An Environmentally Sustainable Road Freight Sector in Asia

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Fifth Regional EST Forum in Asia
A New Decade in Sustainable Transport

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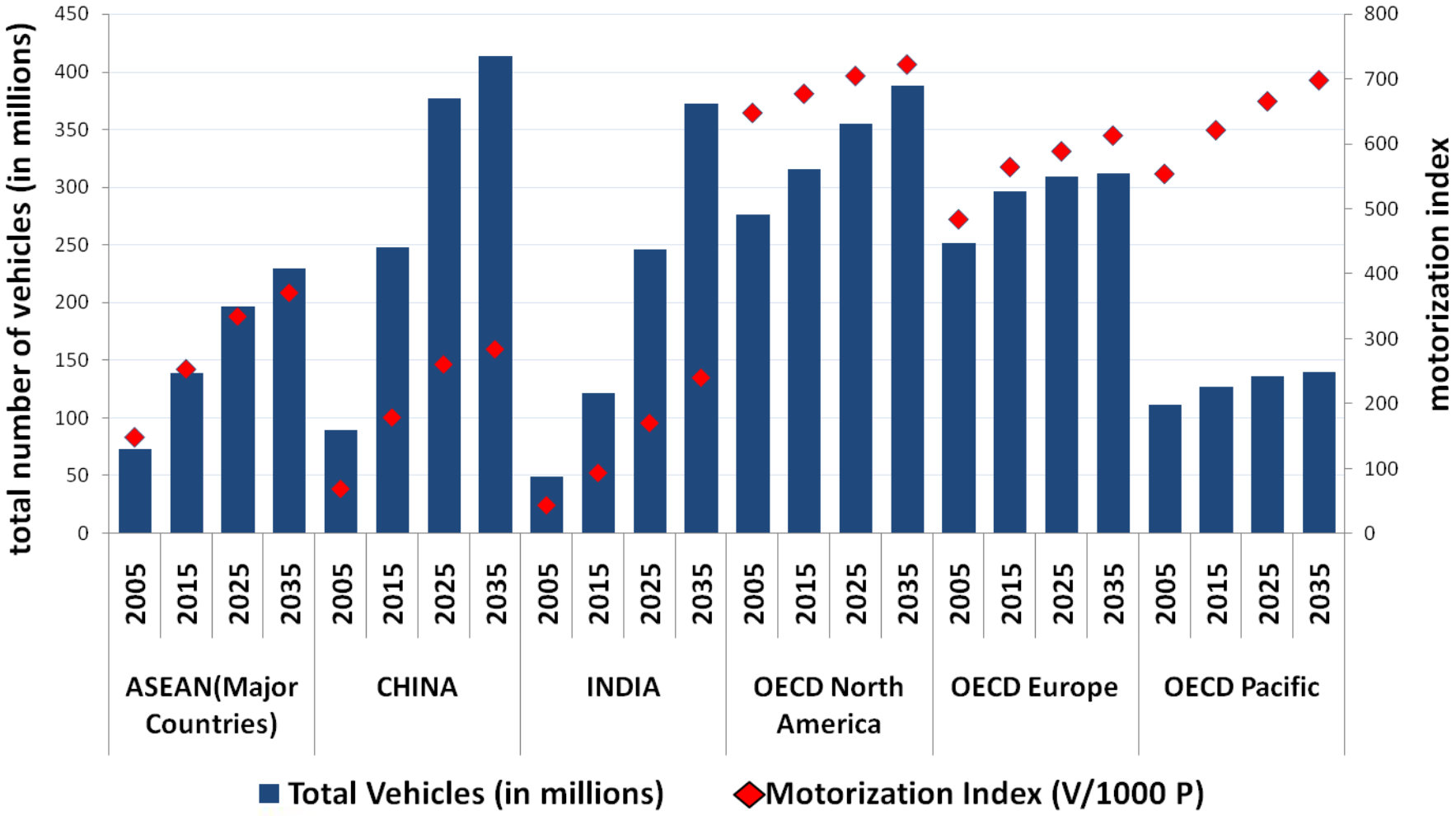
About the Clean Air Initiative for Asian Cities

The Clean Air Initiative for Asian Cities promotes better air quality and livable cities by translating knowledge to policies and actions that reduce air pollution and greenhouse gas emissions in transport, energy and other sectors

CAI-Asia began in 2001 as a multi-stakeholder initiative by ADB, World Bank and USAID

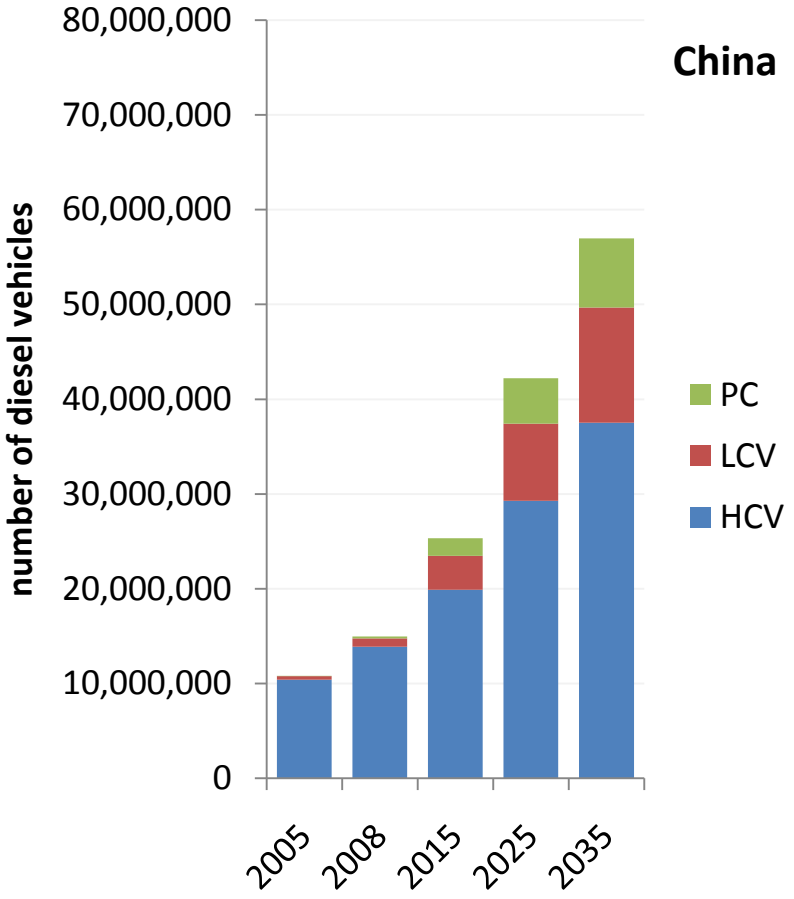
Since 2007, CAI-Asia is a **UN Type-II Partnership** with almost 200 organizational members, **8 Country Networks**, and the **CAI-Asia Center** as its secretariat

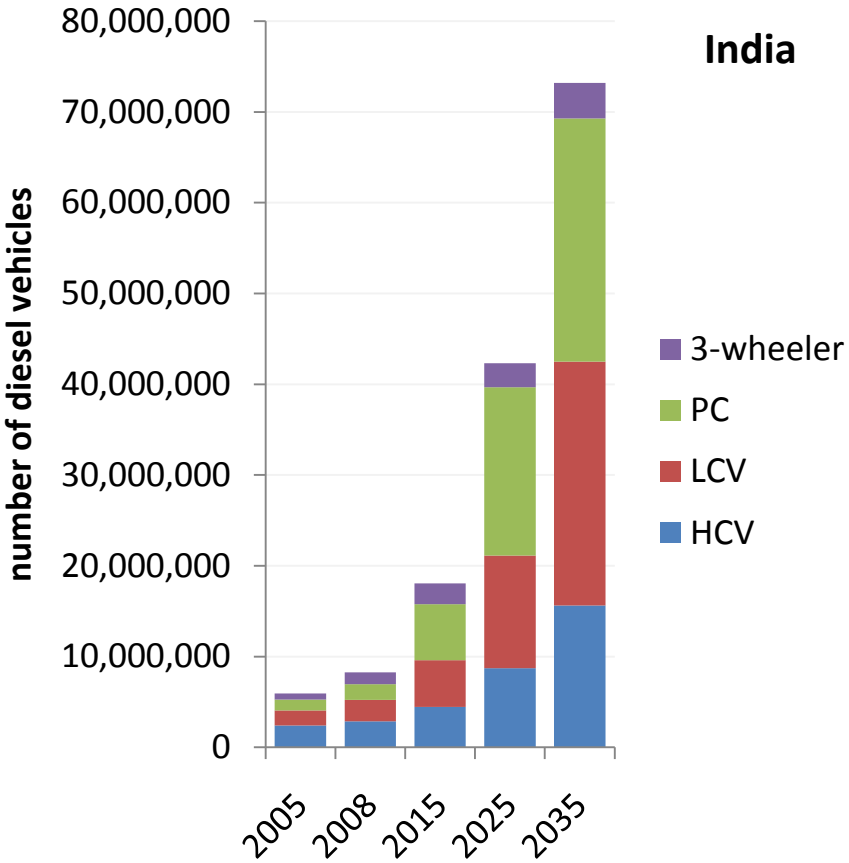
Increasing Motorization in Asia



Source: 2009. ADB, CAI-Asia, Segment Y Ltd., and IEA

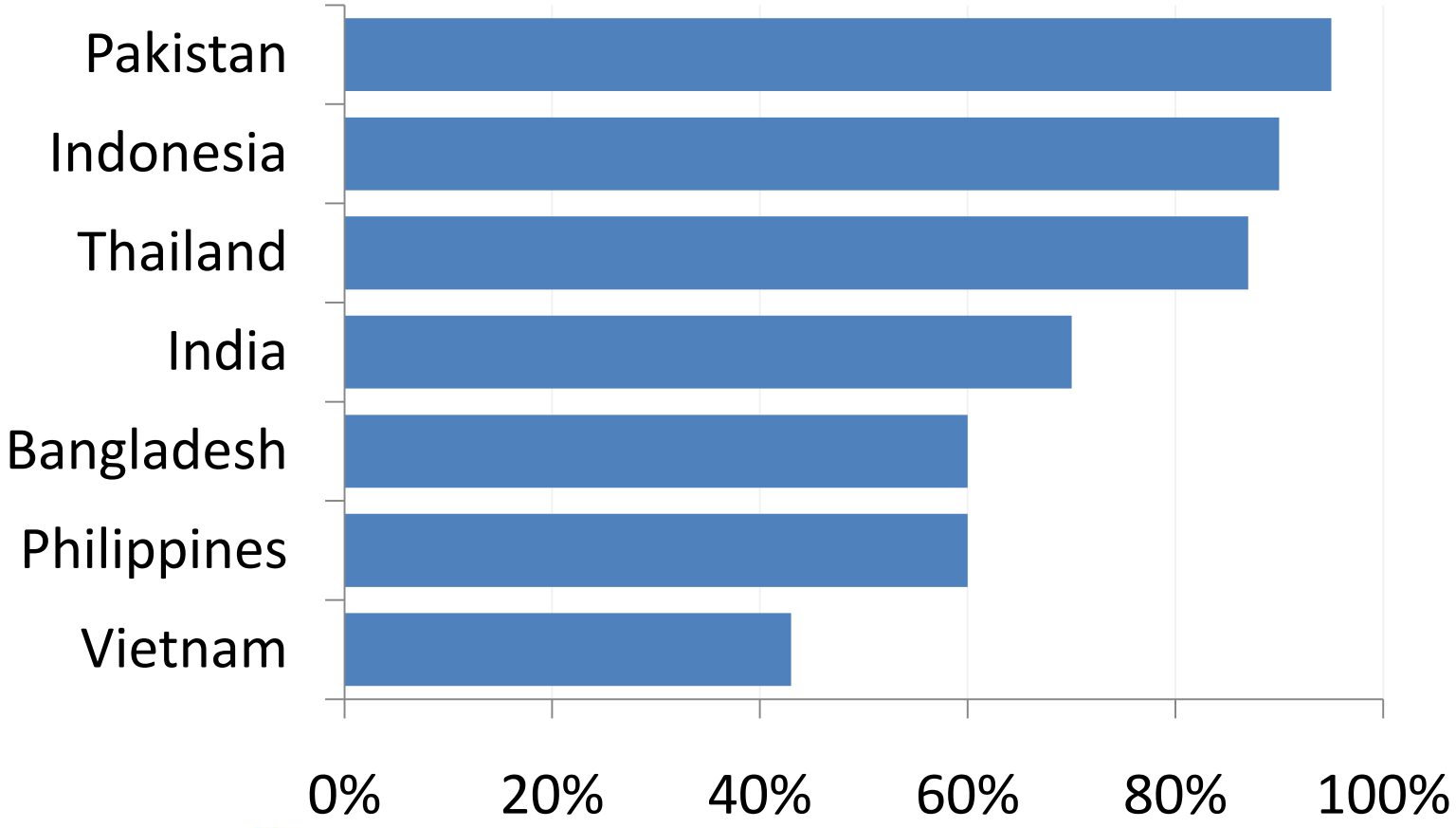
Trucks largest growth of diesel vehicles



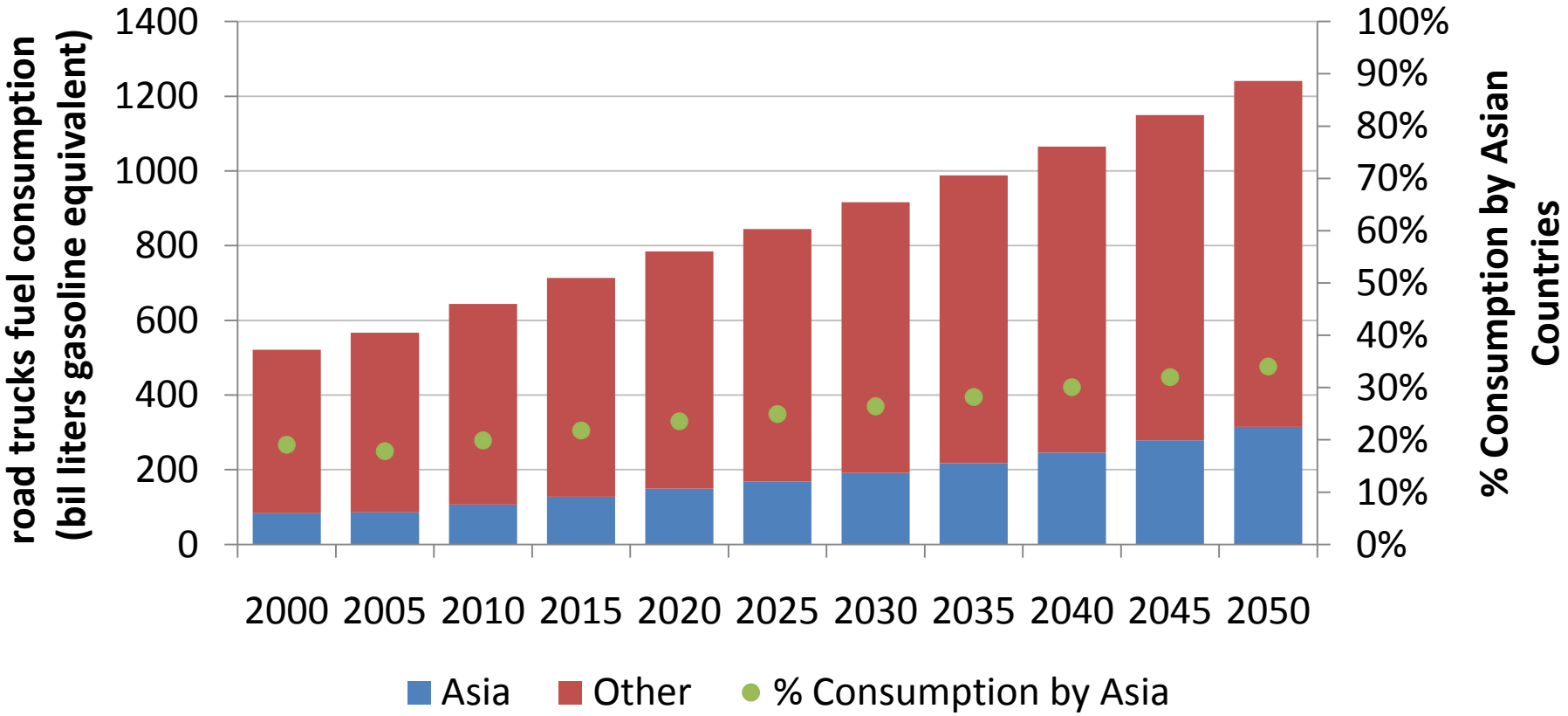


Source: ADB, CAI-Asia, Segment Y Ltd. (2009)

Road freight dominates in Asia: 40% or more



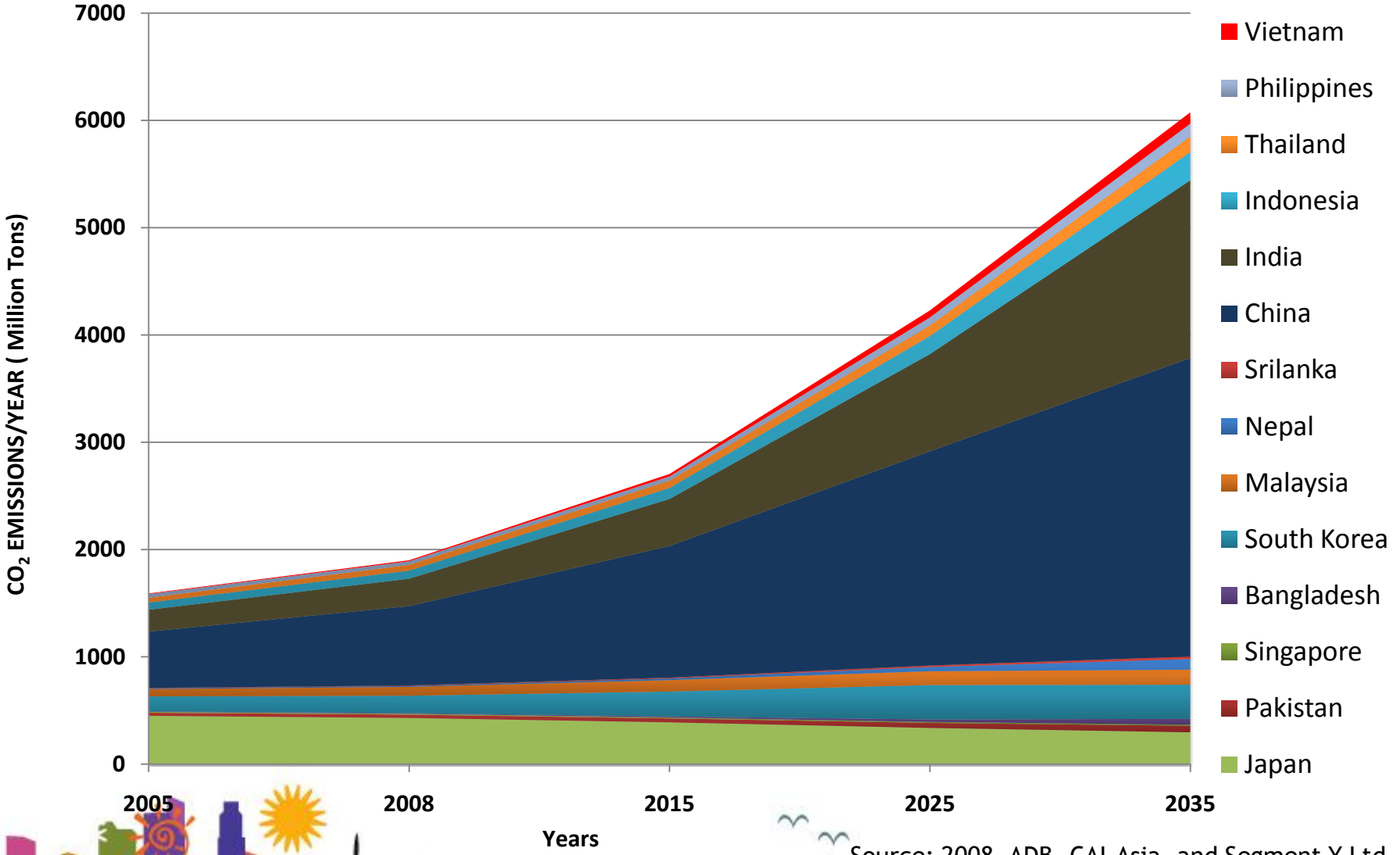
Diesel consumption by trucks to double by 2050 and Asia's share to grow to 34%



Road Freight Energy Use and % Consumption by Asian Countries

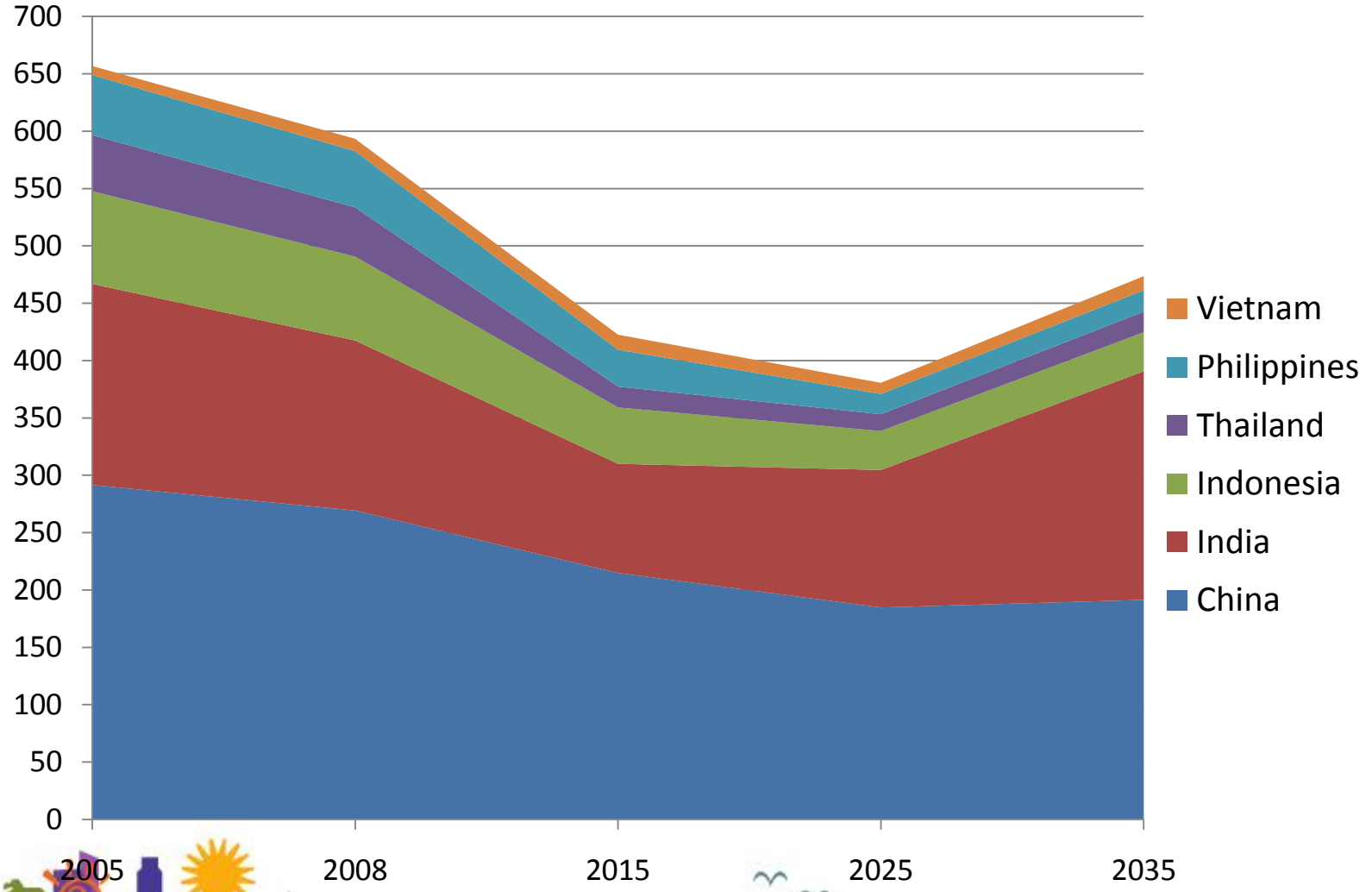
Source: WBCSD and IEA (2004)

Transport CO2 emissions to grow steadily



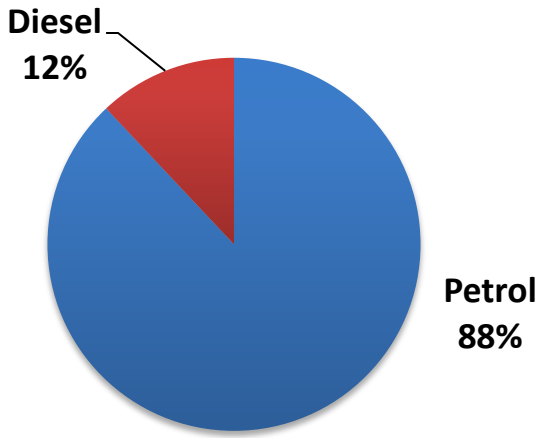
Source: 2008. ADB, CAI-Asia, and Segment Y Ltd

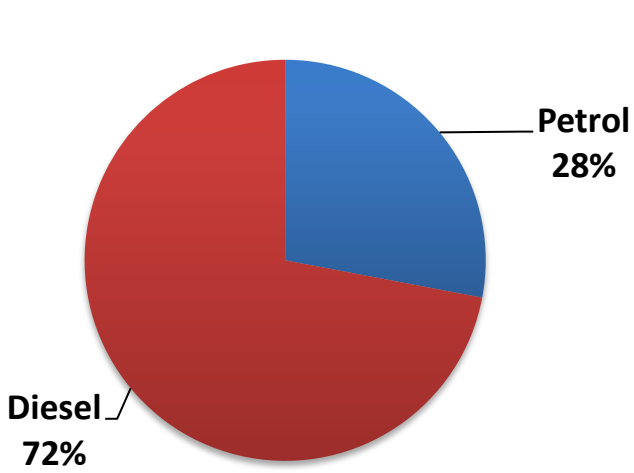
Transport particulate matter (PM) emissions decline, then rise

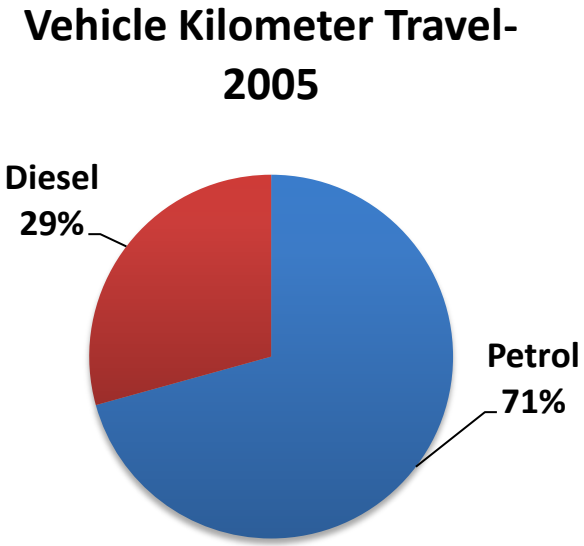


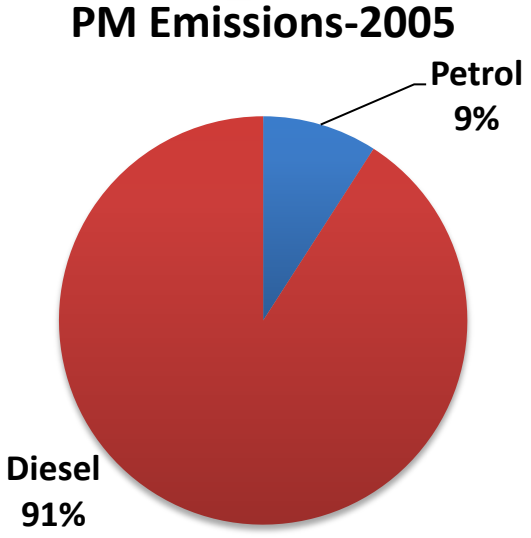
Source: 2008. ADB, CAI-Asia, and Segment Y (based on adoption up to Euro 3 standards)

Trucks relatively high emissions impact – China example



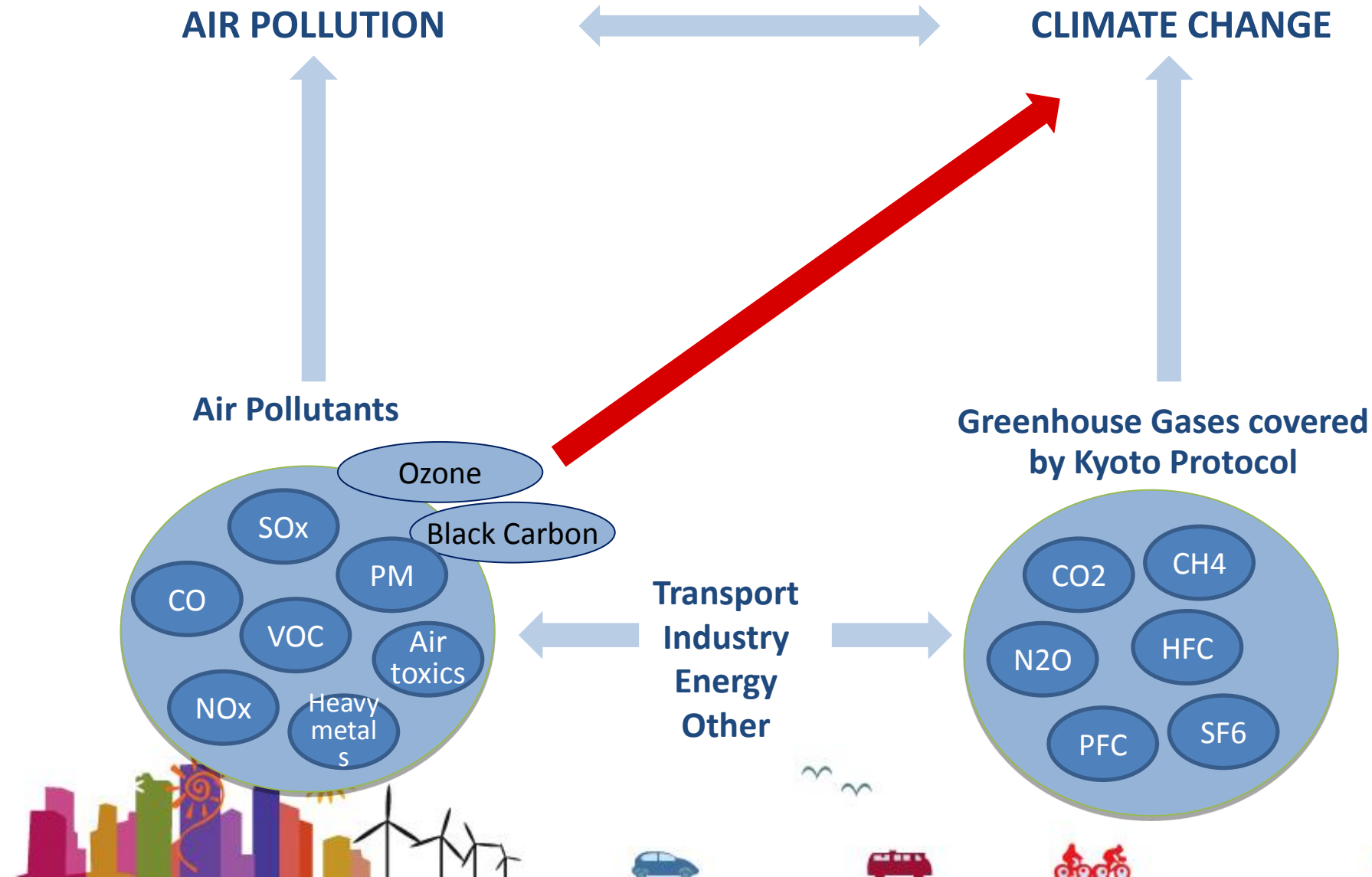






Source: 2008. ADB, CAI-Asia, and Segment Y Ltd

Critical to address both CO2 and air pollution from trucks



Other impacts of trucks

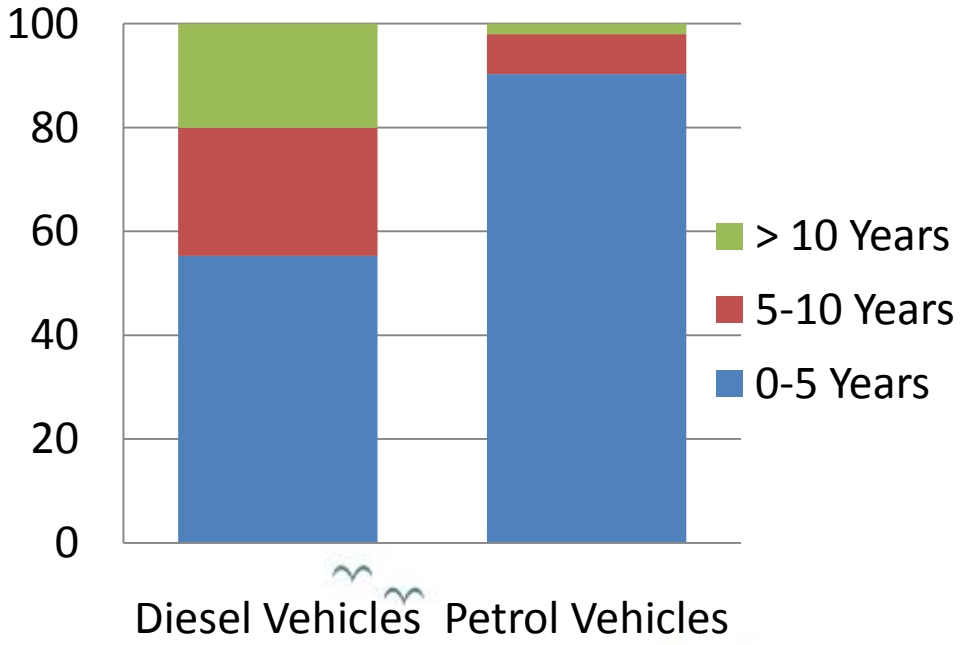
- Road accidents
  - India: trucks 5% of vehicles but 30% of road accidents
  - Pakistan: 25% of road accidents involved trucks
- Truck drivers at high risk of getting sexually-transmitted diseases such as HIV/AIDS
- Noise

Barriers: Policies and institutional set up

- Limited policies for trucks and introduced much later than for light-duty vehicles
- Freight seldom included in design and planning of urban transport systems and policy development
- Large number of government agencies adds more complexity

Barriers: Truck sector

- Highly fragmented with a majority owner-driver trucks
  - China, Guangzhou survey: 52% owner-driver trucks
  - India: 80% of companies have 1-2 trucks, and only 10% of companies have more than 15 trucks
- Old trucks and poor maintenance practices



Barriers: Truck sector (b)

- High percentage of empty hauls
  - China surveys: 40-50% empty miles = 8 billion USD annual loss
  - Philippines: 89% delivery vehicles empty return trips
  - India survey: 37-46% of trips are empty
- Overloading
  - Asia: 52% of trucks 45% over payload weight limit (Asia Fdn)
  - Pakistan: 70% of 2-3 axle and 40% of 4-6 axle trucks overloaded
  - Philippines: 0.5 – 1 billion USD to repair pavement damage (JICA)

Barriers: technologies & financing

- Limited technology availability in Asia and fragmented suppliers' network
- Limited applicability of certain technologies (e.g. aerodynamics on slow highways)
- Limited case studies for Asia to build confidence
- Financing
  - Limited tax policies that favor cleaner technologies
  - Investment costs barrier despite high savings
  - Truck sector not more reliable sector for lending
  - Innovative financing mechanisms and ESCOs (energy service companies) only for industry

Guangzhou truck pilot: Tire equipment

Tire equipment to reduce weight and rolling resistance

- **Single-wide tires or Dual low rolling resistance tires:** reduces rolling resistance

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- **Aluminum wheels:** reduces weight

- **Automatic tire pressure monitoring system:** keeps tire pressure more constant

Guangzhou truck pilot: Aerodynamics equipment

Aerodynamics equipment to air resistance and drag

- **Gap fairing:** reduces the tractor-trailer gap

- **Skirts:** reduce wind underneath trailer

- **Nosecone:** reduces turbulence

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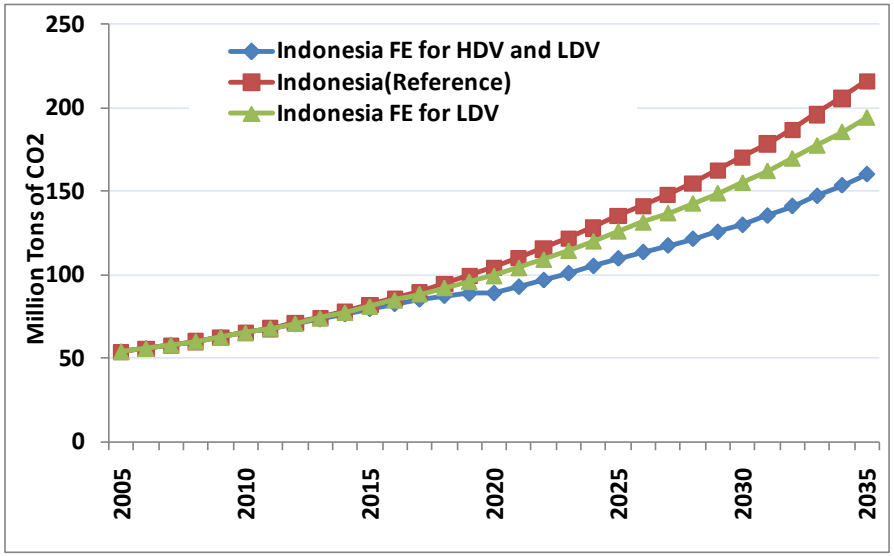
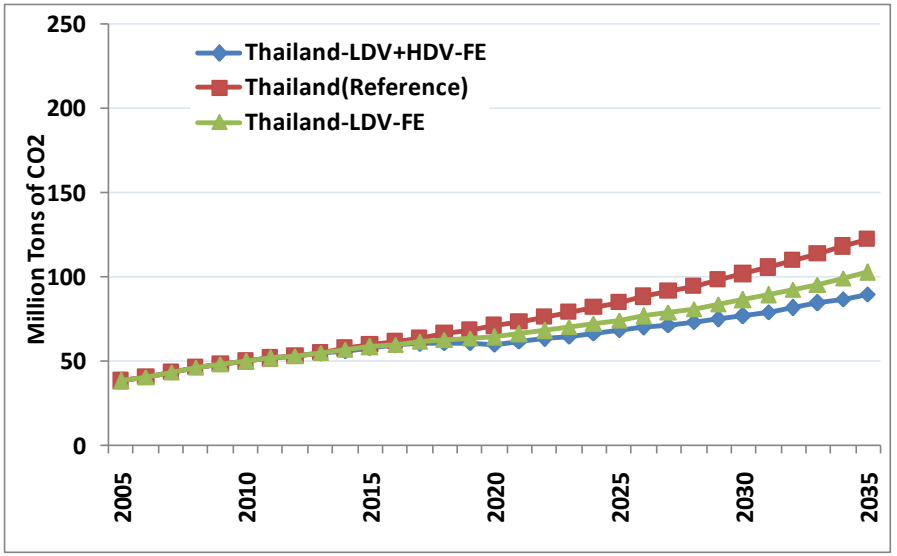
Potential savings from technologies

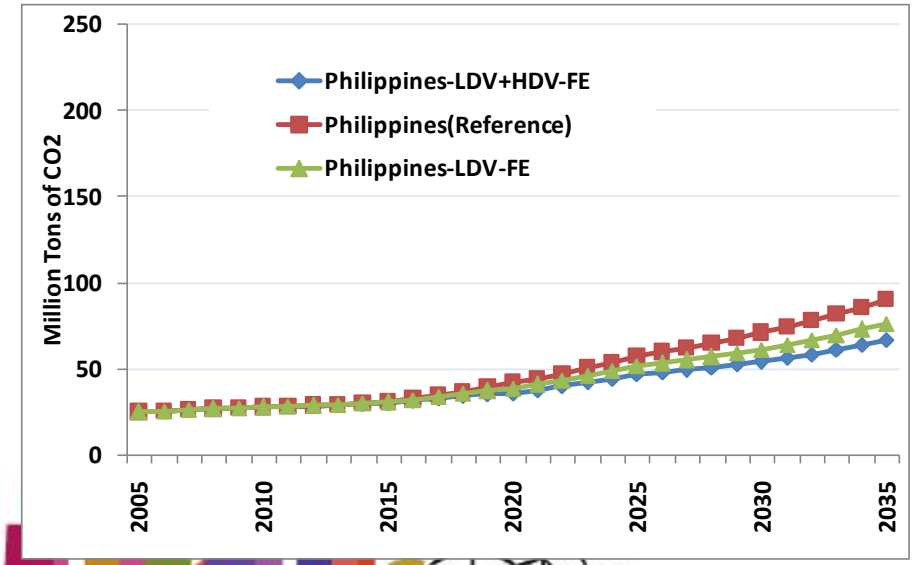
- Pilot project fuel savings: 6.7% for HDV, 18% for garbage trucks
- Savings potential for all trucks registered in Guangdong Province 2007: tires (all trucks) and aerodynamics equipment (only HDTs)
- 67.2% HDT, 19.8% MDV, 13.0% LDV

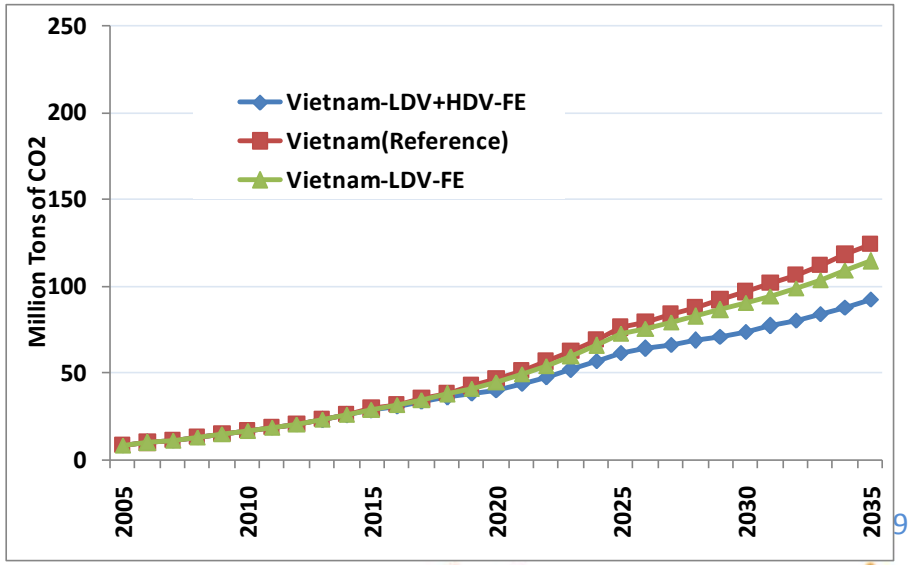
Total number of trucks registered in Guangdong Province	1,230,000
Total investment costs (tires and aerodynamics)	$12 billion dollars
Total fuel savings (liters per year)	3.96 billion liters/yr
Total fuel cost savings	$3.6 billion/yr
Total CO2 savings	10 million tons/yr
Total NOx savings	37000 tons/yr
Total PM savings	1584 tons/yr
Payback period in years	3.38

Potential for Asian countries





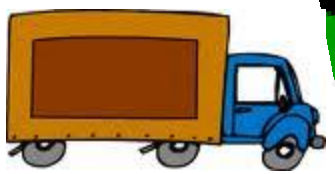




Strategies: avoid, shift, improve

- *Avoid:* reduce the need to travel or the travel
  - Promotion of local production and consumption
  - Co-location of facilities within supply chain and with ports
  - Improved logistics
  - Load management
- *Shift:* more energy-efficient modes
  - Optimization of railways and inland waterways
  - Different vehicle types that better match the loads
- *Improve:* energy efficient modes, operations, technologies
  - Fuel economy standards
  - Stricter implementation of anti-overloading laws
  - Technological tools, such radio frequency identification tags (RFID), global positioning systems (GPS) and vehicle routing software

Need for a Green Freight Program to supplement policies



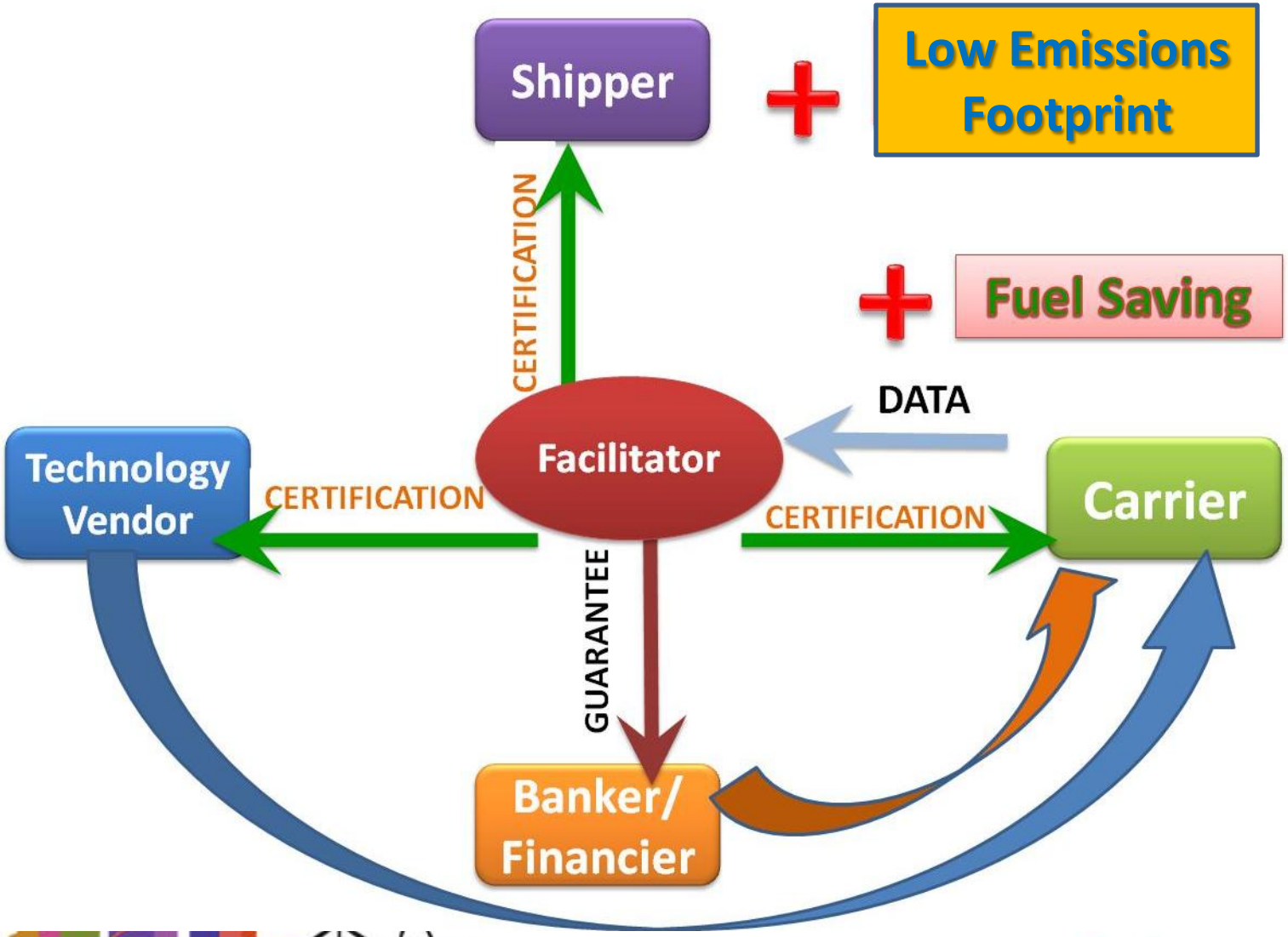
Green freight partnership

Technologies and Logistics

Financing

Freight Database

Green Freight Program Partnership



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BAQ 2010
Better Air Quality
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9 to 11 November

"Air Quality in a Changing Climate"

www.BAQ2010.org

For information email:
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CAI-Asia Center

www.cleanairinitiative.org
www.cleanairinitiative.org/portal/GreenTrucksPilot

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