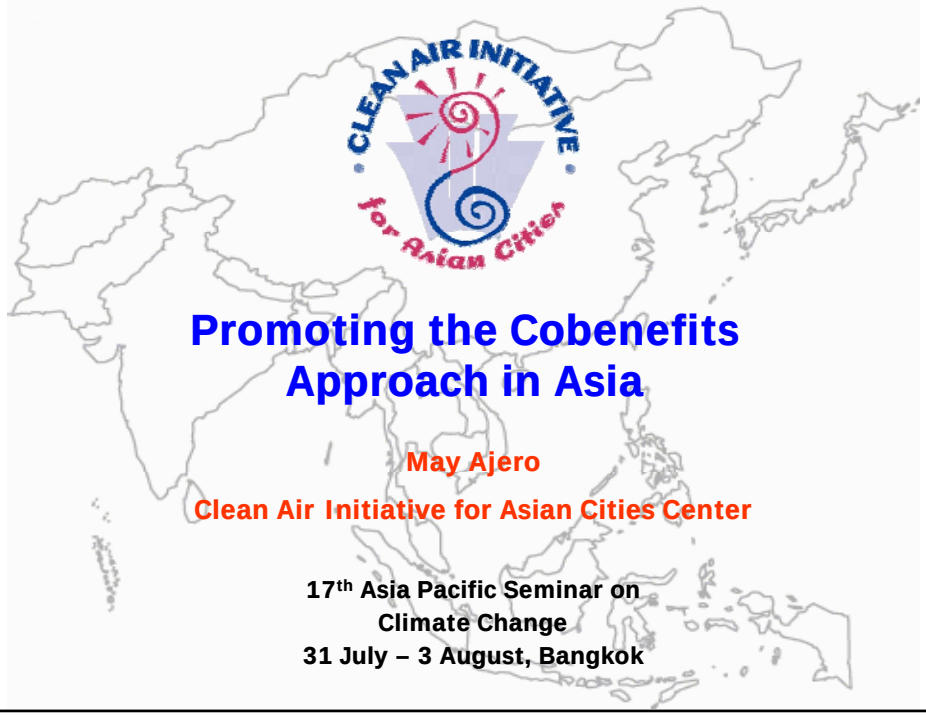

Promoting the Cobenefits Approach in Asia

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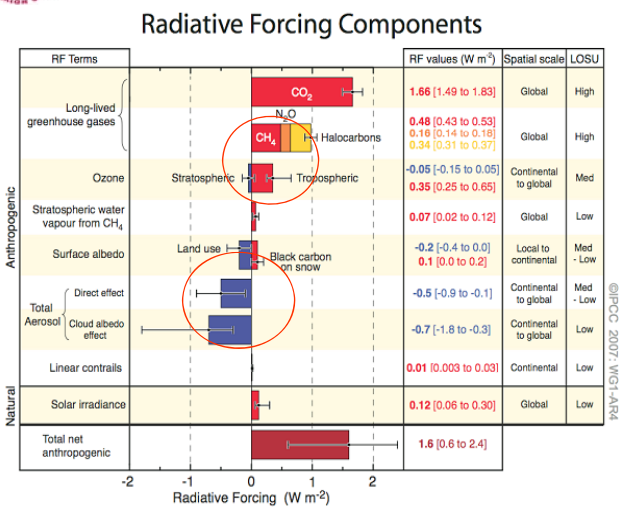
Outline

1. Scientific Underpinning of Co-benefits
2. Evolution in Interpretation of the Definition of Co-benefits
3. Emerging Co-benefits Trends in Asia
4. Promoting Co-benefits Approach in Asia: Triggers, Barriers and Future Steps

Part 1 - Scientific Underpinning of Co-benefits

Climate Change and Air Pollution Linkages



Source: IPCC Working Group I Contribution to the Fourth Assessment Report Climate Change 2007: The Physical Science Basis Summary for Policy Makers

- The IPCC Working Group I Fourth Assessment Report has recognized that dust, ozone, black C, and other aerosols have impact on climate as expressed in radiative forcing units
- Aerosols (Sulphate, Organic C, nitrate and dust) produce a cooling effect while tropospheric ozone (a product of NOx, CO and HC reaction) produce a warming effect
- The **level of scientific understanding of air pollution impact on climate** has improved from Third Assessment Report but still remain the dominant uncertainty in radiative forcing.

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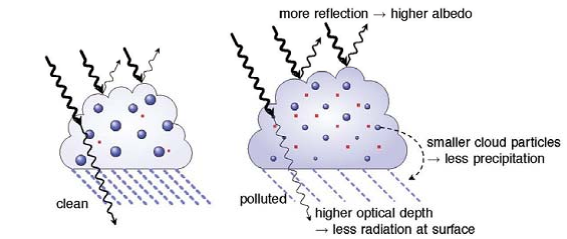
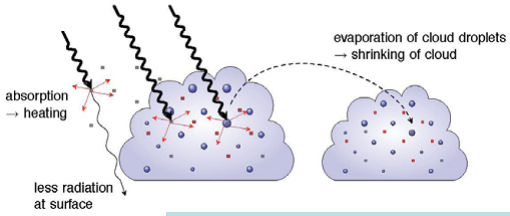
Air pollution impacts on short term / regional climate:

Cloud albedo and lifetime effect (negative radiative effect for warm clouds at TOA; less precipitation and less solar radiation at the surface)



Semi-direct effect (positive radiative effect at TOA for soot inside clouds, negative for soot above clouds)



IN THE NEWS:

Israeli study finds air pollution cuts vital mountain rainfall - 14 May 2007

Dust Dampens Hurricane Formation – 4 March 2007

Airborne Dust Causes Ripple Effect on Climate Far Away - 25 January 2007

Smoke and Pollution Aerosol Effect on Cloud Cover – 13 July 2006

NASA Finds Polluted Clouds Hold Less Moisture And Cool Earth Less – 6 January 2005

Asian Pollution Cloud Changing Climate, Study Says - February 10, 2003

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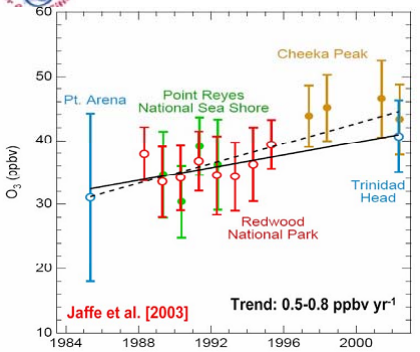
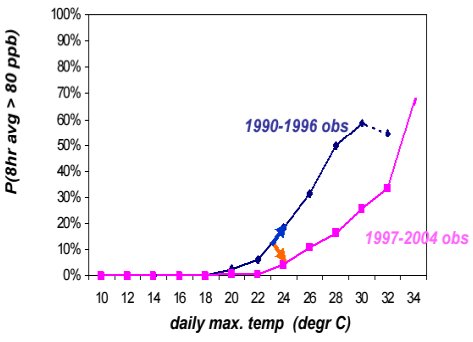
Climate change ALSO affects air pollution:



Observed trends in background O_3 levels in California (Jaffe et. Al., 2003)



Probability of exceeding O_3 limit in Ispra, Italy (Van Dingenen et al., in preparation)

- Increased temperatures increase probability of exceeding air quality guidelines for Ozone.
- Impact of climate change on particulate matter has not been established.

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IPCC Fourth Assessment on Co-benefits

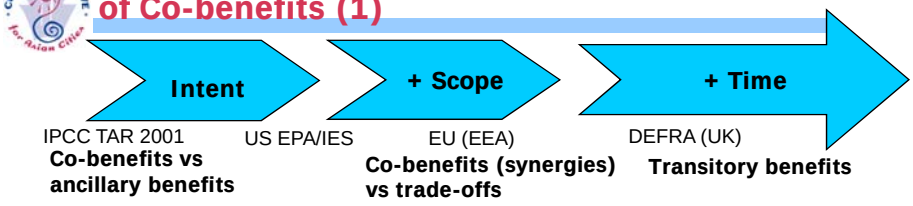
IPCC AR4 acknowledges that cobenefits approach will offer larger benefits..

"While studies use different methodologies, in all analyzed world regions near-term health co-benefits from reduced air pollution as a result of actions to reduce GHG emissions can be substantial and may offset a substantial fraction of mitigation costs *(high agreement, much evidence).*

- Integrating air pollution abatement and climate change mitigation policies offers potentially large cost reductions compared to treating those policies in isolation".

Part 2 - Evolution in Interpretation of the Definition of Co-benefits

Interpretation of the Definition of Co-benefits (1)



INTENT (IPCC TAR 2001)

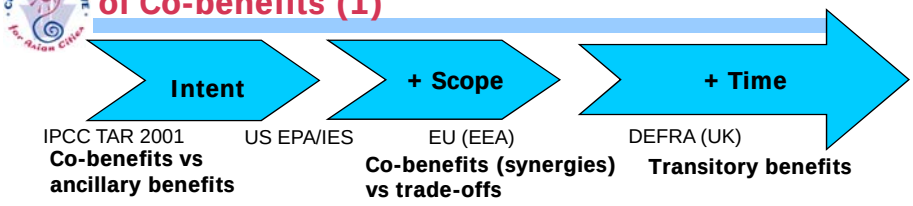
Co-benefits are the benefits from policy options implemented for various reasons **at the same time.**

Ancillary benefits are monetized **secondary, or side benefits** of mitigation policies on problems such as reductions in local air pollution and possibly indirect effects on congestion, land quality, employment, and fuel security.

SCOPE (IES handbook, 2004)

Co-benefits refer to 2 or more benefits that are derived together from a single measure/set of measures. Benefits can be generated unintentionally when decision-makers implement a policy with a single aim and then later discover that the policy resulted in additional co-benefits.

Interpretation of the Definition of Co-benefits (1)



SYNERGIES vs TRADE – OFFS (EEA, 2004 and EEA, 2006)

Measures that address two environmental issues can work either as **synergies or trade-offs.** Control strategies that simultaneously address air pollution and climate change which also lead to more efficient use of resources are called **co-benefits.**

TIME (DEFRA 2007)

A related issue is the **timing of measures and their impacts**. Some measures might benefit AQ in the near-term, whereas others might be of benefit much later. Measures that are likely to have a benefit over a relatively shorter period of time are called **transitory benefits.**

Common to all the definitions above is the inclusion of climate benefits either as main benefit or as one of the major benefits.

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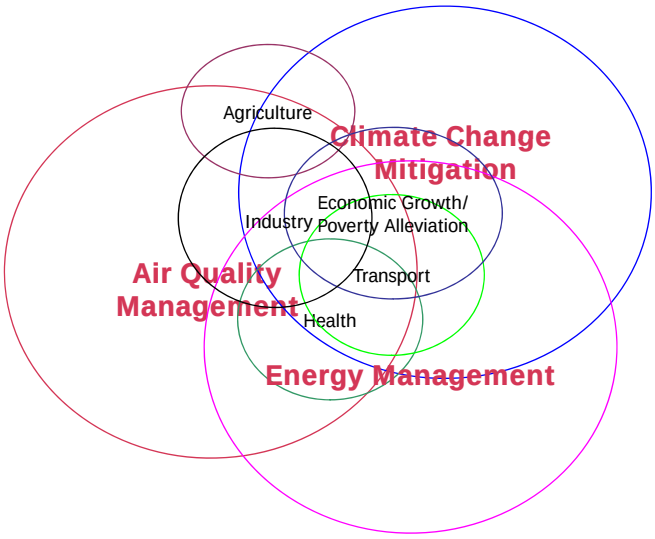
What is CAI-Asia's interpretation of co-benefits?

- The previous definition of co-benefits were conceptualized by developed countries whose pressing concern or priority is addressing climate change.
- Although there is increasing awareness and pressure to address climate change, priorities in Asia are still economic growth, air quality management and energy security.
- The co-benefits appropriate for Asia therefore would be one that internalizes Asia's priorities. The co-benefits definition then would not be climate-centric but could be e.g. energy- security centric OR air quality management-centric.

Major Developmental Challenges with Potential Co-benefits in Asia



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Part 3 – Emerging Trends of Co-benefits in Asia

Status of Co-benefits Approach in the developed world

Europe - The co-benefits approach is more mature in Europe with some research conducted to look into the applicability of the co-benefits approach in addressing air pollution and climate especially in the energy and transport sectors. There is also a proposal to compile joint emissions inventories of GHGs and air pollutants.

United States - There is an ongoing discussion to include CO_2 as a pollutant to be regulated under the US Clean Air Act. The Air Resources Board of California (CARB) is also adopting a co-benefits approach in their policies to reduce air pollution and address climate change concerns.

Japan – Japanese organizations such as the OECC and IGES have been active in conducting co-benefits related policy research and advocacy in Asia.

Emerging Co-benefits Trends (in Asia)

- The co-benefits principle is still developing as a paradigm for problem solving and policy formulation in Asia.
- The common topics covered are: climate change mitigation, air quality management, transportation, energy (efficiency, renewable, fuel switch), agriculture and waste management.
- The number of projects that seem to apply the co-benefits principle are increasing (based on CAI-Asia's Compendium of AQM-related projects)
  - 25 projects in 2004, 33 projects in 2005 and 51 in 2006

  (disclaimer: these are not new projects but cumulative count through-out the years)

Major Players on co-benefits

- The number of organizations working on or interested in co-benefits are increasing in Asia.
- Although application of co-benefits approach is strong in Europe internally, their activities to promote co-benefits approach in Asia are limited.
- Those actively working in Asia are mostly US and Japanese organizations including: US EPA, ICLEI, OECC, IGES and MOE-Japan.
- UNEP is organizing a Climate Action Network where opportunity to advocate co-benefits approach may be expected.
- CAI-Asia has also been actively promoting co-benefits work in Asia and will increasingly do so in the next years.

Methods and Tools

- Application of existing tools have been limited - mostly on small or pilot-scale.
  - Integrated Environmental Strategies (IES), US EPA
  - Harmonized Emissions Analysis Tool (HEAT), ICLEI
  - Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS)-Asia, IIASA
  - Carbon Value Analysis Tool (CVAT), WRI
  - Simple Interactive Model for Better Air Quality (SIM-BAQ), World Bank
  - Clean Development and Climate Program (CDCP), Eco-Asia/USAID
- Most of these tools were either developed or funded by organizations outside Asia.
- Most are quantitative in nature (i.e. emissions-based) except for CDCP which translates qualitative criteria using weighted factors.

Part 4 – Promoting Co-benefits in Asia

Triggers and Barriers to adoption of Co-benefits Approach in Asia

Triggers

- Increasing scientific evidence linking climate change with other environmental issues.
- Growing pressure for developing countries to address climate change.
- Increasing awareness of environmental health problems and increasing public demand for cleaner goods and services.
- Potential to leverage resources (opportunity or "lure" of the carbon market).
- Relevance of co-benefits in advancing sustainable development goals.

Barriers:

- Limited pool of experts and lack of capacity in use of tools.
- Lack of country profiles/baseline information.
- Gap in translating existing EU and US co-benefits-related knowledge base to Asian context.
- Incoherent sectoral cooperation and institutional fragmentation of responsibilities especially in the governments.
- Lack of high-level policy forums where co-benefits agenda can be extensively discussed.
- Lack of connectivity between co-benefits analysis and policy-making.

Promoting Co-benefits Approach in Asia: Future steps (1)

To enable widespread, multi-sectoral application of co-benefits approach in Asia, the following activities are recommended:

Knowledge Management

- further clarification and consensus on co-benefits.
- generation of new knowledge (scientific and technical research).
- information, education and communication (IEC).
- systematic documentation and dissemination of co-benefits related research (e.g. US and EU knowledge base).

Capacity Building

- development of methods and tools.
- development and implementation of multi-stakeholder co-benefits training.
- development of monitoring and evaluation protocol, and indicators.

Promoting Co-benefits Approach in Asia: Future steps (2)

Policy Dialogue

- create policy forums to discuss co-benefits approach with participation from decision-makers at different levels of governance (regional, national and local). Policy forums can also be structured by sectors or by themes.

Networking and Collaboration

- create a region-wide network which can help identify Asia-relevant cobenefits objectives and prioritize activities.
- coordinate co-benefits activities among interested organizations to avoid duplication of efforts, to maximize capacity building and optimize mobilization of resources.

Implementation

- Create pilot co-benefit program and projects.
- Document existing and new co-benefit projects.

Strategies that have potentially large co-benefits in Asia

- Energy Efficiency - Asia is facing rapid increase in demand for energy and energy efficiency in current capacity is generally low.
- Fuels and Cleaner Technologies – research and advocacy for use of cleaner coal technologies are increasing worldwide. Asia will install large amounts of new power capacity which allows for use of new technologies
- Renewable Energy - share of renewables in Asia's energy mix is (still) low but there is high renewable energy potential for a lot of the countries.
- Sustainable Urban Transport and Transport Demand Management: There are large opportunities for Asia to improve its public transport and improve non-motorized transport systems.
- Inspection and Maintenance: Installing inspection and maintenance systems in Asia where there are large fleets of poorly maintained ageing vehicle will bring benefits on fuel efficiency and use, and reduction of emissions.

• There is a wide menu of measures where Asia can reap large co-benefits not only in terms of reduction of emissions of air pollutants and GHGs but also public health improvement, increased road safety, traffic decongestion and economic development.

BAQ 2008

- Co-benefits approach will be the main theme of the Better Air Quality 2008 workshop scheduled for October-November 2008.
- Timing of BAQ 2008, in-between COP13 (Bali) and COP14 (Poland) will allow for influencing the post-Kyoto debates.