



# Clean Air Action Planning in Chinese Cities And Internationally

## 清洁空气行动计划在中国和世界城市的使用

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# About this Presentation

## 演讲内容



*Present findings of rapid survey of clean air action plans internationally including a select number of Chinese cities*  
*世界和部分中国城市清洁空气行动计划中的发现*

### Outline 要点

- Clean Air Action Plans Considered 清洁空气行动计划有哪些
- What is Clean Air Action Plan? 什么是清洁空气行动计划?
- Reasons for preparing a Clean Air Action Plan 为什么要制定清洁空气行动计划?
- Scope of Clean Air Action Plan 清洁空气行动计划的范围
  - Geographic Scope 地理范畴
  - Pollutants Covered 包括的污染物
  - Targets 目标
  - Period Covered 时间周期
  - Integration with Other Plans 和其他计划相结合
- Background Information 背景信息
- Stakeholders 相关方
  - Preparation 制定
  - Implementation 执行
- Control Measures 控制方法
  - Financing 资金



# Clean Air Action Plans Considered

## 清洁空气行动计划有哪些



- Dublin Regional AQM Plan 都柏林区域空气质量管理计划
- London Borough of Newham AQ Action Plan 伦敦Newham自治镇空气质量行动计划
- Birmingham Air Quality Action Plan 伯明翰空气质量行动计划
- Ontario Clean Air Action Plan 安大略清洁空气行动计划
- Vancouver Integrated AQ and GHG Management Plan 温哥华整合空气质量和温室气体管理计划
- Urban AQM Plan in Colombo 科伦坡城市空气质量管理计划
- AQM Plan for the City of Johannesburg 约翰内斯堡城市空气质量管理计划
- San Francisco Bay Area 2010 Clean Air Plan 旧金山湾2010清洁空气计划
- San Pedro Ports Clean Air Action Plan, San Pedro港清洁空气行动计划
- Urumqi Integrated Control of Air Pollution Planning 乌鲁木齐空气污染联控计划
- Luoyang Clear Water and Blue Sky Project Plan 洛阳清洁水和蓝天计划
- Tianjing Blue Sky Project 天津蓝天计划



# What is a Clean Air Action Plan (CAAP)?

## 什么是清洁空气行动计划 (CAAP)



- “Simply describes the air pollution problem and lays out a path to its solution”
  - Handbook of AQM, <http://www.aqbook.org/>
- “It outlines instruments and strategies to comply with air quality and emission standards, adopt control measures, and implement them.”
  - SEI, 2008.
- Also called: Clean Air Implementation Plan, AQ Management Plan, Blue Skies Plan, AQ Strategy, AQ Action Plan



# Air Quality Management Framework

## 空气质量管理体系



Adapted from Bachmann, 2007.



# Why have a clean air action plan? 为什么需要清洁空气行动计划?



1. Compliance with regulation and standards 遵循法规标准
  - Chinese cities, Blue Skies plans to comply with Class II standards 中国城市，蓝天计划和II级标准相符合
  - In specific AQ management areas which can not comply - areas which do not comply with air quality standards/objectives are required to prepare action plans on how they can meet e.g. London Borough of Newham, Birmingham
2. (Continuous) improvement after compliance 达标后持续不断地改进
  - Dublin Regional AQM Plan
3. Anticipation of future trends 未来预期
  - International commitments 国际义务
  - Future national policies 未来国家政策



# General Contents of a CAAP

## 清洁空气行动计划的主要内容



- Scope of Plan 规划范围
  - Geographic Scope, Time Period, Integration with Other Plans
- Targets/Objectives/Goals 目标
- Background of Air Quality Situation /Statement of the Problem 空气质量现状和问题
  - Pollutants Considered and Pollutants of Concern 考虑的污染物
    - Air pollution trends and tendencies analysis; comparisons to air quality objective
    - Inventory of effects on public health and the environment
  - Emission sources and their contribution 排放源
    - Emissions inventory
    - Projections for the future
- Control measures 控制方法
  - Analysis of costs and feasibility 分析成本和可行性
  - Expected impacts (benefits of avoided health impacts) 预期的影响（改善健康所带来的效益）
- Implementation plan 执行计划
  - Institutional Arrangements (enforcement procedures)
  - Resource commitment (manpower, financing); clear timelines
- Monitoring and Evaluation 监督与评估

# Scope of Plan: Geographic

## 计划范围：地理范畴

Maximizes benefits

- Specific Area of Interest 特别关注区域
  - San Pedro Bay Ports (Los Angeles and Long Beach)
- District/County level 区县层面
  - London Borough of Newham, Birmingham
- City Level 城市层面
  - Colombo, Dalian, Tianjin, Urumqi
- Regional Level 区域层面
  - Pearl River Delta





# Scope of Plan: Time Period

## 计划范围：时间周期



*Scope on Time period indicates the validity period of the plan.*

时间周期反应了计划的有效周期

- Not indicated (e.g. Ontario, Canada)
- Less than 5 years (Dublin)
- 5 years (Urumqi, Luoyang)
- More than 5 years (Urumqi, Colombo)

Long-term planning with continuous monitoring, evaluation and updating is preferred over short-term plans.

有持续不断的监督、评估和改进的长期计划，比短期的更好



# Pollutants Covered

## 包括的污染物质



- **Single Pollutant 单一污染物**
  - Traditional approach, one pollutant per plan 传统方法，规划中只涉及一种污染物
  - Per pollutant identifying measures 针对一种污染物制定方法
  - Usually focusing on attaining standards 通常关注于标准
- **Multiple Pollutant 多污染物**
  - Choosing measures based on effective reductions in more pollutants 选择效减低多种污染物的方法
- **Integrated Air Pollutant and GHG 空气污染物和温室气体相结合**
  - e.g. Vancouver draft plan (2011) 例如温哥华的规划草案（2011）



# Multi-pollutant Planning: Why better?

## 多污染物减排计划：为什么是更好的方法



- Allows focus on larger goals: public health, climate change  
关注更大的目标：公共卫生，气候变化
- Maximize co-benefits and minimize trade-offs across pollutants  
协同效益最大化，综合成本最小化
- Maximize cost-effectiveness of control measures  
控制手段的成本效益最大化
- Addressing today's challenges and future  
解决现在和未来的困难
- Strong support from stakeholders (industry, public health groups)  
来自相关方的大力支持（工业、公共卫生团体）



# Multi-pollutant Planning: Issues

## 多污染物减排计划：问题



- Requires an evaluation method to choose measures and actions 需要对方法和行动有一个评估方法
- Pollutants differ in scale, mass, regulatory approach, health impacts 范围、质量、政策方法、健康影响问题
- GHGs: global scale, long-term problem, huge range of impacts, impacts deferred 温室气体：全球范围、长期问题、大面积影响范围都不同
- Trade-offs: emission controls that reduce criteria pollutants may increase CO<sub>2</sub>, or vice versa 排放控制可能会提升CO<sub>2</sub>的排放。
- How to weigh benefit of reducing GHGs compared to other types of air pollutants? 如何衡量温室气体减排所带来的效益



## 1. Concentration Targets 浓度目标

- achieve air quality standards (Class II) - Chinese Cities 达到空气质量标准（II级标准） - 中国城市
- achieve 30microgram/m<sup>3</sup> for 24hr and O<sub>3</sub> (65ppb for 8-hour average) – Ontario 达到24小时臭氧排放30微克/m<sup>3</sup>的标准

## 2. Emission Reduction Targets 减排目标

- reduce GHG emissions by 15% by 2015 and 33% by 2020 compared with 2007 levels 相比2007年，2015年前降低GHG排放15%，2020年前降低GHG排放33%
- reduce diesel particulates from vehicles, equipment and rail by 50% by 2015 compared to 2005 相比2005年，在2015年前，降低机动车、设备和铁路的柴油颗粒物排放50%

## 3. Institutional Improvement Target 制度改善目标

- Establishment of an Air Quality Management System – Johannesburg 建立空气质量管理系统 – 约翰内斯堡

## 4. Combination 结合

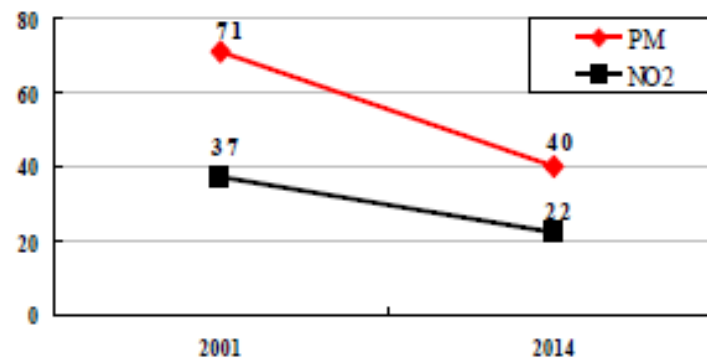


# Targets 目标

## A 10-year Framework Plan for Air Quality Improvement

Length of Implementation	10 Years (includes 5- year Implementation Plan by Local Gov.)
Subjected Areas	Seoul Metropolitan Air Quality Management District (SMAQMD)
Subjected Air Pollutant	PM 10, NOx, SOx, VOCs

TARGET:



# Integration with Other Plans 和其他计划的结合

- Stand-alone Clean Air Action Plan 单一执行的清洁空气行动计划
- Linkage with other Plans in the City (e.g. Vancouver) 和城市其他计划相结合（例如，温哥华）

## INTEGRATED SOLID WASTE AND RESOURCE MANAGEMENT

Minimizing solid waste generation will minimize the production of greenhouse gases from waste disposal (ISWRMP Goal 1 supports IAQGGMP Goal 3)

Maximizing reuse, recycling, material and energy recovery from the solid waste stream will minimize the production of greenhouse gases from landfills and other waste disposal (ISWRMP Goal 3 supports IAQGGMP Goal 3)

Common air contaminant and greenhouse gas emissions associated with energy recovery from waste are to be managed in a way that minimizes air emissions that impact public health and the environment (ISWRMP Action 3.1.4 affects IAQGGMP Goals 1 and 3)

### Integrated Air Quality and Greenhouse Gas Management Plan

Implementing an odour management program for solid waste recycling, recovery and disposal options will minimize odours from waste processing, increase public acceptability and increase siting options (IAQGGMP Action 1.2.4 supports several strategies under ISWRMP Goal 2)

Promoting the development of district energy opportunities will encourage energy recovery from the solid waste stream (IAQGGMP Strategy 3.2 supports ISWRMP Goal 3)



# Agencies Which Prepared Clean Air Action Plan 制定清洁空气行动计划的部门



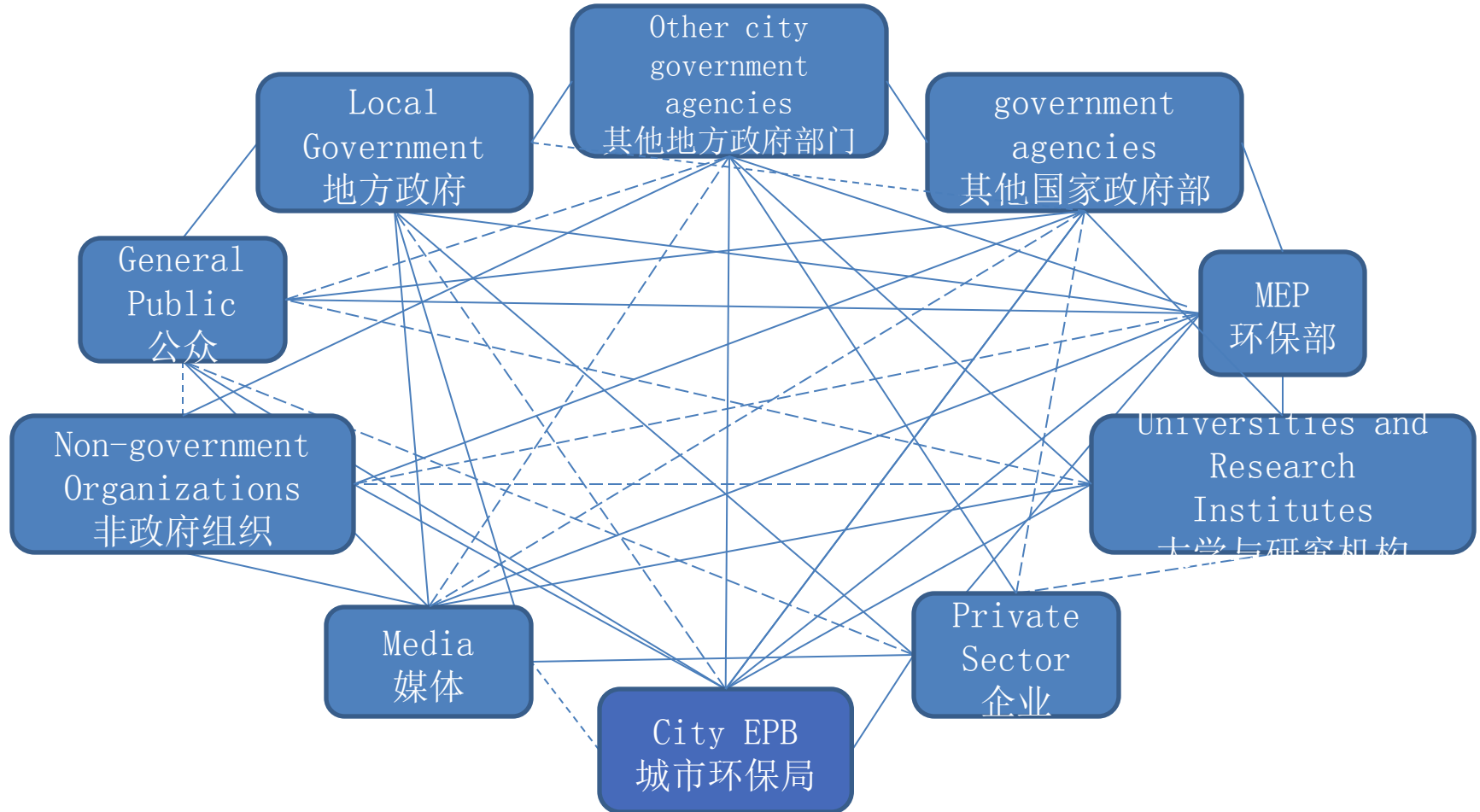
- City/Council government 市政府
- City Environmental Bureau 市环境局
- National Environment Agency (Ministry or Department)  
国家环境部门
- Planning Office 规划部门
- **Multiple Stakeholders 其他各种利益相关方**





# Air quality has many stakeholders

## 利益相关方



City EPB = mandate for AQM  
城市环保局 = 空气质量管理规定

# Stakeholder Involvement in Preparation

## 制定行动计划的相关部门



### 指导委员会

- responsible for **overseeing** the development of the plan and ensuring that the plan is **in line with national/provincial policies** and practices (Johannesburg, Dublin) 负责监督计划的制定，确保符合国家/省级政策的规定

### 技术顾问组

- review the **technical merit and feasibility** of the plan during development phase (this included representatives from different government agencies (health, planning, transport, environment) as well as experts in the private sector 审阅技术水平和可行性

### 利益相关方

- comprised of **interested and affected** parties who may be impacted by interventions (e.g. business, industry, NGOs, etc) 有相关方和兴趣方组成



### 五类55个控制手段:

- Direct authority
- Stationary sources (18) 固定源 (18个)
    - livestock waste (methane)
    - natural gas processing & distribution (methane)
    - energy efficiency in permitting (CO2)
  - Mobile sources (10) 移动源 (10个) : reduce tailpipe emissions
- Collaboration
- Transportation control (17) 交通控制 (17个) : reduce driving
  - Land use & local impacts (6) 土地利用和当地影响 (6个) : protect communities
  - Energy & climate (4) 能源和气候 (4个)
    - energy efficiency
    - renewable energy
    - urban heat island mitigation
    - shade tree planting



# Control Measures/Action

## 控制方法/行动



- Action description 行动描述
- Agency to implement or responsible agency 执行机构或负责机构
- Timeline of completion 时间框架
- Identification of Capacity Building 能力建设
- Financing 资金
- Benefits from the measures/action 行动所带来的效益



# Financing of Plan or Actions in Plan

## 行动计划中的资金计划



### Birmingham Action Plan 伯明翰行动计划

#### Funding Status

寻找现状

A- additional Funding Required

S - funding secured

W - within existing funds

#### Cost 成本

Low = < £ 100 thousand

Med = £ 100 thousand to £ 1 million

High = more than £1 million

#### Priority 优先度

1 - High

2 - Medium

3 - Low

	ACTION	DETAILS	RESPONSIBLE	COMPLETION DATE	£ COST	PRIORITY	FUNDING
<b>REDUCING VEHICLE EMISSIONS</b>							
1.	Testing of vehicle emissions	The Council will establish a programme of free, on the spot vehicle emissions testing targeting the general public	BCC Regulatory Services	2006	Low	3	W
2	Assist the setting up of freight partnerships for deliveries to the city centre	The Council will assist schemes put forward to reduce traffic and / or emissions through freight partnerships for delivering goods to city centre businesses	BCC Transportation	Ongoing	Low	2	W
3	Improve the Council Fleet by seeking to use alternatively fuelled/low emission fleet vehicles	The City Council will seek to develop pilot (s) using alternatively fuelled/low emission vehicles in its fleet	BCC Regulatory Services	2006/7	Low	2	W



# Conclusions

## 结论



- Clean Air Action Plans are customized to the needs and objectives (not one specific template) 清洁空气行动计划的顺应需求
- Clean Air Action Planning is evolving with trends observed as follows 清洁行动计划的演化
  - Single pollutant to multiple pollutant 单一到多重污染物
  - Expansion to regional AQM 扩大到区域空气质量管理
  - Multiple stakeholder involvement 多利益相关方的介入
  - Long-term planning 长期规划
- Very few of the clean air action plans surveyed indicated financing sources for the implementation of the plan or the specific actions. 清洁空气行动计划中很难找到资金来源
- Clean Air Action Plans of Chinese cities are NOT accessible in one place (e.g. MEP website)  
中国城市的清洁空气行动计划网站上没有(例如环保部网站)



For more information  
更多信息



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