Co-benefits: Linking low carbon transport to sustainable development

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Outline

• Co-benefits definition
• Co-benefits examples
• Support for integrating co-benefits in climate
• Challenges to mainstream co-benefits approach
• Recommendations to mainstream co-benefits approach
**Co-benefits: 2 definitions**

<table>
<thead>
<tr>
<th>Global climate change perspective</th>
<th>Asian regional/local perspective</th>
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<tbody>
<tr>
<td>Additional benefits beyond GHG reductions resulting from climate change mitigation measures</td>
<td>Additional GHG reductions resulting from measures aimed to address</td>
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<tr>
<td>- Reduced air pollution</td>
<td>- Development issues, such as air pollution and associated health</td>
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<td>- Associated health benefits</td>
<td>- Problems, lack of energy access and security, and other socio-economic problems</td>
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<td>- Improved energy security through reduced energy costs and dependency on oil imports</td>
<td>- Increased access to energy</td>
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<td>- Reduced traffic congestion</td>
<td>- Reduced traffic congestion</td>
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Co-benefits: aim and approach

• **Aim:**
  – Maximize the intended impacts of a policy or intervention at reduced overall costs to society through integration of multiple objectives in policies and projects
  – Substantially contribute to sustainable development goals

• **Co-benefits approach:**
  – Intentionally internalizes co-benefits at the conception of a policy or project to maximize co-benefits
  – Takes into account measures with short term benefits and long term GHG reductions and other benefits.
  – Considers co-benefits and trade-offs

Source: ADB and CAI-Asia Center, 2009 (for publication)
Co-benefits in transport projects

Primary Co-benefits
- Increased productivity through time savings
- Reduced 
- Reduced air emissions
- Reduced noise levels
- Improved equity
- Improved safety
- Reduced fuel subsidies paid by government

Secondary Co-benefits
- Reduced health costs due to air pollution and increased physical exercise
- Reduced other pollution (soil and water contamination, waste etc)

Benefits
- Reduced traffic congestion
- Reduced vehicle operating costs

Source: ADB and CAI-Asia Center, 2009 (for publication)
AVOID: unnecessary emissions in the future – Case of Indian Cities

- Indian cities show strong correlation between emissions of air pollutants and GHGs
- As cities grow in size, transport emissions increase
- Importance of catching cities early before they start to grow

SHIFT: motorized to non-motorized transport
Case of Marikina Bikeways, Philippines

• From 1996 to 2008 - 52 km of bikeways funded by LGU and then GEF contributed 1.3 Million USD from World Bank –GEF for expansion (about 56% funded by LGU and 43% from GEF)
• GEF estimates that in the medium scenario by 2015, bike share would be 12.3% of total vehicle share
• Taking 2000 as base year and considering a 20 year life cycle, bike lanes would save approximately:
  – 62,000 Tons of CO₂
  – 36 Tons of PM
  – 72 Tons of NOx
  – 17.5 Million$ of fuel saved
• Economic Analysis
  – Using 10$ for ton of CO₂ and using fuel savings – IRR = 10%,
  – If only fuel savings are considered than - IRR = 9% ??
  – Using 100$ per ton of CO₂ and using fuel savings – IRR = 11%

Source: World Bank – GEF, UP NCTS, Analysis by CAI-Asia Center using CART
IMPROVE: Application of technologies for heavy duty (long haul) trucks in Guangdong Province

- Technology packages
  - Tires: tire pressure monitoring, low rolling resistance tires, aluminum wheels
  - Aerodynamics: nosecone, fairings, skirts

- Savings per truck per year
  - Fuel: 14,772 liters (17%, based on US experience)
  - CO2 emissions: 37.9 tons
  - NOx: 0.239 tons
  - PM: 0.016 tons

- Payback period: 1.3 years

- If applied to estimated 826,000 HDTs in Guangdong Province
  - Fuel savings: 12.2 billion liters fuel per year
  - CO2 emission reductions: 31.7 million tons per year
"Efforts are needed to pursue sustainable development, as climate change is ultimately a development issue and it can only be addressed in the course of sustainable development."

Hu Jintao, President of People’s Republic of China, APEC meeting 2007
Support for integration of co-benefits in climate: scientific community

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

*Intergovernmental Panel on Climate Change (IPCC)*
*Fourth Assessment Report, 2006*

Black carbon significantly contributes to global warming, second to CO2

Support for integration of co-benefits in climate: transport experts and development organizations

*Bellagio Declaration on Transportation and Climate Change*

Climate action in the transport sector should recognize co-benefits:

- Acknowledge the importance of co-benefits of low carbon sustainable transport policies
- including air pollution abatement, enhanced health protection, reduced congestion, diminished accident rates, improved productivity and energy security
- as being equally important to bring about low carbon sustainable transport
- by institutionalizing support and incentives for sustainable transport interventions that maximize co-benefits together with CO2 reductions
Challenges to mainstream co-benefits of transport in climate

- Measurement of co-benefits
  - Difficult, costly and time-consuming
  - Few standardized methodologies
- Limited awareness, knowledge and capacity of policy makers, transport planners, engineers and donors/investors
  - Limited application in EIAs and post project assessment
  - Co-benefits approach not mainstreamed in policies
- Fragmented policy and institutional framework in the transport sector
- Limited focus on co-benefits in CDM projects

Source: ADB and CAI-Asia Center, 2009 (for publication)
Challenges to mainstream co-benefits of transport in climate

**CDM**

- CDM process intended to give weight to sustainable development issues relevant to the country, i.e. co-benefits, through sustainability criteria
- CDM in practice focused on CO2 reductions
  - DNA approval criteria do not include criteria
    - in absolute terms (minimum tons of pollutant reduced)
    - relative terms (minimum ratio with GHG reduced)
  - Separate assessment of CO2 reductions and sustainability indicator
  - No verification / certification process for sustainability indicators
Recommendations to mainstream co-benefits of transport in climate

- **Measurement**
  - Include in appraisal, evaluation and monitoring of transport projects
  - Improve baseline data gathering for quantifying CO2 and air pollutant emissions

- **Policy**
  - Standardized process needed based on sustainable development and integrating CO2 in transport
  - Integration of co-benefits in a post-Kyoto agreement

- **Financing** – (monetary) quantification of co-benefits will increase
  - Investment in sustainable transport projects
  - Attention of financiers in the public and private sector to direct investments from conventional to sustainable transport

- **Institutional framework**
  - Central coordination
  - Strengthened relationship between government agencies responsible for transport, climate change, environment/air pollution, and energy

Source: ADB and CAI-Asia Center, 2009
Mainstream co-benefits in climate framework: AWG-KP

- AWG-KP agreed to consider, with due attention to improving the environmental integrity of the Kyoto Protocol, in particular:
  - Possible improvements to emissions trading and project-based mechanisms under the KP on their scope, effectiveness, efficiency, accessibility, contribution to sustainable development, capacity to generate co-benefits, and the transfer of technology.
  - Possible broadening of the coverage of GHGs (black carbon, ozone?), sectors and source categories, and its implications based on sound science.
Mainstream co-benefits in climate framework: AWG-LCA

• The new mechanism should include registering sustainable development benefits, **co-benefits** and GHG emission reduction as outcome of each NAMA

• Co-benefits should be included as eligibility criteria for project activities including
  – technology transfer
  – capacity-building
  – employment creation
  – environmental conservation (such as air pollution reduction)

• These criteria shall be defined by the CDM Executive Board or a new body to be created under the Convention

• Projects that demonstrate co-benefits should be promoted through a number of measures including lower registration fees and expedited registration measures
