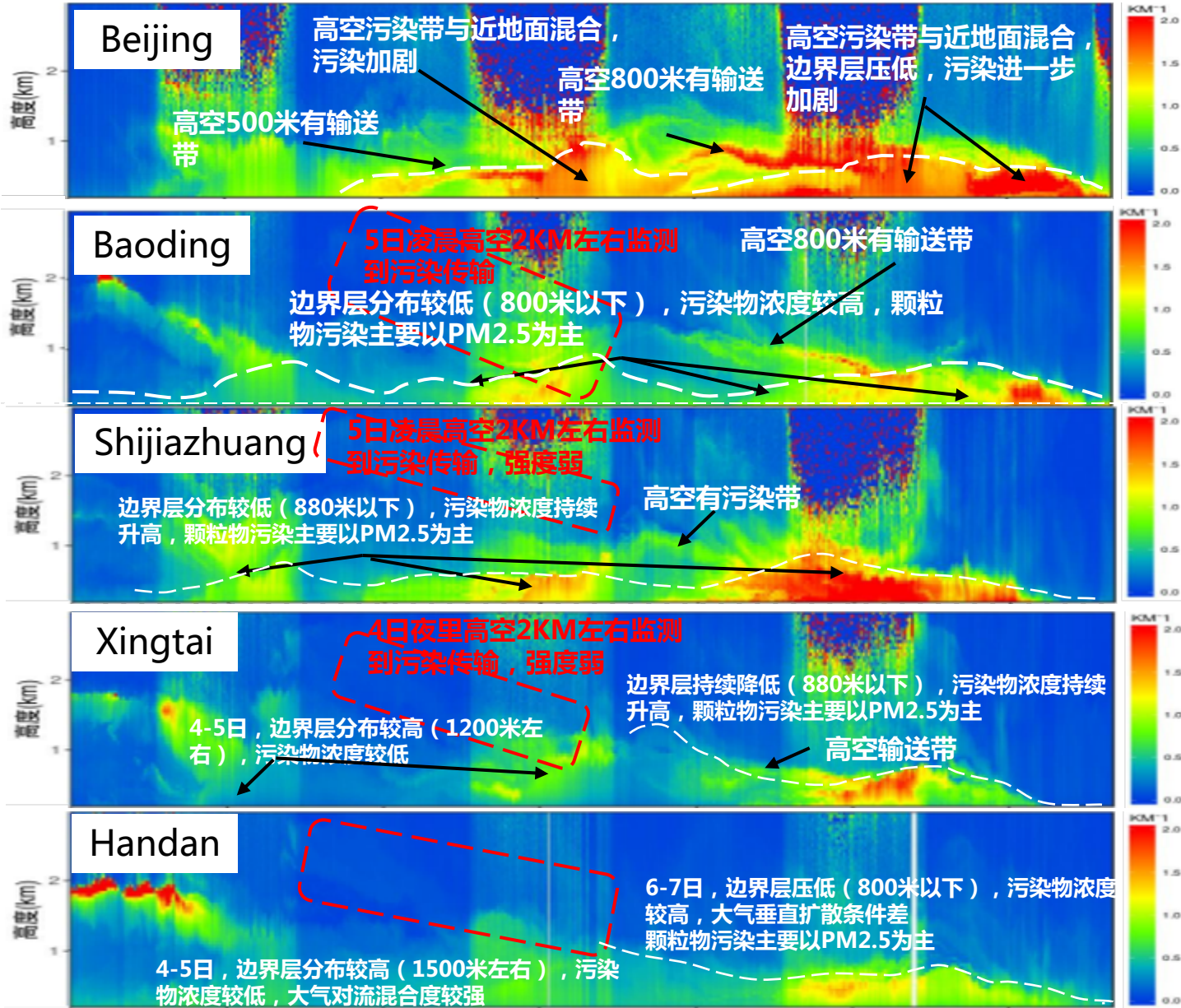
# 2013-2016年PM<sub>2.5</sub>污染日历

## PM<sub>2.5</sub> Pollution Calendar during 2013-2016



- PM<sub>2.5</sub>一级优天数由71天增加到126天 ;  
PM<sub>2.5</sub> Class 1 excellent days increased from 71 days to 126 days;
- PM<sub>2.5</sub>优良率由56%增加到64% ;  
PM<sub>2.5</sub> excellent rate increased from 56% to 64%;
- PM<sub>2.5</sub>重污染天数由58天减少为38天。  
PM<sub>2.5</sub> heavy pollution days reduced from 58 days to 38 days.

# A pollution process during 4-7 November 2017



Become serious from south to north



Enhanced 3-d Observation facilitates pollution emergency control to lower the peak pollution levels

4日0时      5日0时      6日0时      7日0时

# Comprehensive Policies

- **A large special fund** was set up for energy saving, emission reduction and environmental protection.
- **Pollution charging** standards were **elevated and categories of fees increased**. Fugitive dust and VOCs were also included.
- Beijing has formulated **41 local emission standards** on coal-fired boilers, gas-fired boilers, petrochemical industry and vehicles. Beijing has the **most comprehensive system** and the **most strict standard limits** in China.
- The Coordinated Group for the Joint Prevention and Control of Air Pollution in Beijing-Tianjin-Hebei Region and Surrounding Areas was established in 2013.



# 《跨地区环保机构试点方案》

## Pilot Program for Trans-regional Environmental Protection Agency

在京津冀及周边地区开展跨地区环保机构试点，要围绕改善大气环境质量、解决突出大气环境问题，理顺整合大气环境管理职责，探索建立跨地区环保机构，深化京津冀及周边地区污染联防联控协作机制，实现统一规划、统一标准、统一环评、统一监测、统一执法，推动形成区域环境治理新格局。

Unified Planning, Unified Standard, Unified EIA, Unified Monitoring,  
Unified Law Enforcement

京津冀及周边区域空气质量管理局呼之欲出！

Air Quality Management Bureau for BTH and Surrounding Area is under active preparation.



# C.Y. Leung' s speech at the Clean Air Forum of the GBA

## About Collaboration between Hong Kong and Guangdong

This led to the first air quality management plan with timelines and reduction goals to be achieved by both Guangdong and Hong Kong.

Some of you who participated in this landmark effort may recall the coordination problems, as the two governments had not worked together under the new constitutional arrangements before. But the joint determinations underlined the importance that both sides attached to this pressing issue.

## About the Guangdong-Hong Kong-Macau Greater Bay Area

The national vision for the cluster of 11 cities with a total population of 66 million and a GDP the size of Australia or Korea is for the region to coordinate their development in many areas. Economic cooperation is not the only area on which all cities have to work together.

Environmental degradation needs to be reversed; technology and management to be advanced; jobs to be created without sacrificing the environment; and the overall well-being of the people will continue to improve.

'Ecological Civilization' has become a national strategy for development all over China. This concept puts the environment as a priority. The President and Premier of the Country have made this clear over the course of this year.

## **Main Points Achieved in the GBA Forum**

1. Air pollution control in the PRD played a leading and demonstrating role to the AQM in other parts of China in the past 20 years.
2. Environmental quality is the aspect with the largest gap between GBA and other major bay areas, e.g. San Francisco and Tokyo. Ecological civilization is one of the key parts for building up a livable GBA, while air pollution control is the leading requirement of ecological civilization. Environmental quality in the GBA should be in the same level as other major bay areas.
3. GBA is still in the process of rapid economic development. How to achieve air quality improvement along with rapid economic development is a world-class difficult problem. Pollution control strategies must be accurate and thus need scientific research to back up.

## **Main Points Achieved in the GBA Forum**

4. Guangdong and Hong Kong have built up a very good research collaboration in terms of air pollution prevention and control in the past 20 years. Such a collaboration needs to be strengthened. A scientific think tank for air quality management and beyond are recommended.
5. More importantly, regional air pollution control should be performed in a more regionally unified manner. On the premise of maintaining “one country, two systems”, novel institutional system should be considered.
6. The AQM experience in the GBA can be used for reference in other developing areas along with the Belt and Road, enhancing China’s impact and soft power to the world.

# Xi Jinping' s speech at the 19<sup>th</sup> National Congress of CPC

## IX. Speeding up Reform of the System for Developing an Ecological Civilization, and Building a Beautiful China

Man and nature form a community of life; we, as human beings, must respect nature, follow its ways, and protect it. Only by observing the laws of nature can mankind avoid costly blunders in its exploitation. Any harm we inflict on nature will eventually return to haunt us. This is a reality we have to face.

What we are doing today to build an ecological civilization will benefit generations to come. We should have a strong commitment to socialist ecological civilization and work to develop a new model of modernization with humans developing in harmony with nature. We must do our generation's share to protect the environment.

**Thanks**