协同效益的国际进展

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亚洲城市清洁空气行动中心

第五届中国城市空气质量管理研讨会
CAI-Asia 中国网络：空气质量和协同效益
中国 北京
2010年7月26-27

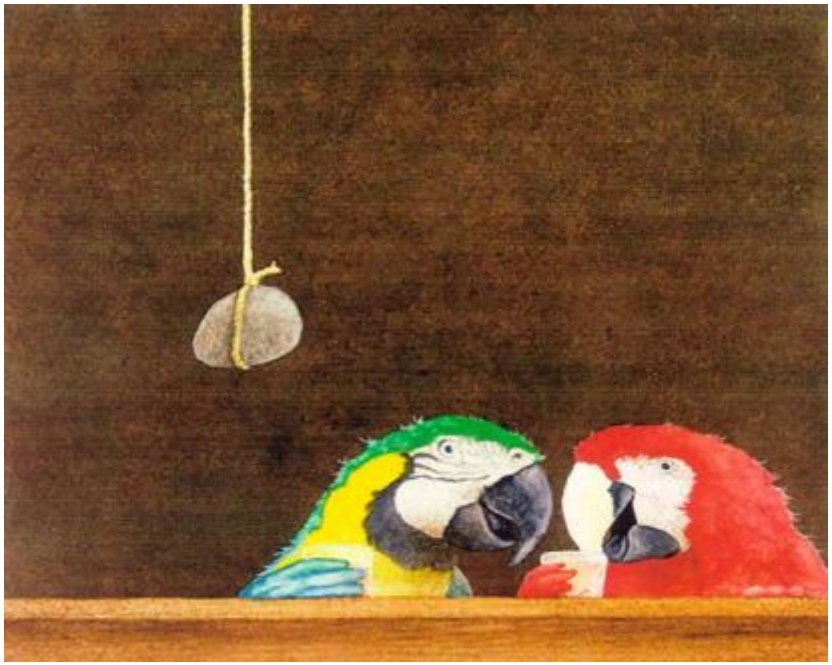
感谢能源基金会的支持

大纲

- 什么是协同效益方法?
- 亚洲协同效益的机遇: 空气质量管理和减缓气候变化
- 国际协同效益的趋势
- 提升亚洲协同效益

什么是协同效益方法?

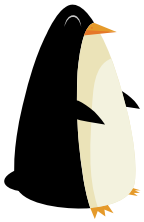
定义协同效益



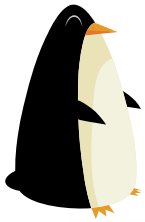
协同效益是一石二鸟的方法(或多鸟)

但有许多方法和事情需要考虑.....

1. 意图和范围

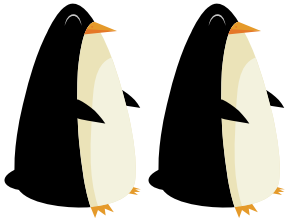


无意图的击第二只鸟



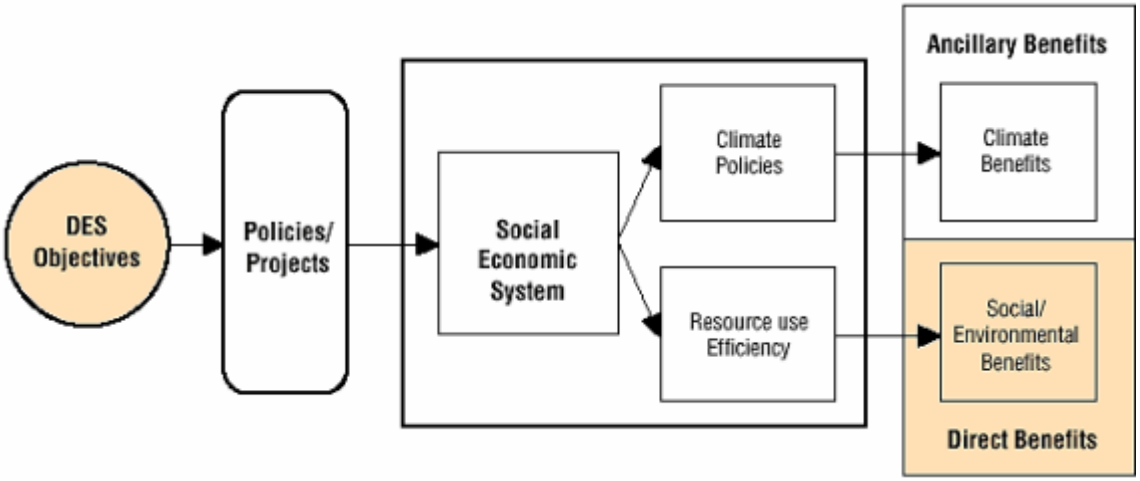
VS

有意图的击第二只鸟

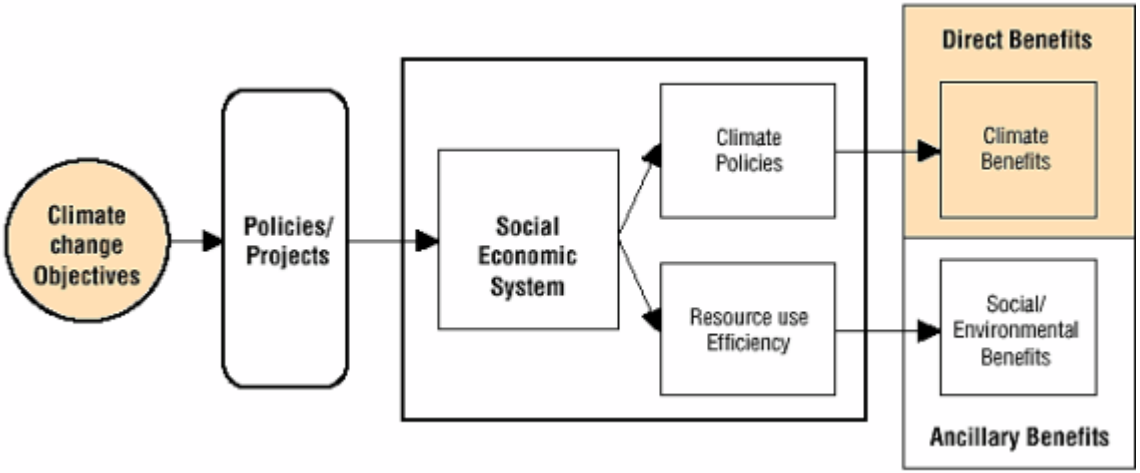


伴生效益

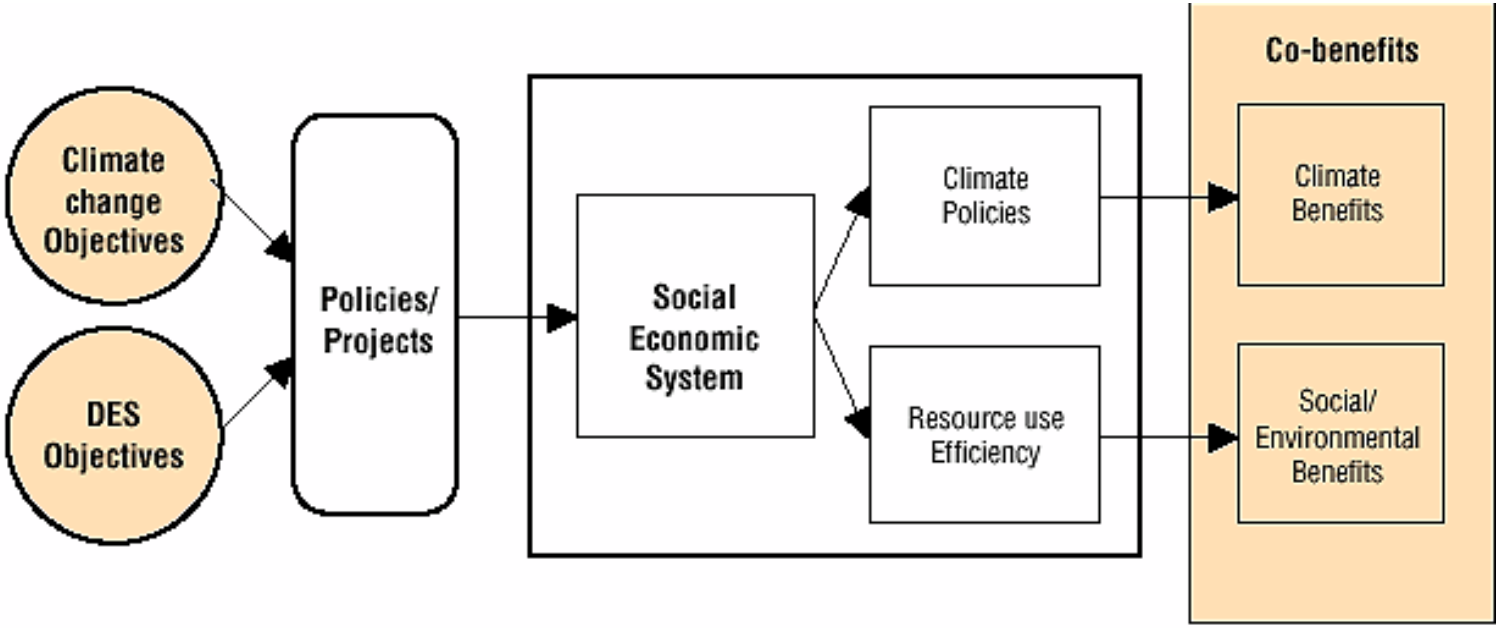
减排政策的次级或伴生的效益。这些政策解决了诸如地区空气污染、拥堵影响、土地质量、就业和燃料安全等问题. (IPCC, 2001)



包含哪些问题和领域？
是否有层级优先？



1. 意图和范围 (续)



“协同效益”是同时、多目的政策选择所发生的效益…(IPCC, 2001)

协同效益说明多数政策目的是在减缓GHG排放的同时，还具有其他（至少等同）的重要目的和效果 (例如：发展、可持续和平等). (IPCC, 2001)

协同效益: 发达国家 vs 发展中国家

全球气候变化下的协同效益:

通过减缓气候变化的措施降低GHG排放，从而获得附加的效益

- 空气污染物减排
- 附带的健康收益
- 通过降低能源成本和对石油进口的依赖，加强了能源安全

亚洲区域/地方视角下的协同效益:

通过对地区目标的实现，减少GHG 排放

- 经济发展中的问题：例如空气污染和附带的健康问题
- 缺乏能源、能源安全问题，以及其他经济社会问题

2. 时效, 协调和选择

协同 vs 选择

能效标准通常对解决空气污染和气候变化有正面效果 ➔ 协同

去硫化解决了硫化物排放问题，但却增加了能耗和GHG排放
➔ 选择

措施和影响的时效

一些措施可能会在短期提高空气质量， 其他措施可能会比较晚的看到效果 。
短期见效的措施产生的效果称为短期效果。
如，对老旧车辆/技术的报废。

(来源: EEA, 2004 and 2006, and DEFRA, 2007)

定义协同效益方法

- 内部化目标领域（群体）的共同利益，通过单一的措施和方法获得至少2种效益.
- 获得多重利益并/或减少损失
- 协同控制、整合战略

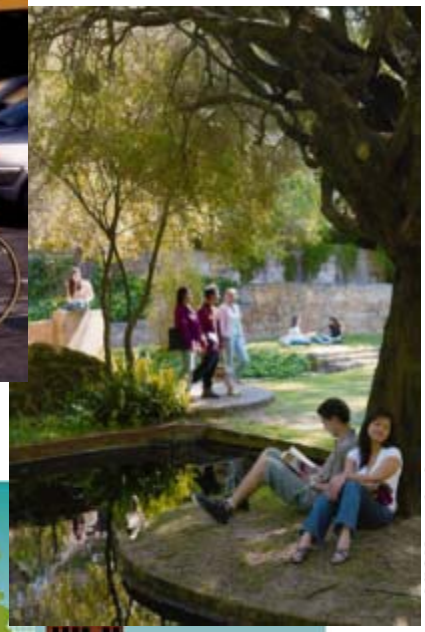
协同效益方法的好处 (1)

最大化人力资源

节油

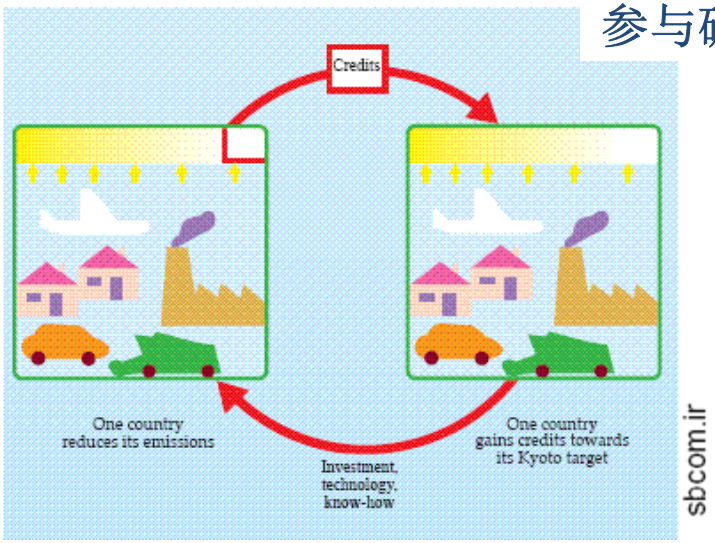
协同效益方法的好处 (2)

利益相关方的支持



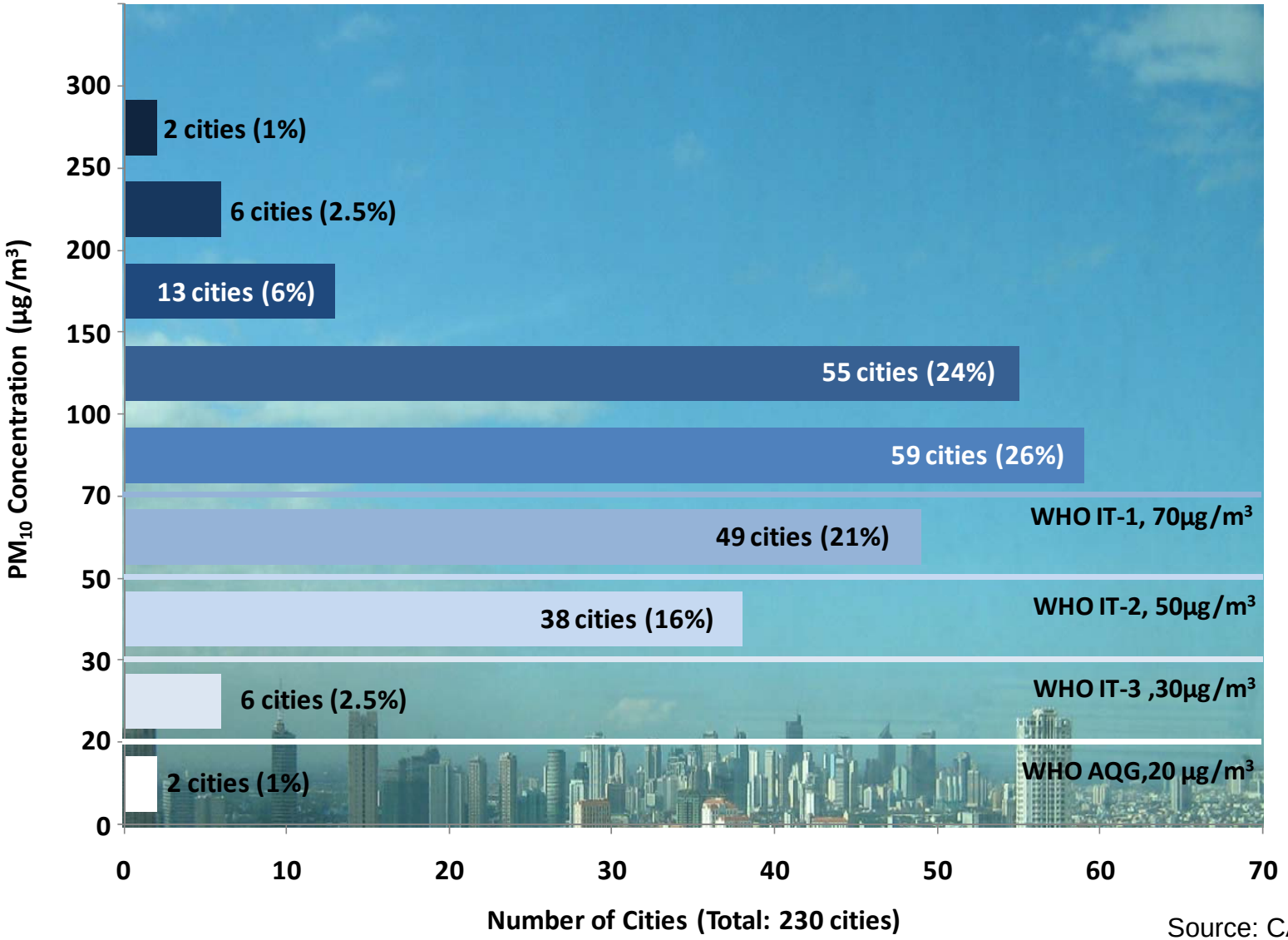
益居城市

参与碳市场



协同效益在亚洲的契机:
空气质量管理和减缓气候变化

空气污染仍然是亚洲城市的问题



Source: CAI-Asia, 2010

GHG和气候影响的关系增强

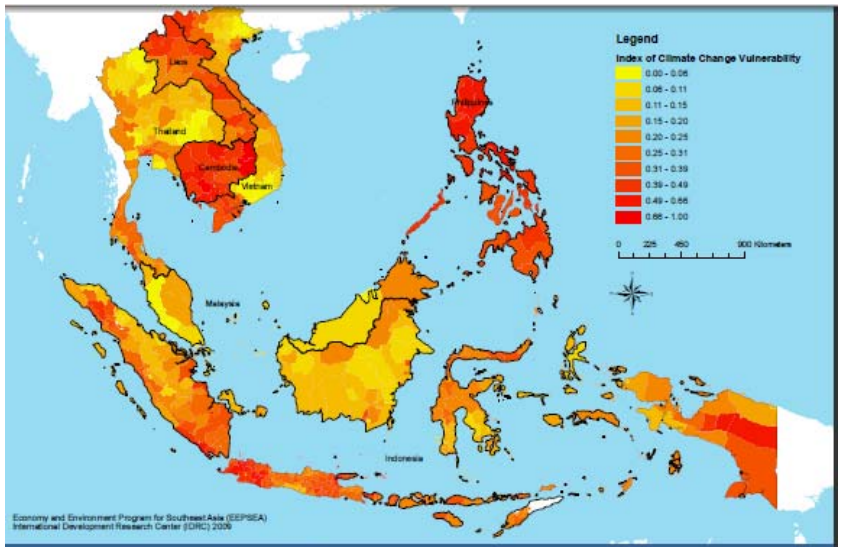
Table 7.1. Greenhouse Gas Emissions ($MtCO_2$-eq)

	1990	1995	2000	World (% share)	Per Capita Emissions (tons CO_2-eq)	% Increase over 1990–2000
Southeast Asia	4,091.2	4,944.9	5,187.2	12.0	10.2	27
Annex I countries	14,645.1	16,628.2	17,001.9	39.5	13.9	16
World	37,736.2	41,481.8	43,058.2	100.0	7.2	14

Note: Annex I countries (industrialized countries): Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, UnitedKingdom, United States of America (based on the United Nations Framework Convention on Climate Change grouping).

Source: CAIT Database (WRI 2008).

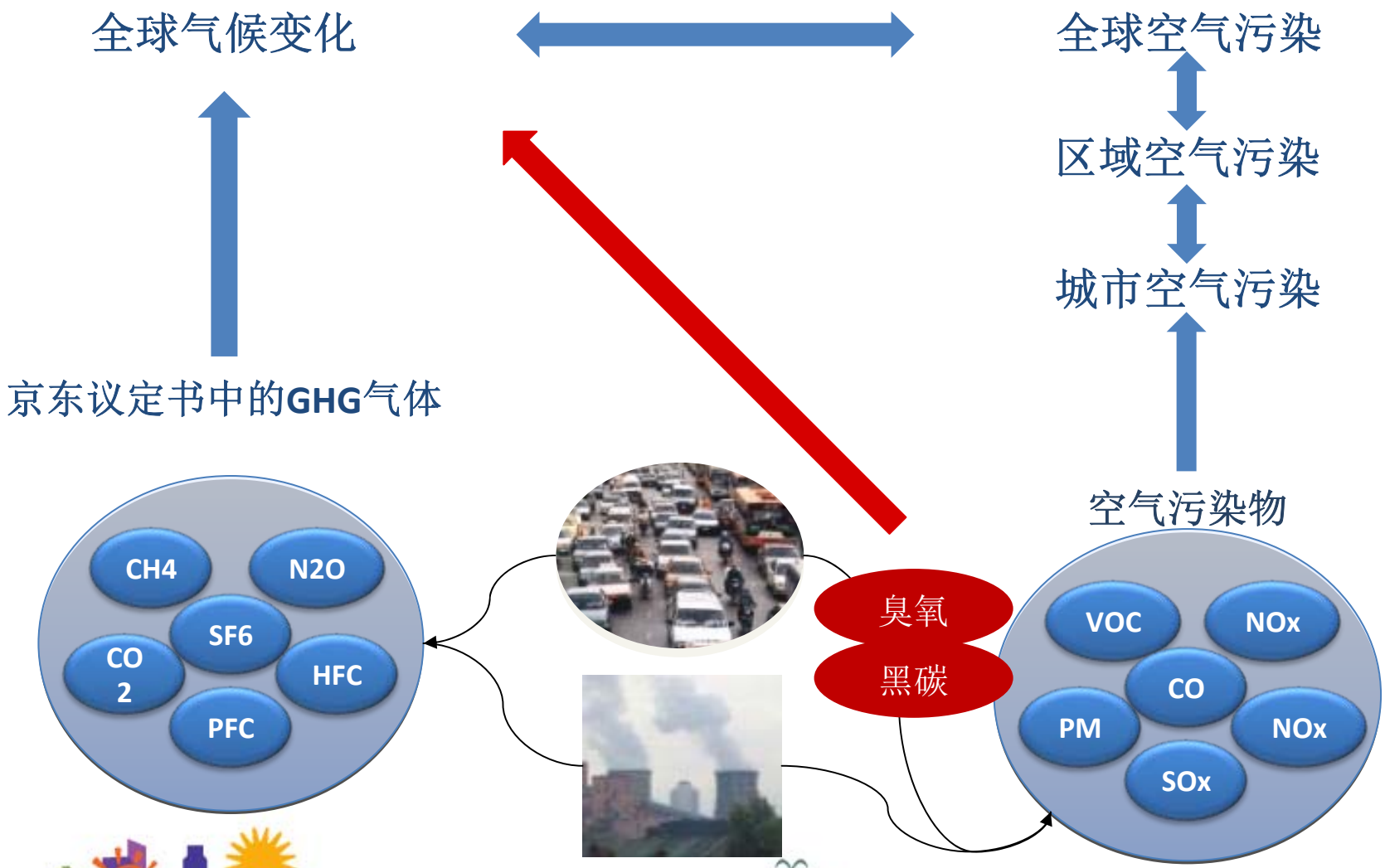
- 东南亚国家 能源行业排放增长 83% (1990 – 2000)



Climate Change Vulnerability in Southeast Asia

来源: ADB, 2009 和 IDRC, 2009

GHG和空气污染的协同影响



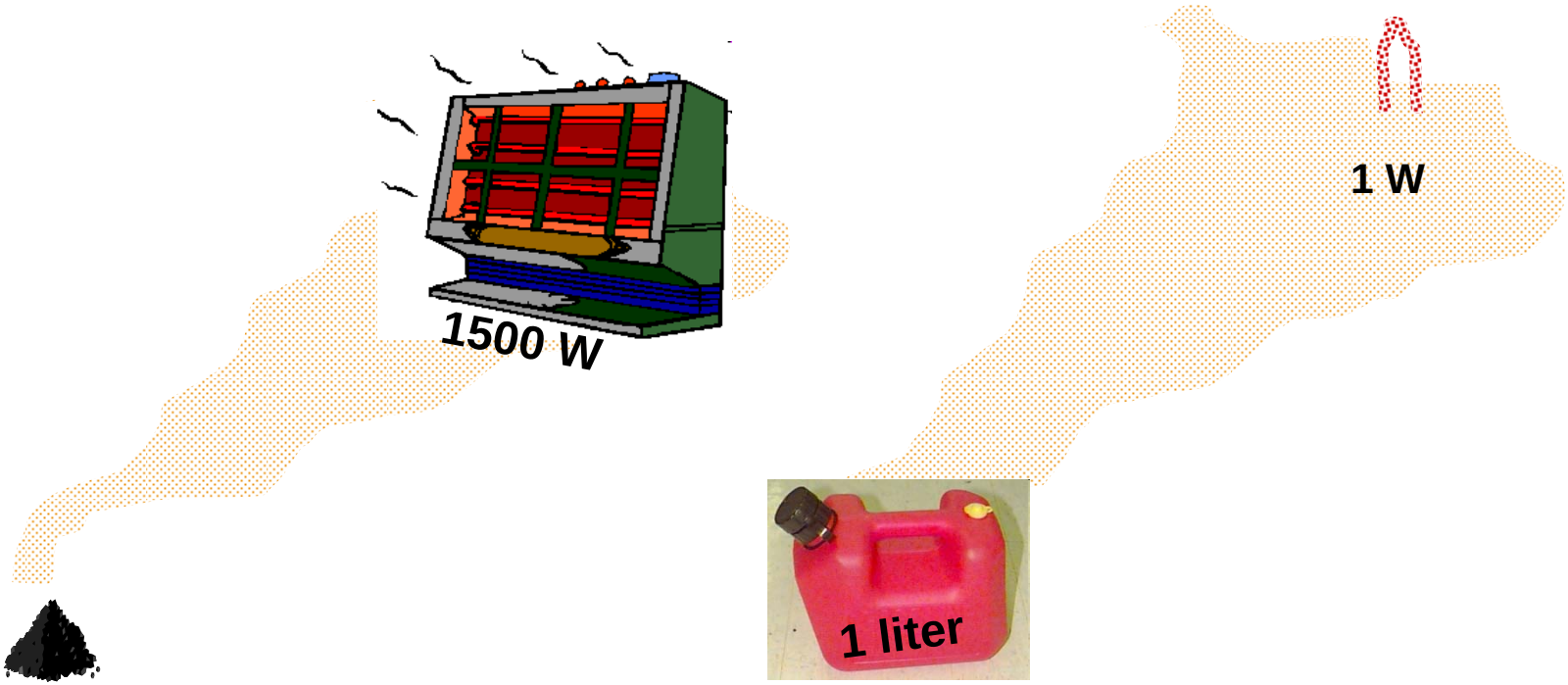
GHGs 和空气污染共同产生

亚洲协同效益的状况

- 2种主要问题——空气污染和气候变化
  - 城市急需增强意识
- 空气污染(AP)和温室气体(GHG)（排放清单）缺乏信息支持
- 对协同效益方法的理解较弱
  - 包括对空气污染物和GHG的科学关系
- 制度问题和政策能力–AP和GHG
  - 缺乏减少AP和GHG的融资机制 (只关注CO_2减排)
  - 责任重叠
  - 政策选择

国际协同效益的状况
(以空气质量管理和减缓气候变化为重点)

1. 增强科学理解 (1)



黑碳 – 影响力大、迅速，区域变暖

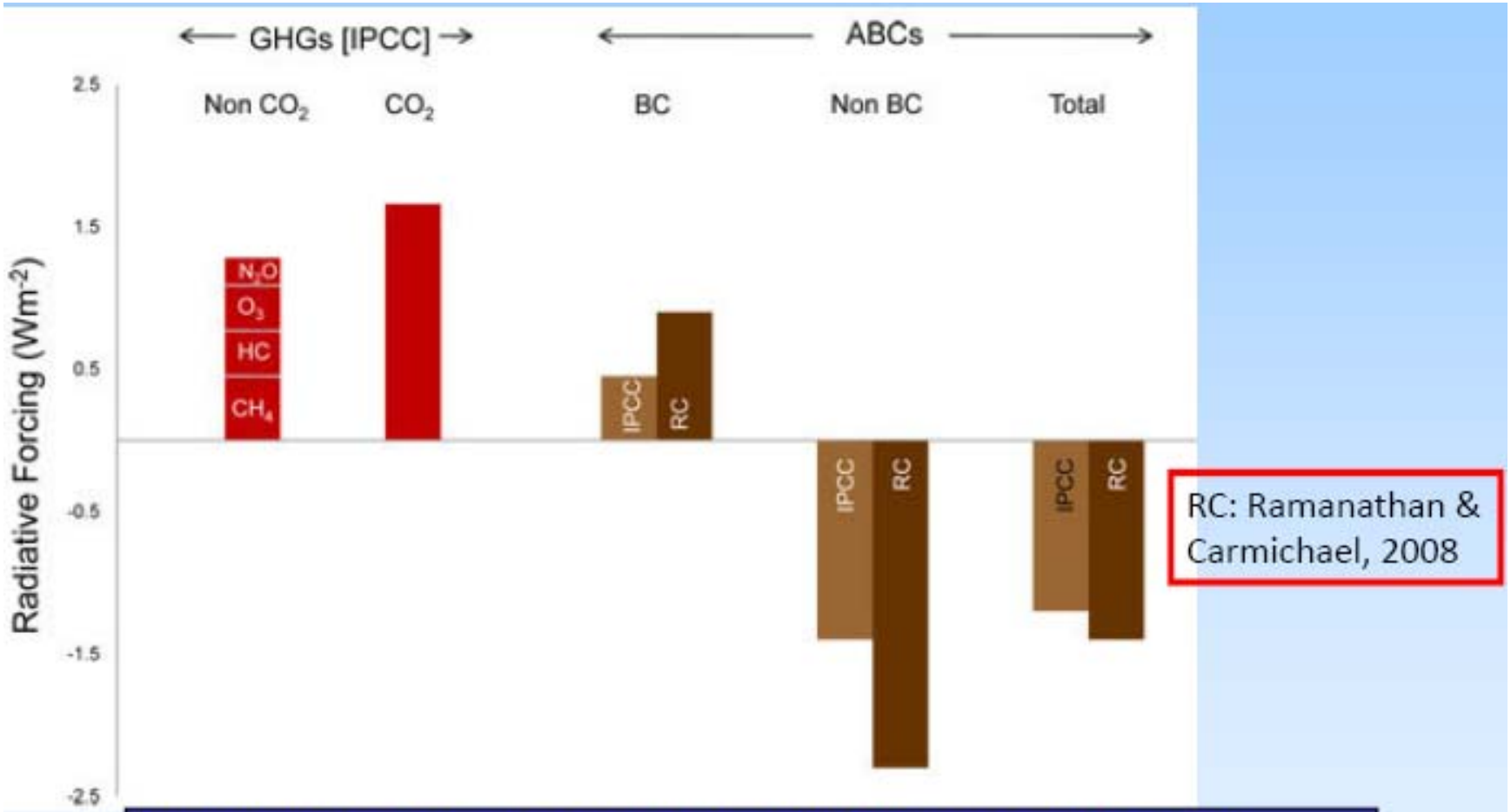
CO_2 – 长期、慢速、全球变暖

1 g 黑碳 = 1.5kW 空气加热器工作1周
3 kg CO_2 = 1 W的灯泡工作100年

相当于一辆老旧柴油货车行驶3.5km的排放。

资料来源: **Bond, 2010**

1.增强科学理解 (2)



For high BC heating, also see: Jacobson, 2001; Hansen and Nazarenko, 2004; Chung and Seinfeld, 2005

2. 讨论和出版物 (1)

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Black Carbon: An Overlooked Climate Factor

By BRYAN WALSH Friday, Nov. 13, 2009

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World Leaders Put Off a Climate Change Treaty

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Thick, black smoke billows into a blue sky from a chimney at Fawley Power Station in Hampshire, England

IGSD Institute for Governance & Sustainable Development

Cutting Non-CO_2 Pollutants Can Delay Abrupt Climate Change, Solve "Fast Half" of Climate Problem

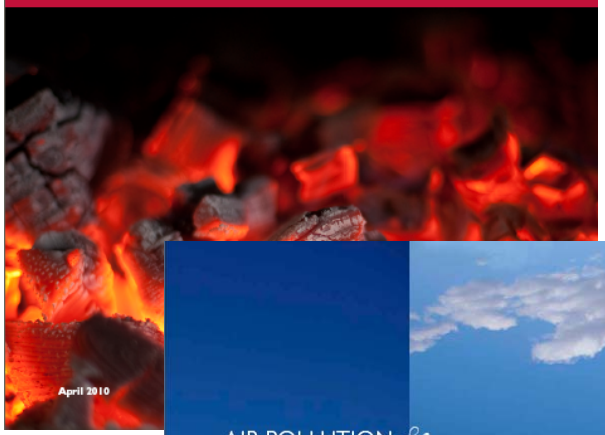
Washington, D.C., October 12, 2009 – Reducing non-CO_2 climate change agents such as black carbon soot, tropospheric ozone, and hydrofluorocarbons (HFCs), as well as expanding bio-

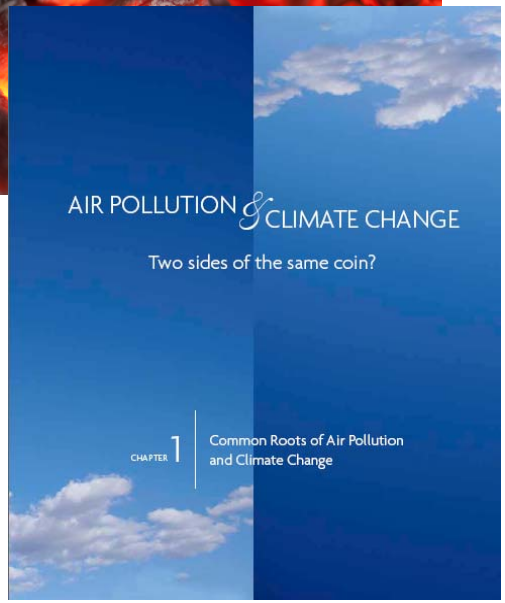
"Cutting HFCs, black carbon, tropospheric ozone, and methane can buy us about 40 years before we approach the dangerous threshold of 2°C warming," said co-author Professor Veerabhadran Ramanathan, a Distinguished Professor of Climate and Atmospheric Sciences at Scripps Institution of Oceanography at the University of California, San Diego.

"By targeting these short-term climate forcers, we can

USAID | ASIA FROM THE AMERICAN PEOPLE

BLACK CARBON EMISSIONS IN ASIA:
Sources, Impacts, and Abatement Opportunities





2. 讨论和出版物 (2)

- Co-benefits of Greenhouse Gas and Air Pollution Management, November 15, 2006 in Nairobi, Kenya
- US- Japan Workshop on Climate Actions and Developmental Co-benefits , March 5-6, 2007
- Air pollution and its relations to climate change and sustainable development - Linking immediate needs with long term challanges "Saltsjöbaden 3“, 12-14 March 2007, Gothenburg, Sweden
- The United States-Japan Workshop on The Co-benefits of Climate Actions in Asia - Bangkok, Thailand, 22 April 2008
- Air Pollution and Climate Change: Developing a Framework for Integrated Co-benefits Strategies Stockholm 17 - 19 September 2008
- “Co-benefits Network for Asia and Pacific” - 3 October 2009, Bangkok, Thailand
- Co-benefits of Climate Change and Sustainable Development in Developing Countries, 9 December 2009, Copenhagen, Denmark
- Seminar on a Co-benefits Approach:Emerging Trends and Needs, 11-12 March 2010, Bangkok, Thailand
- U.S.-China Cooperation: The Co-benefits of Reducing Black Carbon - March 17 2010, Washington DC,
- UN-REDD Workshop: Identifying and Promoting Ecosystem Co-Benefits from REDD+ - 27-29 April 2010, Cambridge, UK

3. 政策和项目

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Friday, July 23, 2010

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- ARB Programs
  - Climate Change

Program Links

- AB 32 Overview
- Advisory Committees
- Cap-and-Trade Program
- Economic Sectors Portal
- Fact Sheets
- Highlights
- Implementation
- Measure Timeline (7/1/10)
- Newsletter
- Public Health Workgroup
- Renewable Electricity Standard
- Research
- Scoping Plan
- SB 375 Regional Targets

Assembly Bill 32: Global Warming Solutions Act

In 2006, the Legislature passed and Governor Schwarzenegger signed AB 32, the Global Warming Solutions Act of 2006, which set the 2020 greenhouse gas law. It directed the California Air Resources Board (ARB or Board) to begin developing discrete early actions to reduce greenhouse gases while also preparing best to reach the 2020 limit. The reduction measures to meet the 2020 target are to be adopted by the start of 2011.

Assembly Bill 32 Includes a Number of Specific Requirements:

- **ARB shall prepare and approve a scoping plan for achieving the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions from sources or categories of sources of greenhouse gases by 2020 (Health and Safety Code (HSC) §38561).** The scoping plan, approved by the ARB Board December 12, 2008, provides the outline for actions to reduce greenhouse gases in California. The approved scoping plan indicates how these emission reductions will be achieved from significant greenhouse gas sources via regulations, market mechanisms and other actions.
- **Identify t** §38550). greenhous
- **Adopt a r** adopted a as a solid

U.S. ENVIRONMENTAL PROTECTION AGENCY

Climate Change - Regulatory Initiatives

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- PA and NHTSA National Program to Cut GHG and Improve Fuel Economy for Cars and Trucks
- ndangerment Findings
- andatory Reporting of GHGs Rule
- aste Energy Recovery Registry
- alifornia GHG Waiver Request
- enewable Fuel Standard 2 (RFS)

Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act

- Action
- Findings
- Response to Comments
- Resources
- Petitions for Reconsideration
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Action

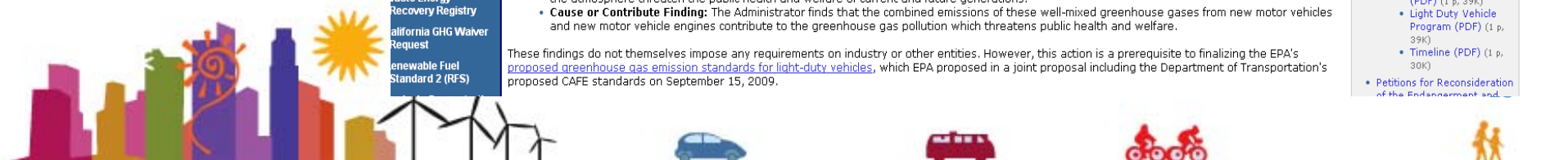
On December 7, 2009, the Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases — carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) — in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing the EPA's proposed greenhouse gas emission standards for light-duty vehicles, which EPA proposed in a joint proposal including the Department of Transportation's proposed CAFE standards on September 15, 2009.

Resources and Tools

- Findings
- Technical Support Document
- Response to Comment Documents
- Press Release
- Resources
  - Legal Basis (PDF) (1 p, 117K)
  - Health Effects (PDF) (1 p, 95K)
  - Environmental and Welfare Effects (PDF) (1 p, 45K)
  - Climate Change Facts (PDF) (1 p, 39K)
  - Light Duty Vehicle Program (PDF) (1 p, 39K)
  - Timeline (PDF) (1 p, 30K)
- Petitions for Reconsideration of the Endangerment and



亚洲协同效益

推动城市低碳方案

全球和国家的压力：低碳发展

城市的低碳计划

现有的地方空气质量计划

提升协同效益

1. 整合评价和测量工具
2. 整合气候变化和空气污染的计划和政策
3. 调整减缓气候变化和空气质量管理的制度责任
4. 出资方的平衡考虑：CO_2减排的全球利益、节能减排和可持续交通带来的地方利益

1- 整合评价和测量工具

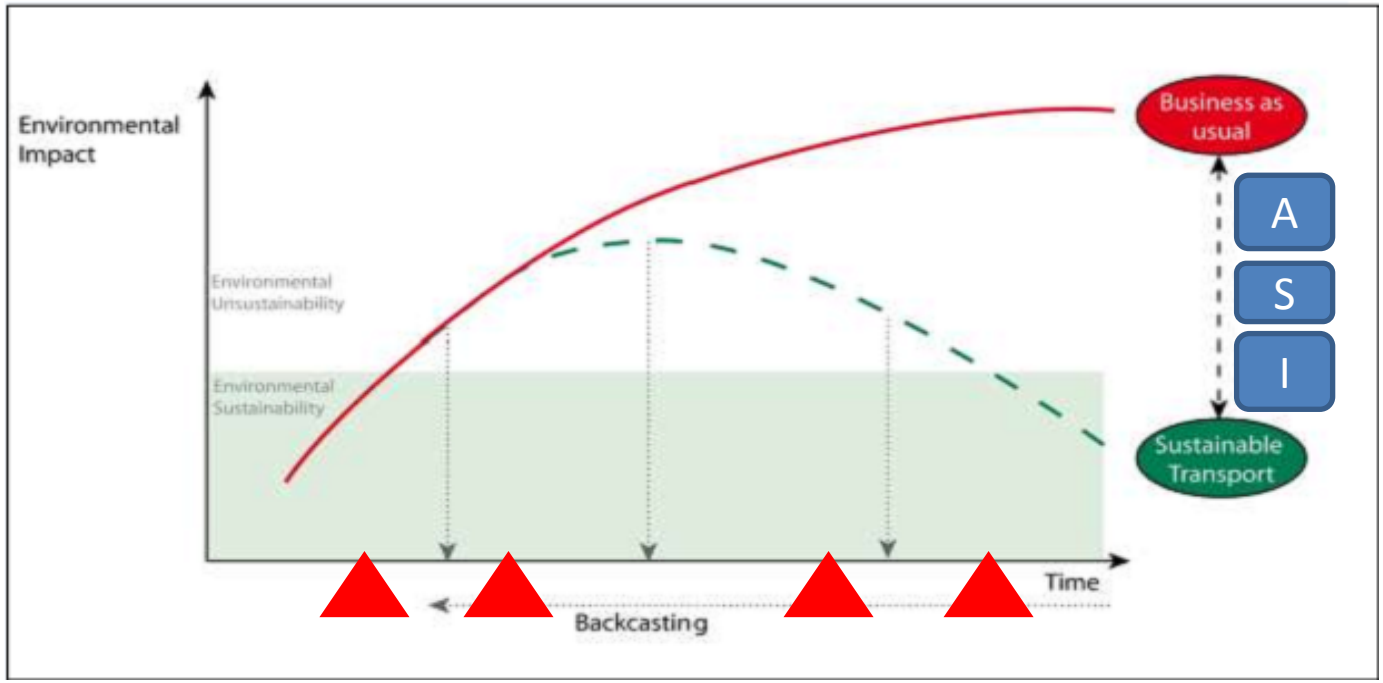
- 清洁空气评价工具– 明天讨论.
- 为公司整合GHG/AP的审计工具
- 交通排放情景分析模型
- 交通、能源领域的GHG/AP 指标

整合GHG/AP审计工具

- 基于World Resources Institute (WRI)-World Business Council for Sustainable Development (WBCSD)'s (世界可持续发展工商理事会)的GHG协定
- 包括PM, SO_2, NO_x, VOC，以及 CO_2, CH_4, N_2O
- 在菲律宾公司实施
  - 酿酒厂 (San Miguel Corporation – San Fernando Brewery)
  - 水利用(Maynilad Water)
  - 炼油厂(Petron Bataan Refinery)
- 与菲律宾环境商业机构合作 (PBE) – WBCSD菲律宾秘书处
- 在2010年3月的华盛顿会议中，把GHG/AP工具整合进GHG草案工具。

为交通运输行业设计框架

目标：提供一个新型的预测工具，对未来的不同情况、政策措施所带来的不同结果进行情景分析



A － 避免或减少不必要的交通
S － 使用清洁的和低碳的出行方式
I － 提高机动车能效和碳效

交通和能源行业的GHG和AP指标

目标: 在13个亚洲国家中，对交通、能源领域的GHG/空气污染物指标 进行对比

- 为交通和能源行业（发电业）制定参数，对数据进行持续收集和更新
- 收集数据并获得GHG和当地空气污染物指标
- 对比 13个亚洲国家和25个亚洲城市
- 在清洁空气门户网站上提供数据

2-规划和政策的整合
3-各机构的联合

- 在中国开展协调效益项目
- CAI-Asia 和SLOCAT相关的活动
- 小城市的清洁空气活动
- 协同效益网络中的积极成员 (将要召开的BAQ)

4-全球CO2排放和地方经济发展的平衡考虑

BAQ 2010

BETTER AIR QUALITY
SINGAPORE
9 to 11 November

BAQ 2010 - “气候变化中的空气质量”

www.baq2010.org

空气质量和协同效益的继续讨论

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Sustainable Transport Discussions	7	10	Pedestrian Budget? By Sudhir Gota 08 Mar 2010

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- Special Edition: "Un"Sustainable Urban Mobility in Asia News Digest
- Indonesia E-newsletter
- Partnership for Clean Air (PCA) Newsletter
- Clean Air Network Nepal Newsletter
- Clean Air Sri Lanka Newsletter

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  10-12 May 2010 (Washington DC, USA)
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The Clean Air Portal was developed by the CAI-Asia Center with support from the Asian Development Bank through the Japan Special Fund together with CAI-Asia Partnership members.

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