



北京市大气污染防治历程

A Review of Air Pollution Control In Beijing: 2013—2017

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概况 Introduction and Background

北京社会经济状况 Beijing in Brief

◆ Rapid social and economic development:

- 面积 Area: 16,400 km²
- 人口 Population: over 21 million (2017)
- GDP总量 Total GDP: 2.8 trillion RMB (2017)
- 机动车保有量 Automobiles: 5.9million (2017)
- 能源消耗量 Energy consumption: 69.6 million tons of standard coal (2016)

- ### ◆ The rapid growth of economy and society has brought huge pressure on environment. In particular, air pollution has become a major challenge in Beijing.



概 况 Introduction and Background

- 1998年，我市拉开了大规模、综合治理大气污染的序幕（以PM10为重点），连续实施了16个阶段大气污染治理措施

Since 1998, Beijing has prioritized air pollution control (focusing on PM10) and moved aggressively to control pollution from all sources, and 16 stages of air pollution control measures have been implemented in succession

- 2012年，新修订的《环境空气质量标准》新增了PM 2.5 和O3 这两项监测指标，同时加严了PM10的浓度限值

In 2012, the newly revised *National Ambient Air Quality Standard* included PM2.5 and O3 monitoring indicators and tightened PM10 concentration limits

- 2013年，国家发布《大气污染防治行动计划》，要求到2017年北京市PM2.5年均浓度控制在60微克/立方米左右

In 2013, China issued the *Air Pollution Prevention and Control Action Plan*, requiring that the average annual concentration of PM2.5 in Beijing decrease to around 60 $\mu\text{g}/\text{m}^3$ by 2017

概 况 Introduction and Background

- 2013年，贯彻落实国家要求，根据PM2.5源解析结果，本市出台并实施了《北京市2013-2017年清洁空气行动计划》，聚焦PM2.5污染，重点在压减燃煤、控车减油、治污减排、清洁降尘等领域，开展了一系列减排工程

In 2013, based on the PM2.5 source apportionment results, Beijing Municipal Government (BMG) promulgated and implemented a comprehensive air pollution control program, or *Beijing Clean Air Action Plan 2013-2017*, which focused on controlling pollution related to coal combustion, vehicle emissions, industrial discharge and fugitive dust

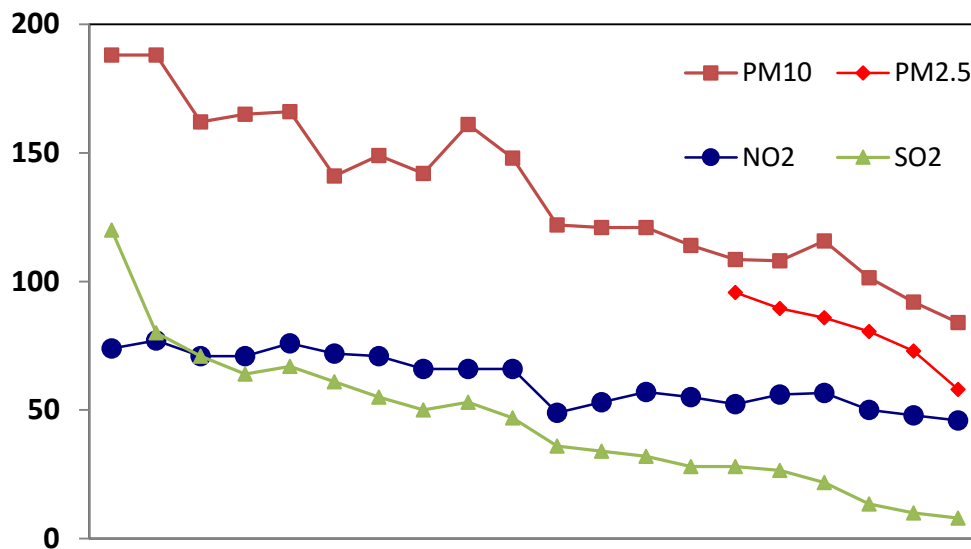
- 2014年，本市出台《北京市大气污染防治条例》，为进一步改善本市大气环境，保障人体健康，促进经济、社会可持续发展，提供强有力的法治保障

In 2014, BMG issued *Beijing Air Pollution Prevention and Control Regulation*

空气质量情况持续改善 Air Quality Continuously Improved

PM2.5: 39% ↓ PM10: 55% ↓ SO₂: 93% ↓ NO₂: 38% ↓

单位：微克/立方米 unit: μg/m³

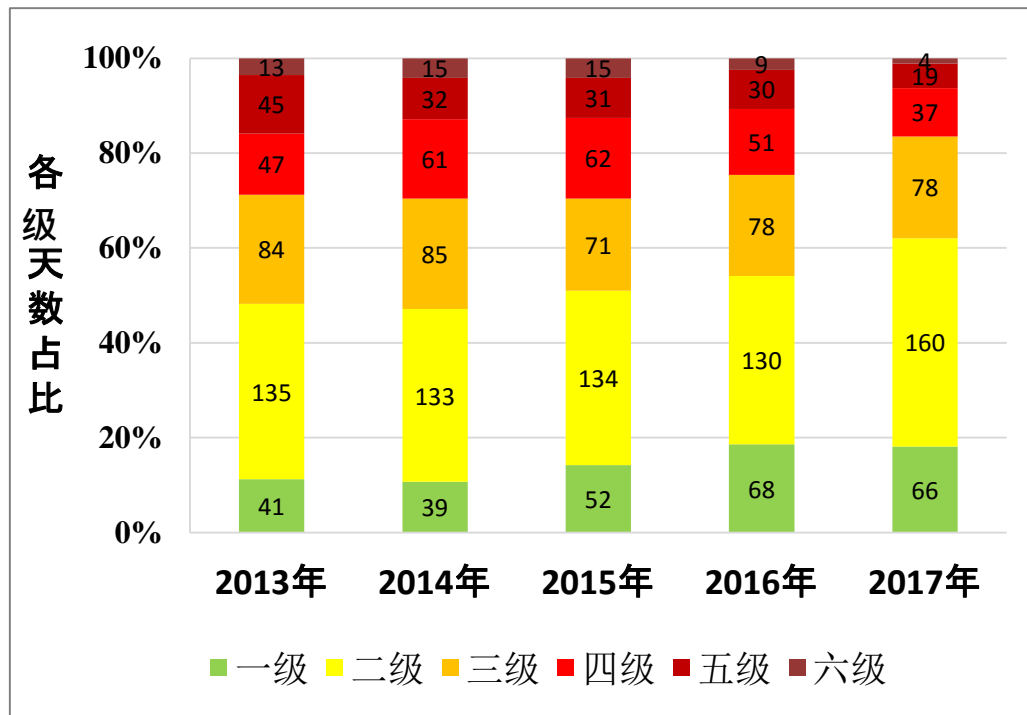


北京市清洁空气行动计划
Beijing Clean Air Action Plan (2013-2017)



空气质量情况持续改善

Air Quality Continuously Improved



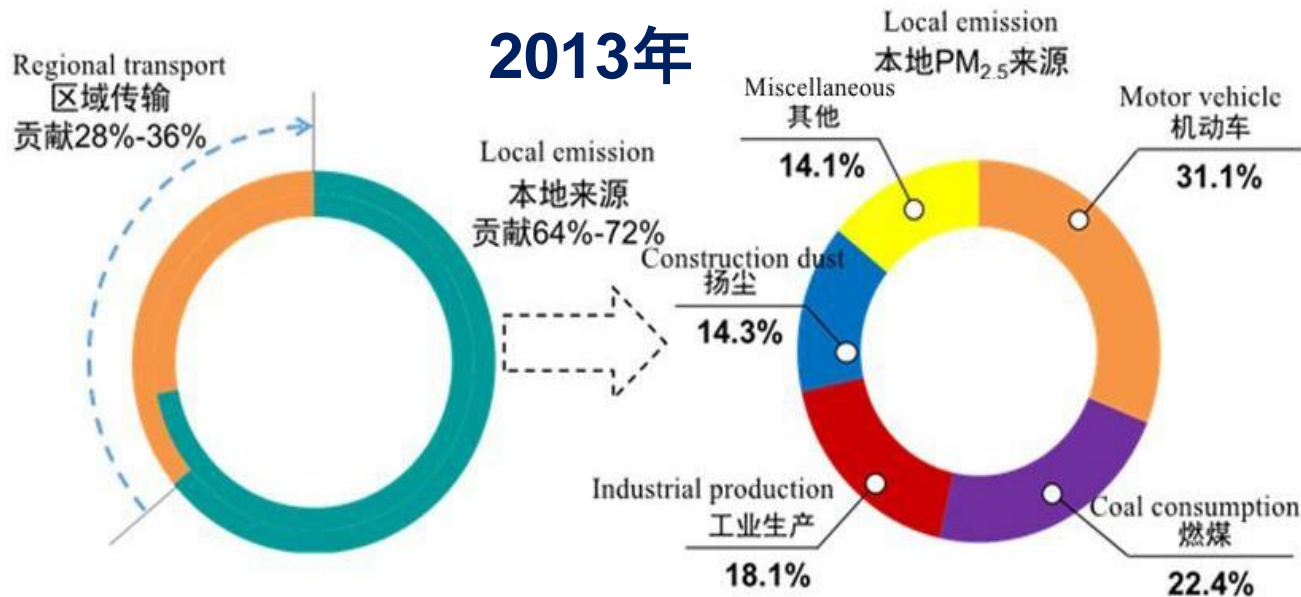
| 年份 | 达标天数 (占比) | 重污染天数 (占比) |
|-------|----------------|---------------|
| 2013年 | 176 (48.2%) | 58 (15.9%) |
| 2014年 | 172 (47.1%) | 47 (12.9%) |
| 2015年 | 186 (51.0%) | 46 (12.6%) |
| 2016年 | 198 (54.1%) | 39 (10.7%) |
| 2017年 | 226 (62.1%) | 23 (6.3%) |

- **空气质量达标天数呈增加趋势，2017年达标天数为226天，占比62.1%，较2013年多了50天**
The number of days when air quality meets the standard increased to 226 in 2017, 50 more than that in 2013
- **重污染天数逐年减少，从2013年的58天下降到2017年的23天，下降60.3%**
The number of days with heavy pollution decreased from 58 in 2013 to 23 in 2017

PM2.5来源解析

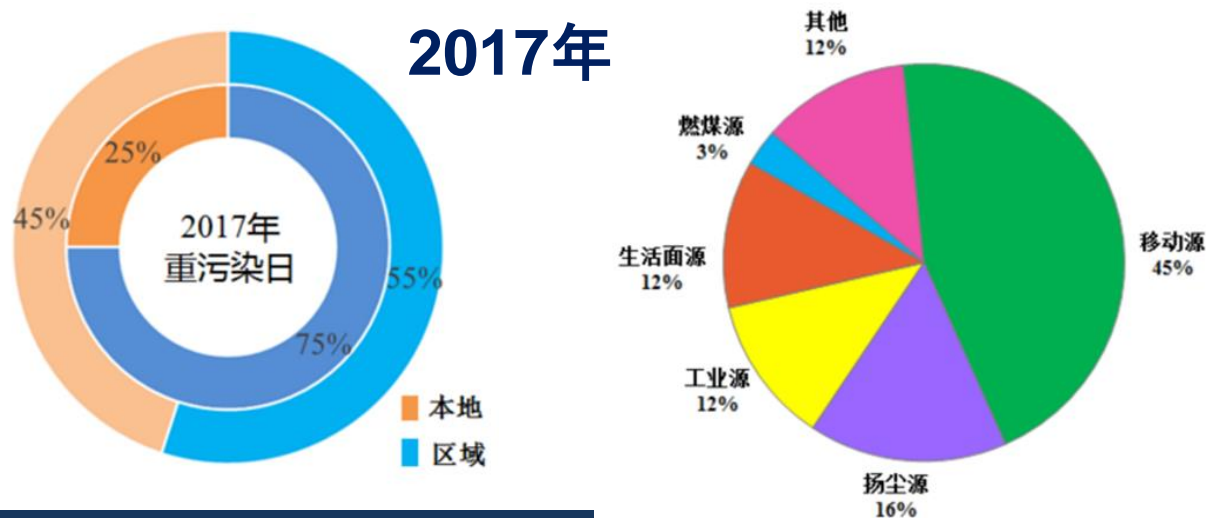
PM2.5 Source Apportionment

2013年



In 2013, the source apportionment study identified major local contributors, including on-road vehicles, coal combustion, industrial production and dust

2017年



- 区域传输占比有所增加
- 本地污染源中，移动源、扬尘源贡献率有所上升，燃煤和工业源贡献率下降，生活面源贡献率进一步凸显

大气污染防治主要措施

Air Pollution Control Measures

◆ 工程减排

Project Measures

- 压减燃煤 Coal-fired Emission Control
- 控车减油 Vehicle Emission Control
- 治污减排 Industry Pollution Control
- 清洁降尘 Dust Control

◆ 管理减排

Management Measures

- 法规标准 Regulations and Standards
- 经济政策 Economic Incentive
- 加强监测 Monitoring Capacity
- 区域协同 Regional Coordination

工程减排措施

Project Measures

- 以“冬病夏治”为主，推动能源结构优化升级
Energy Structure Optimization and Coal-fired Emission Control
 - 电厂：建成四大燃气热电中心，代替燃煤电厂
Power Plants: Four gas-fired and thermal power centers have been built to replace the coal-fired power plants
 - 燃煤锅炉清洁能源改造：实施3.9万蒸吨燃煤锅炉清洁能源改造或淘汰,基本淘汰10蒸吨及以下燃煤锅炉
Coal-fired Boilers: a total of 39,000 (t/h) coal-fired boilers have been scrapped or renovated to use clean energy, and almost all small coal-fired boilers (with a capacity of less than 10 t/h) have been removed.
 - 生活领域散煤改清洁能源: 完成近百万户居民煤改清洁能源
Domestic Heating: Coal-to-electricity conversion for nearly one million households
 - 截至2017全市燃煤总量已下降到500万吨以内，2016年天然气用量增加到160亿立方米
 - Coal consumption reduced to 5 million tons in 2017, and natural gas consumption increased to 16 billion m³ in 2016

工程减排措施

Project Measures

□ 以“退改限”为主，机动车结构逐步清洁化

Vehicle Structure Optimization

- 实施第五阶段机动车排放标准和第六阶段油品标准

Implementing China V vehicle emission standard and China VI fuel standard

- 报废转出200多万辆高排放老旧机动车，新能源和清洁能源车辆累计达到20万辆

More than 2 million old and high-emission vehicles have been scraped or phased out, and the number of new and clean energy vehicles has been increased to 200,000

- 重点加强柴油货车管控，出台外埠车六环路禁限行政策，划定非道路移动机械低排区，持续加大超标排放违法行为查处力度

Strengthening the control of diesel trucks, forbidding or controlling non-local vehicles to travel within the sixth ring road area, designating low-emission areas for off-road machinery, and continuing to step up efforts to handle illegal actions of excessive discharge

工程减排措施

Project Measures

□ 以“治停退”为主，推动产业结构优化升级

Industrial Structure Optimization and upgrading

- 坚持非首都功能疏解，五年来，本市共淘汰退出1992家一般制造业污染企业、清理整治1.1万家“散乱污”企业

Beijing shut down or renovated 1,992 major polluting enterprises in the manufacturing sector, and 11,000 enterprises that are not in line with Beijing's functions essential to its role as the capital, discharge illegally or engage in illegal production

- 推行清洁生产审核,强化环保技改, 提升企业治污能力;实施总量控制制度和排污许可制度

Improving enterprises' abilities to combat pollution by implementing measures like clean production review and enhanced technical reform; introducing the Emission Cap and Discharge Permission System

□ 控制扬尘污染:加强施工扬尘防治和道路清扫保洁，深入开展植树造林，不断扩大水域面积

Dust control: controlling dust from construction sites and roads, encouraging tree-planting and expanding water-shed area.

管理减排措施

Management Measures

法律法规 Regulations

- 《中华人民共和国大气污染防治法》
Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution
- 《中华人民共和国环境保护法》
Environmental Protection Law of the People's Republic of China
- 《北京市大气污染防治条例》
Beijing Air Pollution Prevention and Control Regulation

标准体系 Standards

- 累计发布44项地方大气污染物排放控制标准，全国体系最为完整
A comprehensive system of 44 local standards for air pollutants emission

管理减排措施

Management Measures

严格产业准入
Strict industrial
access



- 北京市新增产业的禁止和限制目录
Catalog for Banned and Restricted New Industries in Beijing
- 北京市工业污染行业、生产工艺调整退出及设备淘汰目录
Catalog for Adjustment and Elimination of Polluting Industry, Production Process and Equipment

经济政策
Economic
Incentives

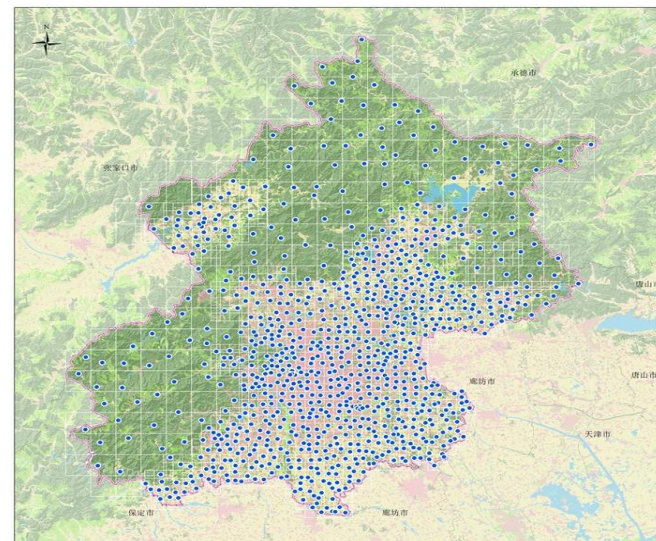
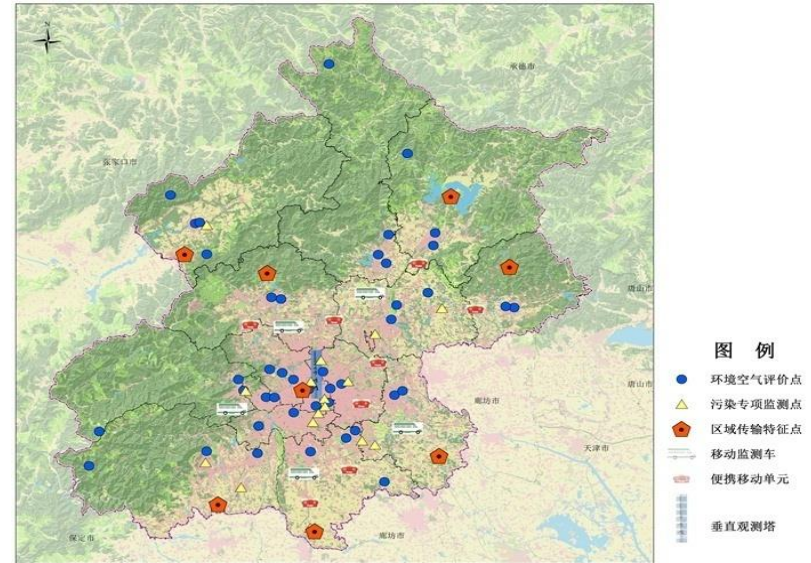


- 排污收费
Pollution charges on: SO₂, NO_x, VOCs, dust
- 节能减排及环境保护专项资金:补贴和奖励污染治理
Special funds for technical retrofit in energy conservation, emission reduction and environmental protection, providing subsidies and rewards

提升监测能力

Enhancing monitoring capacity

- 在全国率先建成PM2.5高密度监测网络，将原有35个PM2.5监测站点升级扩展为67个地面站和覆盖街乡镇的小型监测站
- Beijing is the first to build a widely located PM2.5 monitoring network, comprising 67 automatic ambient air quality stations and more than 1000 PM2.5 monitoring sites with low-cost sensors



区域协作 Regional Coordination



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Perspectives and Outlook

- 按照《北京城市总体规划（2016年—2035年）》，到2020年，北京市PM2.5年均浓度要下降到56微克/立方米

According to the *Master Plan of Beijing (2016-2035)*, the annual concentration of PM2.5 in 2020 should be brought down to below 56 $\mu\text{g}/\text{m}^3$

- 本市将紧紧抓住疏解非首都功能、京津冀协同发展，冬奥会和冬残奥会筹办等历史机遇，聚焦氮氧化物、挥发性有机物减排，以机动车、扬尘和生活源为重点，制定实施新一轮大气污染防治行动计划，推进本市大气环境质量持续改善

Beijing will grasp historic opportunities such as phasing out functions non-essentials to Beijing's role as the capital, coordinated development of Beijing, Tianjin and Hebei Province, and the hosting of the 2022 Winter Olympic and Paralympic Games to promote the continuous improvement of the city's air quality

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Perspectives and Outlook

- 联合国环境规划署前执行主任阿奇姆·施泰纳在第二届联合国环境大会上指出,在巨大的挑战面前,北京在保持城市高速发展的同时成功改善了空气质量, 其经验绝对值得与其他发展中经济体和新兴城市分享
- In the second session of the United Nations Environment Assembly (UNEA-2), Achim Steiner, then Executive Director of UNEP, pointed out that “Beijing’s experience in controlling air pollution against a backdrop of rapid expansion is a story that should be shared with other emerging economies and burgeoning cities”

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Perspectives and Outlook

- **北京愿意与东北亚地区各城市分享治理空气污染的经验
和教训， 共建空气清新的美丽都市**

Beijing is willing to share experience and lessons on air pollution control, go hand in hand with other cities around the world to build a beautiful homeland with clean air



Thanks