



Introduction To Guidelines of CAAP Formulation

清洁空气行动计划指南

Kaye Patdu

Air Quality Researcher, CAI-Asia

7th Air Quality Management City Workshop of CAI-Asia China Network

Dalian, P.R. China

30 June – 1 July 2011



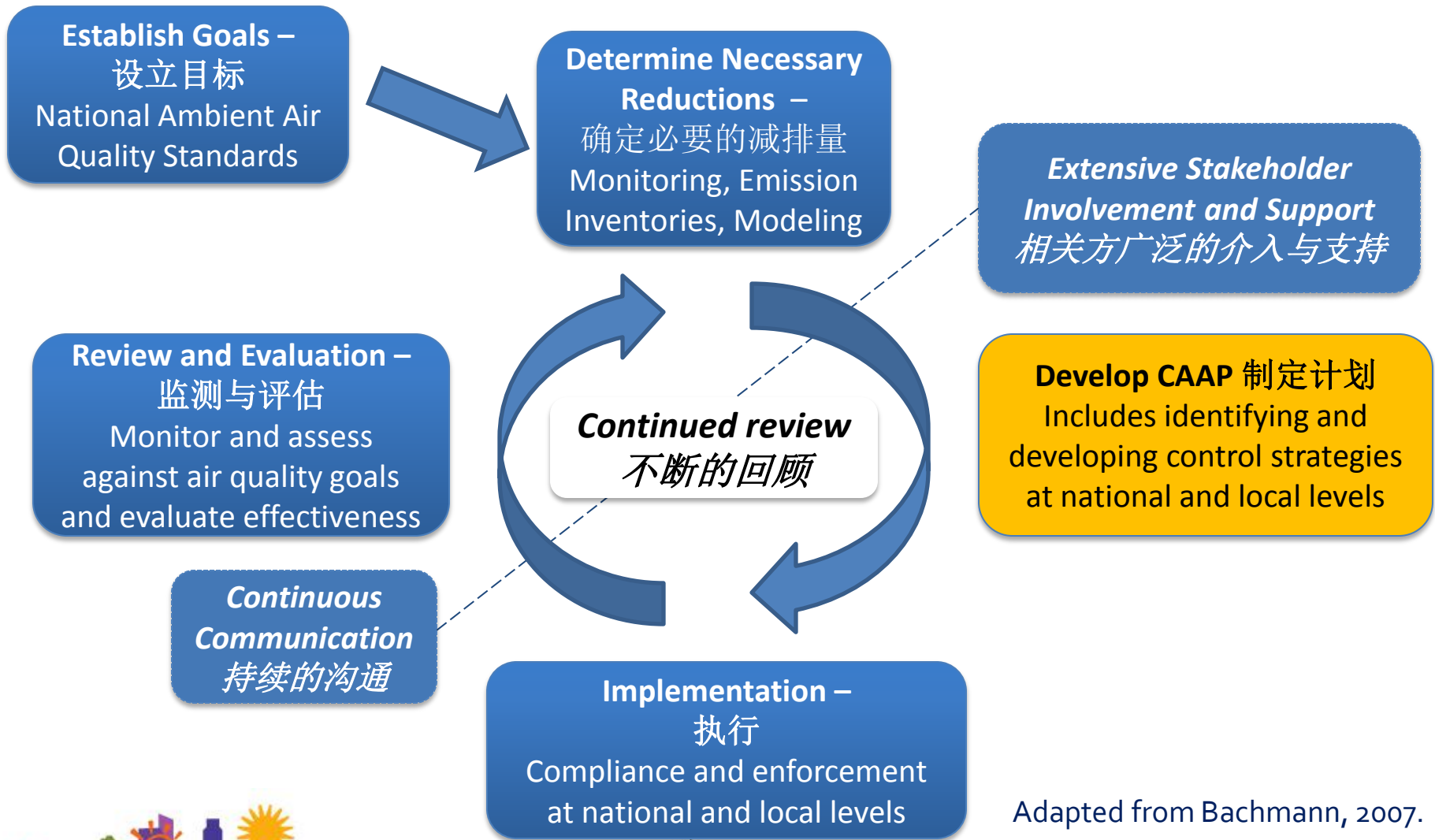
Presentation Outline 目录

- Clean Air Action Plan (CAAP) concept 清洁空气行动计划的概念
- Process involved in clean air action planning 清洁空气行动计划步骤
- Components of a CAAP 清洁空气行动计划构成
 - Assessment 评价
 - Development 制定
 - Implementation and enforcement 执行与实施
 - Review and improvement 审阅与改进
- Ingredients for a successful CAAP 清洁空气行动计划的成功要素
- CAAP References 参考文献



Framework of Air Quality Management

空气质量管理体系



Adapted from Bachmann, 2007.

What is a Clean Air Action Plan (CAAP)?

什么是清洁空气行动计划

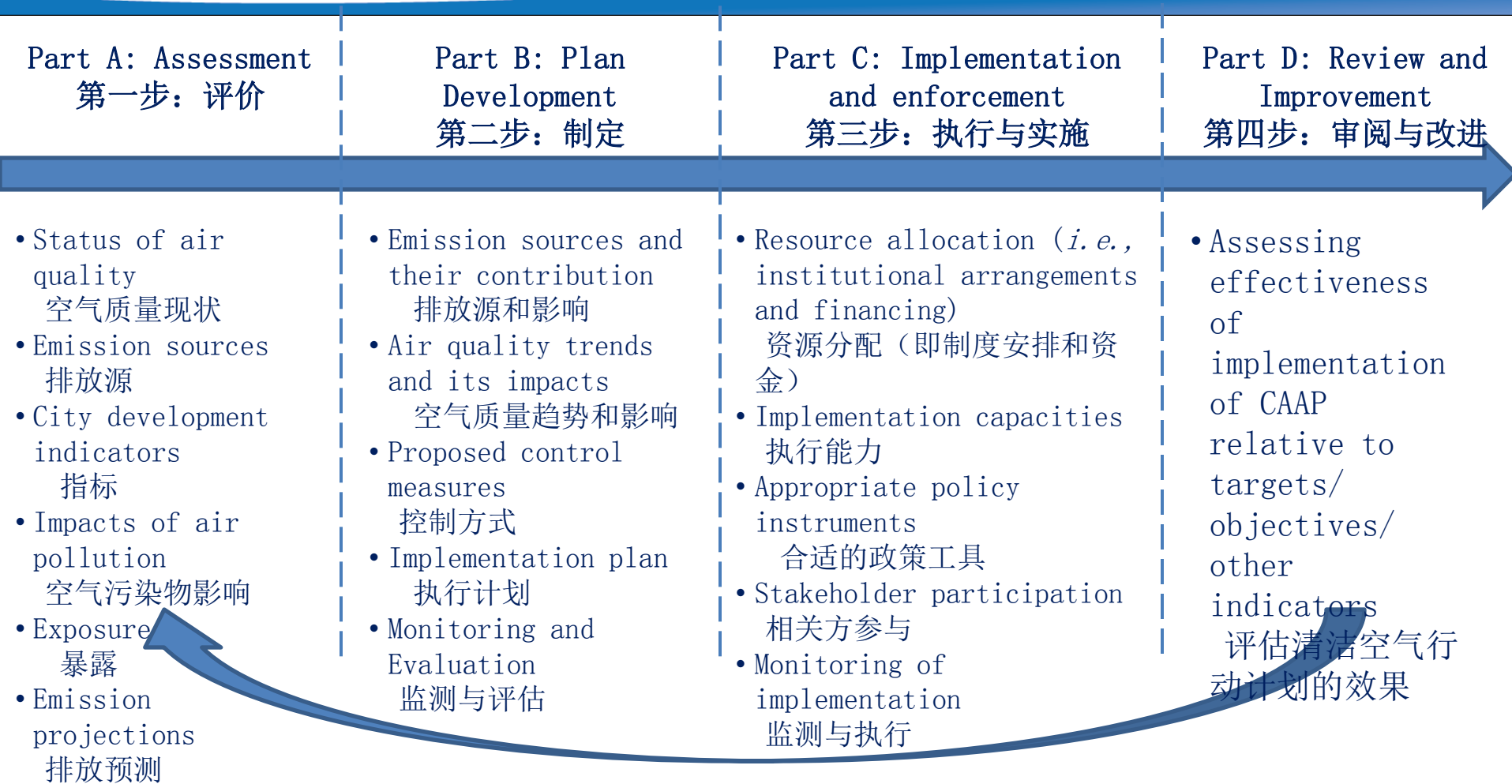


- “Simply describes the air pollution problem and lays out a path to its solution”简单的描述空气污染问题并提出解决途径
- Handbook of AQM, <http://www.aqbook.org/>
- “It outlines instruments and strategies to comply with air quality and emission standards, adopt control measures, and implement them.” 达到空气质量与排放标准，采取并实施控制措施
- SEI, 2008.
- Also called: Clean Air Implementation Plan, AQ Management Plan, Blue Skies Plan, AQ Strategy, AQ Action Plan 也称作清洁空气实施计划、空气质量管理计划、蓝天计划、空气质量策略、空气质量行动计划等。



Clean Air Action Planning Process

清洁空气行动计划流程



Stakeholder Participation 相关方参与
Communication (Clean Air Reporting) 信息交流 (清洁空气报告)

Part A: Assessment (1)

第一步：评价（1）



Gain understanding and assess: 了解和评价

- General information 大致信息
 - Geography and climate 地理和气候方面
 - Population and urbanization 人口和城市化
 - Economy and industry 经济和工业
 - Energy and Transportation 能源和交通
- Sources of air pollution 污染源
 - Emissions inventory 排放清单
 - Spatial distribution and source contribution 空间布局和排放源影响
 - Emissions from mobile and stationary sources 移动源和非移动源排放
 - Future projections of emissions 排放预测
 - Source apportionment 排放源分摊
- Status of air quality 空气质量现状
 - Air quality monitoring results 空气质量监测结果
 - Modeling results 模型结果
 - Pollutants of concern 污染物
 - API and concentration trends and tendencies 空气污染指数和浓度趋势
 - Comparison to air quality goals/standards 和空气质量目标/标准做比较
- Impacts of air pollution 空气污染影响
 - Health impact assessments, exposure studies 健康影响评价, 暴露污染源调查
 - Environmental, economic impacts 环境、经济影响



From Data to Action 从数据到行动

Clean Air Management Information

清洁空气管理信息

- General city information
- Monitoring data 数据
- Modeling (air quality and exposure) 模型
- Emissions inventory 清单
- Source apportionment 污染源分解
- Goals and regulations 目标
- Cost analysis 经济及其他影响分析
- Local impacts of air pollution



Clean Air Action Plan

清洁空气行动计划

- Control measures 控制措施
 - short, medium and long term 短中长期
 - Mobile, stationary and area sources 移动, 点面源
- Implementation strategies 实施方案
- Institutional arrangements 机构设置
- Resource allocation 资源分配
- Policy instruments
- Review and evaluation



Part A: Assessment (2)

第一步：评价（2）



- **Guide Question:** Does your city have the capacity to undertake Part A: Assessment?
问题：您的城市是否有能力来做第一步：评价？
- This can be answered using the **Clean Air Management Assessment Tool (CAMAT)** – linked to Index 2 (Clean Air Management Capacity)
可以使用清洁空气管理评价工具（CAMAT）-和指标2（清洁空气管理能力）相关联

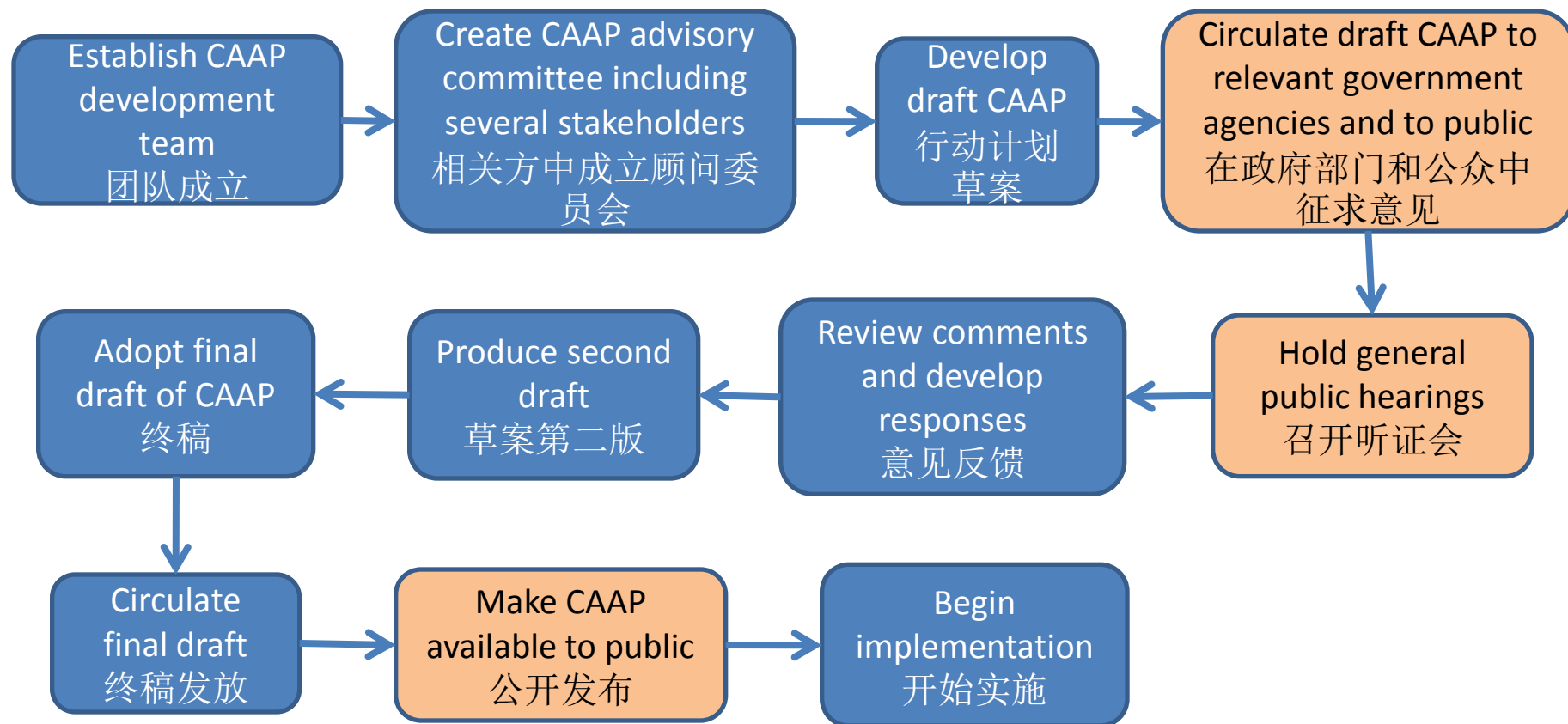


Part B: Plan Development

第二步：计划的制定



Example of CAAP Development Process 清洁空气行动计划制定过程实例



Stakeholder and Public Participation is an integral part of development process
相关方和公众参与在制定过程中是一体的

General Components of a Clean Air Action Plan (1)

清洁空气行动计划的整体构成(1)



- CAAP Scope 清洁空气行动计划范围
- Air Quality Objective/Targets 空气质量目的/目标
- Emission sources and their contribution
 - Emissions inventory 排放清单
 - Causal analysis of effects and attribution to individual sources
 - Projections for the future 未来情景预测
- Air quality trends and its impacts 空气质量趋势及影响
 - Air pollution trends and tendencies analysis; comparisons to air quality objective 空气污染物排放趋势分析，并和目标对比
 - Implementation Projections for the future 未来执行预测
 - Inventory of effects on public health and the environment 公众健康和环境
 - Benefits of avoided health impacts 健康带来的效益
- Control measures 提议控制措施
 - Analysis of costs and feasibility 经济及可行性分析
 - Expected impacts 期望影响
- Implementation plan
 - Institutional Arrangements (enforcement procedures) 机构设置
 - Resource commitment (manpower, financing); Clear timelines 资源分配；时间安排
- Monitoring and Evaluation 监测与评估

- Define the air quality objective: 明确空气质量目标
What does your CAAP aim to achieve? 确定计划范围
 - Reduce air pollution concentrations 减少空气污染物浓度
 - Reduce emissions 减排
 - Address current institutional limitations (policy-related) 解决目前的制度上的限制（和政策相关）
 - Combination 结合
- Determine the scope of the plan 确定计划范围
 - *Where* : geographical coverage (urban, district, whole city, etc) 地理范围
 - *When* : timeline of the plan 时间范围
 - *How*: (a) development, review and approval process; (b) separate plan or part of another plan 确定流程
- Organizational set-up 组织结构
 - CAAP development team, steering committee, advisory group, government agencies and other stakeholders 团队成员，政府机构与相关方参与

General Components of a Clean Air Action Plan (2)

清洁空气行动计划的整体构成 (2)



Assessment

- CAAP Scope 清洁空气行动计划范围
- Air Quality Objective/Targets 空气质量目的/目标
- Emission sources and their contribution
 - Emissions inventory 排放清单
 - Causal analysis of effects and attribution to individual sources
 - Projections for the future 未来情景预测
- Air quality trends and its impacts 空气质量趋势及影响
 - Air pollution trends and tendencies analysis; comparisons to air quality objective
 - Implementation Projections for the future
 - Inventory of effects on public health and the environment
 - Benefits of avoided health impacts
- Control measures 提议控制措施
 - Analysis of costs and feasibility 经济及可行性分析
 - Expected impacts 期望影响
- Implementation plan
 - Institutional Arrangements (enforcement procedures) 机构设置
 - Resource commitment (manpower, financing); Clear timelines 资源分配; 时间安排
- Monitoring and Evaluation 监测与评估

General Components of a Clean Air Action Plan (3)

清洁空气行动计划的整体构成 (3)



- CAAP Scope 清洁空气行动计划范围
- Air Quality Objective/Targets 空气质量目的/目标
- Emission sources and their contribution
 - Emissions inventory 排放清单
 - Causal analysis of effects and attribution to individual sources
 - Projections for the future 未来情景预测
- Air quality trends and its impacts 空气质量趋势及影响
 - Air pollution trends and tendencies analysis; comparisons to air quality objective
 - Implementation Projections for the future
 - Inventory of effects on public health and the environment
 - Benefits of avoided health impacts
- Control measures 提议控制措施
 - Analysis of costs and feasibility 经济及可行性分析
 - Expected impacts 期望影响
- Implementation plan
 - Institutional Arrangements (enforcement procedures) 机构设置
 - Resource commitment (manpower, financing); Clear timelines 资源分配; 时间安排
- Monitoring and Evaluation 监测与评估

Tasks included: 任务包括

- Assess control measures, their feasibility (technical, economic, political) and their costs
评鉴控制措施，以及可行性（技术、经济和政治方面）和成本
- Calculate cost-benefit ratios for control measures, determine best control strategies
进行成本效益分析，确定最好的控制战略
- Set institutional arrangements (enforcement procedures)
确定制度安排（强制性进程）
- Outline resource commitment (manpower, financing) 配置资源（人力和资金）
- Define monitoring and evaluation procedures 确定监测和评估流程



Is the Clean Air Action Plan implementable? 清洁空气行动计划是否容易执行?



Factors considered in implementing strategies to prevent and/or control air pollution

在实施控制空气污染策略时需要考虑的因素

Factor 因素	Consideration 考虑因素
Technical 技术	Effectiveness 有效性 Sustainability under local conditions 实际情况下的可持续性
Administrative 管理	Feasible with the legal and administrative framework 法律行政框架下的可行性 Enforceability 执行能力
Economic 经济	Costs and benefits 成本收益
Social 社会	Equity in sharing of costs and benefits 成本收益分担中的公平 Culture of compliance 遵守制定的文化
Political 政治	Public support 公众支持 Stakeholder pressure 相关方压力

Issues to be considered 需要考虑的问题

- objectives to be achieved 要达到的目标
 - Timeframe of the CAAP and its objectives 时间框架和目标
 - Key priorities of the community/city 重点区域
- policy instruments available 可用的政策工具
 - Strategies addressing different sectors 不同部门行业
 - Main types: direct regulation (command and control), co-regulation and voluntary initiatives, self-regulation, economic instruments and education and information instruments
 - 行政命令，自愿行动，自我管理，经济措施，宣传教育



Issues to be considered 需要考虑的问题

- likelihood of success and risk factors for control measures 控制措施中的成功几率和风险因素
 - Predict effectiveness and efficiency, as well as unintended economic and social consequences 预测效率和有效性，以及可能的经济社会影响
 - Priority: Effective, inexpensive and easily implementable 首要目标是，有效，低成本和易实施
- social and economic costs and benefits 社会经济成本与收益
 - Ex. economic instruments making polluting activities more expensive may adversely affect poor groups in society 经济措施可能会影响到社会中的贫困人群



Issues to be considered 需要考虑的问题

- policy reforms and institutional strengthening to support implementation 政策改良与加强机构，以支持实施
 - Training Needs Assessment 培训需要评价
 - Capacity Building Activities 能力建设活动

➤ Critical to successful implementation of the Clean Air Action Plan

成功执行清洁空气行动计划很重要

➤ Increases assurance of sustainability

增强保证可持续性



Issues to be considered 需要考虑的问题

- Monitoring and evaluation, 监测与评估
 - using **indicators** to assess progress 评估进展的指标
 - Reduction of 减少
 - concentration levels and exposures, emissions 浓度水平和暴露排放
 - air pollution-related burden of disease 和空气污染相关的疾病
 - Other impacts – visibility, agriculture, etc. 其他影响 – 可见度、农业等
 - energy used by all stakeholders 所有相关方的能源利用
 - increase in energy efficiency 增强能效
 - **long-term environmental targets** as well as **interim milestones** to assess progress 长期目标与短期成效相结合
 - Allows for 'Phased' implementation to address complex issues, but providing results in the short-term 分阶段解决复杂问题，短期看到成效
 - This needs clear time frame for different phases of implementation 清晰的不同阶段时间框架设计
 - Example: implementation of Euro Vehicle Emission Standards in Asia 例如：亚洲国家的欧洲机动车排放标准

Issues to be considered 需要考虑的问题

- feedback mechanism from different stakeholders 不同相关方的反馈机制
- cost-effectiveness and who bears the costs 性价比和谁承担成本
- ease of implementation of the strategy 战略的实施
 - Select control measures achievable within the technical, social and economic capabilities of the implementing agency 技术上、经济上的可实施性
 - Gradual movement from simple/basic to sophisticated measures 从简单到复杂的措施



Part D: Review and Improvement (1)

第四步：回顾与改进（1）



Purpose of review: assess effectiveness of each control measure relative to its intended purpose and identified targets and indicators.

审阅回顾的目的：评估各项措施是否有效达成其目标和指标

Review will consider the progress of all initiatives and programs in CAAP.

过程中将考虑行动计划中所有行动和项目

Air quality trends will be considered, information gaps will be identified, and priorities will be reconsidered in view of future needs.

考虑空气质量趋势，填补信息空缺，重新考量未来重点

Revisions will be undertaken, when necessary.

Adapted from Perth AQM Plan – Five-Year Review.



Part D: Review and Improvement (2)

第四步：回顾与改进（2）



- Determine timeframe for review (ex. Every 5 years) 确定审查的时间表（如每隔5年）
- Review Process 审阅回顾过程
 - Multi-stakeholder / consultative process 各利益相关方/协商进程



- Some guiding questions in review:回顾时的指导性问題
 - Has the air quality objectives been met?
空气质量目标是否达到？
 - Were the control measures proposed effective to meet the air quality objectives in the future? (projected impacts versus actual) If not, what changes should be made?
之前的控制措施是否对今后目标有效？是否需要作何改进？
 - Are the control measures stipulated in the plan still appropriate? (considering experience from implementation)
 - Does the environmental challenges stipulated in the plan still hold? Are there emerging issues that must be addressed?
之前行动计划中的环境问题是否还存在？是否有新问题出现需要被解决？
 - What is the level of public support? 公共支持的程度



- Some guiding questions in review:回顾时的指导性问题
 - What are the benefits gained from implementation of CAAP
行动计划执行后的收益
 - Health, economic, etc.
健康、经济等
 - Compare actual benefits with projected benefits
比较实际与当时预测结果
 - What are shortcomings in the management and implementation of the plan?
管理和执行过程中出现哪些问题？
 - What phases/activities needs more funding support?
 - Is there a need to revise/restructure the plan?
是否需要改写或重组计划
 - Recommendations to address identified challenges
对所遇挑战所提出的建议



Ingredients for a Successful CAAP (1)

清洁空气行动计划的成功要素 (1)



- Establish clear institutional responsibilities 建立清晰的机构间职责
 - Implementing organizations/ departments should have legitimacy and political authority to effectively implement them
实施机构部门需要拥有合法性和全力去实施计划
 - Clarify designated functions vis-a-vis areas for collaboration
- Coordination and planning 协调与规划
 - among different agencies/ organizations with overlapping responsibilities
 - 不同部门机构间是否存在责任重叠
- Coordination of CAAP with existing plans 清洁空气行动计划与现有计划相协调
 - To have compatibility among new environmental strategies and existing development strategies at city or national level
 - 城市和国家层面上，兼容现有和新出台的环境和发展战略
 - Integrate CAAP with land use planning, transportation planning and low carbon planning, as it has direct influence on a city's air quality
 - 与土地使用，交通规划，低碳规划及其他空气质量相关政策相结合

Ingredients for a Successful CAAP (2)

清洁空气行动计划的成功要素 (2)



- Maintain political support 取得政治支持
 - Essential as they are parties who must agree with and approve the CAAP; and are involved in identifying and allocating staff and financial resources for implementation 同意批准通过行动计划，分配人员和经费
- Allocate financial resources 分配财务资源
 - Possible sources include: national budget, city budget, partnerships with private sector, development banks, donor communities, etc. 国家财政，地方财政，与企业合作，发展银行，基金会
 - Ensure AQ programs included in the regular budget cycle
- Strengthen technical capabilities 提高技术能力
 - Capacity-building measures to strengthen capability of implementing agencies and other stakeholders 能力建设，提高执行机构及其他相关方的能力
- Conduct monitoring, review and improvement 监测、回顾与改进
- Knowledge management and communication 知识管理与交流



References (1) 参考文献 (1)



Home | Contacts

Foundation Course on Air Quality Management in Asia

Developed by the Stockholm Environment Institute

Overview | Urban Air Pollution | About the Course | Modules | Resources | Review

Overview

The Foundation Course on Air Quality Management in Asia is for adult learners studying the issue without the support of a class room teacher. It is aimed at students with some basic knowledge of environment and air pollution issues.



What is air quality management?

Urban air pollution affects the health, well-being and life chances of hundreds of million men, women and children in Asia every day. It is responsible for an estimated 537,000 premature deaths annually with indoor air being responsible for over double this number of deaths. It is often the poor and socially marginalized who tend to suffer disproportionately from the effects of deteriorating air quality due to living near sources of pollution.

Download Modules Here

Foundation Course
Air Quality Management in Asia

What students say about the course (Video)




URL: <http://www.sei.se/cleanair/>

urban air quality management toolbox

Home | Handbook.pdf | Toolkit.pdf | Glossary | Disclaimer

Welcome Page of the Urban Air Quality Management CD-ROM



Home
Introduction
Handbook
Toolkit
City Cases
Bibliography
Acknowledgement

NOTE: The information obtained from the spreadsheet, simple mathematical models, and maps in the Toolkit is not conclusive or absolute, but it does allow air quality managers in developing countries to build demographic and geographic information to obtain indicative estimates of the relative health effects of air pollutants and the overall seriousness of air pollution.

This CD-ROM offers you the opportunity to learn about urban air quality management in the context of a participatory planning and management process applied in many cities around the world.

URL: <http://ww2.unhabitat.org/wuf/2006/aqm/index.htm>

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Air Quality Management Online Portal

Contact Us Search: All EPA This Area

You are here: EPA Home » Air & Radiation » Air Quality Management (AQM) Online

To improve air quality, it is important for governments, industry and the describes each of these components and provides links to a tremendous.

While countries' agreed-upon pollution levels vary, the overall system for the key air quality management activities below for detailed information

- Air Quality Goal Setting
- Control Strategies
- Air Quality Modeling
- Human & Environmental Assessment
- Legislation, Regulation & Implementation
- Compliance & Enforcement
- Public Participation
- Monitoring
- Emissions Inventory

Each page of this Web site provides an AQM System Icon to help you. you to contact us with additional web sites of interest.

You can find more information about what to expect on this site.

EPA HQ


URL: <http://www.epa.gov/air/aqmportal/index.htm>

Norwegian Institute for Luftforskning
Norwegian Institute for Air Research

Accreditation | Discipline | Topics | Products and services | Projects | Publications


Dhaka: The Dusty City

News
The first results from the collaboration between the Department of Environment in Bangladesh and NILU - The Norwegian Institute for Air Research are now in. 15 Apr 2011. [Read article](#)



NanoTOES - an Initial Training Network under the 7th Framework Programme - is offering a total of 11 PhD positions and 2 postdoctoral positions

News
The members of the NanoTOES consortium are 12 partner organisations, including universities, non-university research institutions and industry, which will perform a joint study on the impact of Nanomaterials on Health and Environment. 11 Jun 2011. [Read article](#)



PHD thesis on methods and tools for assessment of global emissions of mercury

News
On 21 December Elisabeth Pacina, senior scientist at NILU - Norwegian Institute for Air Research, successfully defended her PhD thesis at the

NILU IN THE NEWS

URL: http://www.nilu.no/index.cfm?lan_id=3

Citeair II

Home | Project Structure | Products | Partners | Links | Contact

City companion
Benchmarking mobility emissions
Integrating green house gases emissions
Forecasting common air quality indexes

HOT ISSUES

- CITEAIR II Final Conference, 24 June 2011, Rome. [Read more here](#)
- CITEAIR II Newsletter 4 is available now! - [Click \(here\)](#) to download it.
- For the latest news on air quality in Europe, join now CITEAIR II on Facebook and Twitter (follow "Citeair")!

NEWS & EVENTS


CITEAIR II NEWSLETTER
CITEAIR II & THE MEDIA
RESULTS FROM CITEAIR I

Introduction
Cities and regions all around Europe are facing exposure to high levels of air pollution and the emerging impacts of climate change, which have detrimental effects on their citizens and their economy.
The European Union has taken many initiatives in this and is supporting local and regional authorities in their actions to mitigate air pollution and climate change and to provide updated and comparable information to their citizens.

Partner's area
Login

URL: <http://www.citeair.eu>

HANDBOOK OF AIR QUALITY MANAGEMENT



written by
James Lents • Michael Walsh • Kevin He • Nicole Davis
Mauricio Osses • Sebastian Tolvett • Huan Liu

Enter | Entre | 进入

URL: <http://www.aqbook.org/>

References (2) 参考文献 (2)

- World Bank, 1999. "Pollution prevention and abatement handbook 1998: Towards cleaner production." World Bank, Washington. URL: <http://go.worldbank.org/E6G093QFZ1>
- UNEP and UN-Habitat, 2001. "Urban Air Quality Management Toolbook Part A and B." URL: ww2.unhabitat.org/wuf/2006/aqm/index.htm
- Air Pollution in the Megacities of Asia (APMA)/ CAI-Asia, 2004. "A Strategic Framework for Air Quality Management in Asia." CAI-Asia. URL: www.cleanairinitiative.org/portal/node/4673
- Schwela, D. and Haq, G., 2008. "Foundation Course on Air Quality Management in Asia." Module 6: Governance. Stockholm Environment Institute. URL: <http://www.sei.se/cleanair/>



For more information 更多信息



www.cleanairinitiative.org

CAI-Asia Center

center@cai-asia.org

Unit 3505 Robinsons-Equitable Tower
ADB Avenue, Pasig City
Metro Manila 1605
Philippines

CAI-Asia China Office

cpo@cai-asia.org

901A, Reignwood Building
No.8 YongAnDongLi
Jianguomenwai Avenue
Beijing 100022
China

CAI-Asia India Office

india@cai-asia.org

257 Regus Elegance
Elegance Tower, Mathura Road,
Jasola Vihar, New Delhi
India

CAI-Asia Country Networks

China, India, Indonesia, Nepal, Pakistan, Philippines, Sri Lanka

