Transportation & Environment:
Challenges on tackling global warming problems

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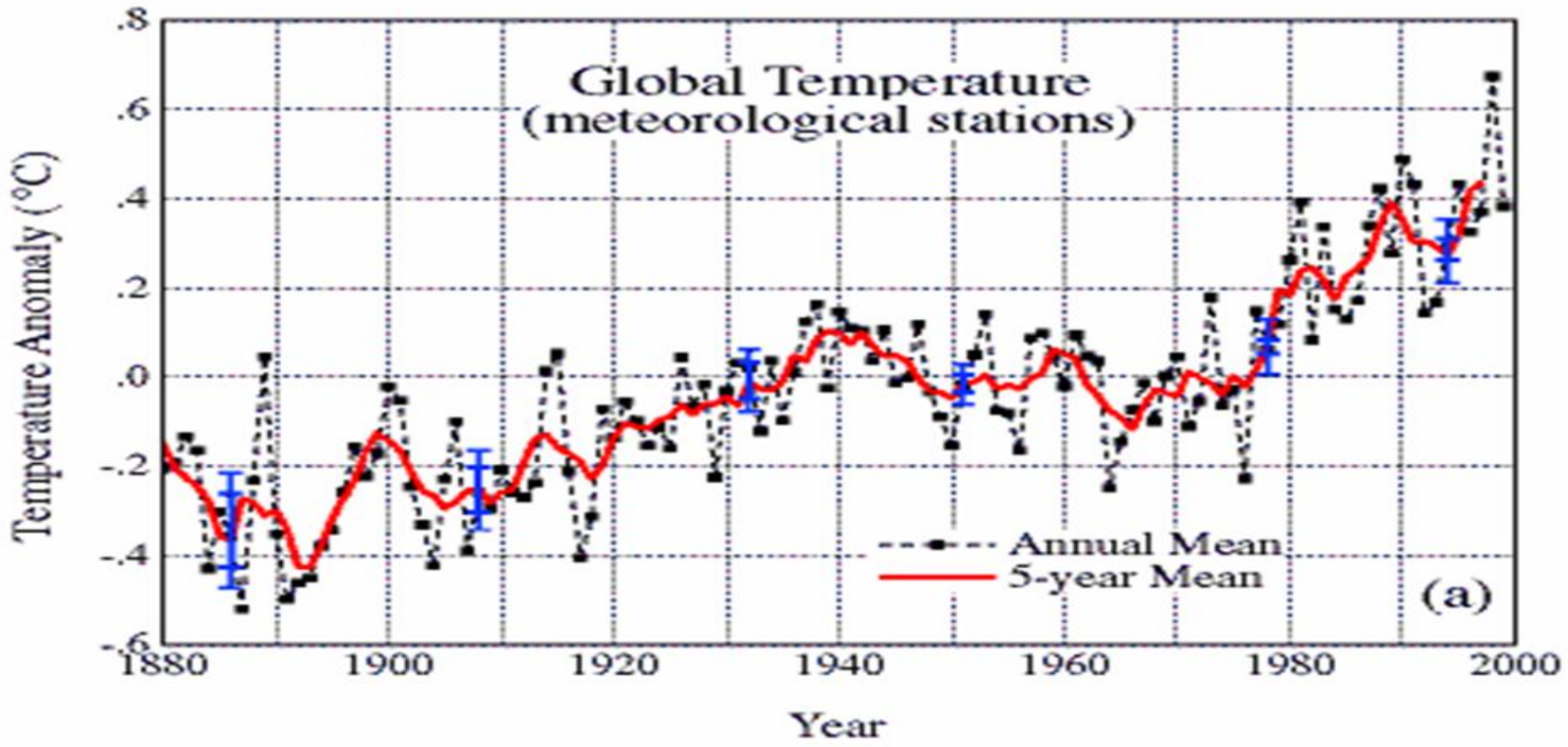
Global warming



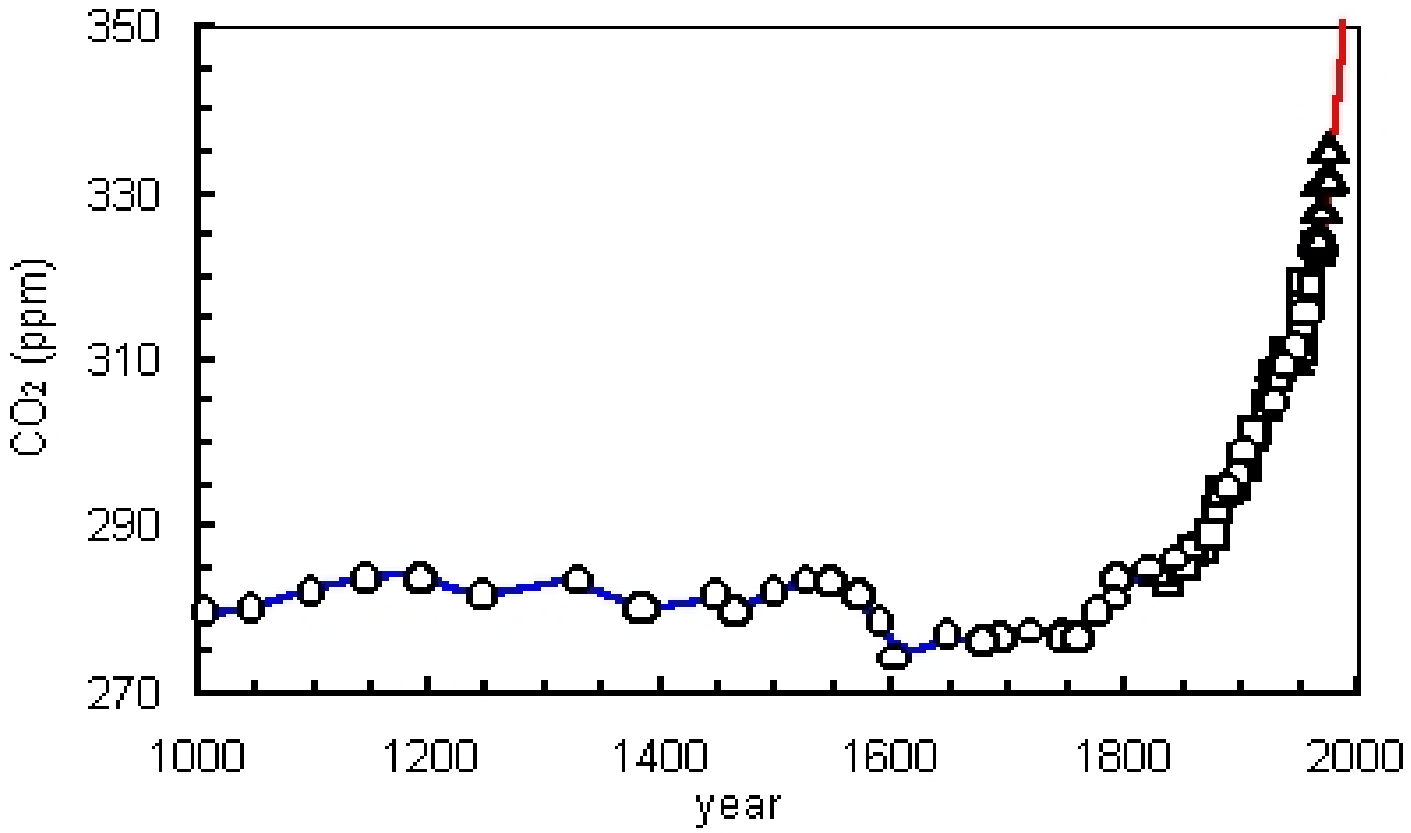
Source: NASA Goddard Institute for Space Studies

Global Warming Potential

Greenhouse Gases	Formula	100-yr Global Warming Potential (GWP) Carbon dioxide equivalent
Carbon dioxide	CO_2	GWP: 1
Methane	CH_4	GWP: 21
Nitrous oxide	N_2O	GWP: 310
Hydrofluorocarbons	HFCs	GWP: 140 – 11,700
Perfluorocarbons	PFCs	GWP: 6,500 – 9,200
Sulphur hexafluoride	SF_6	GWP: 23,900

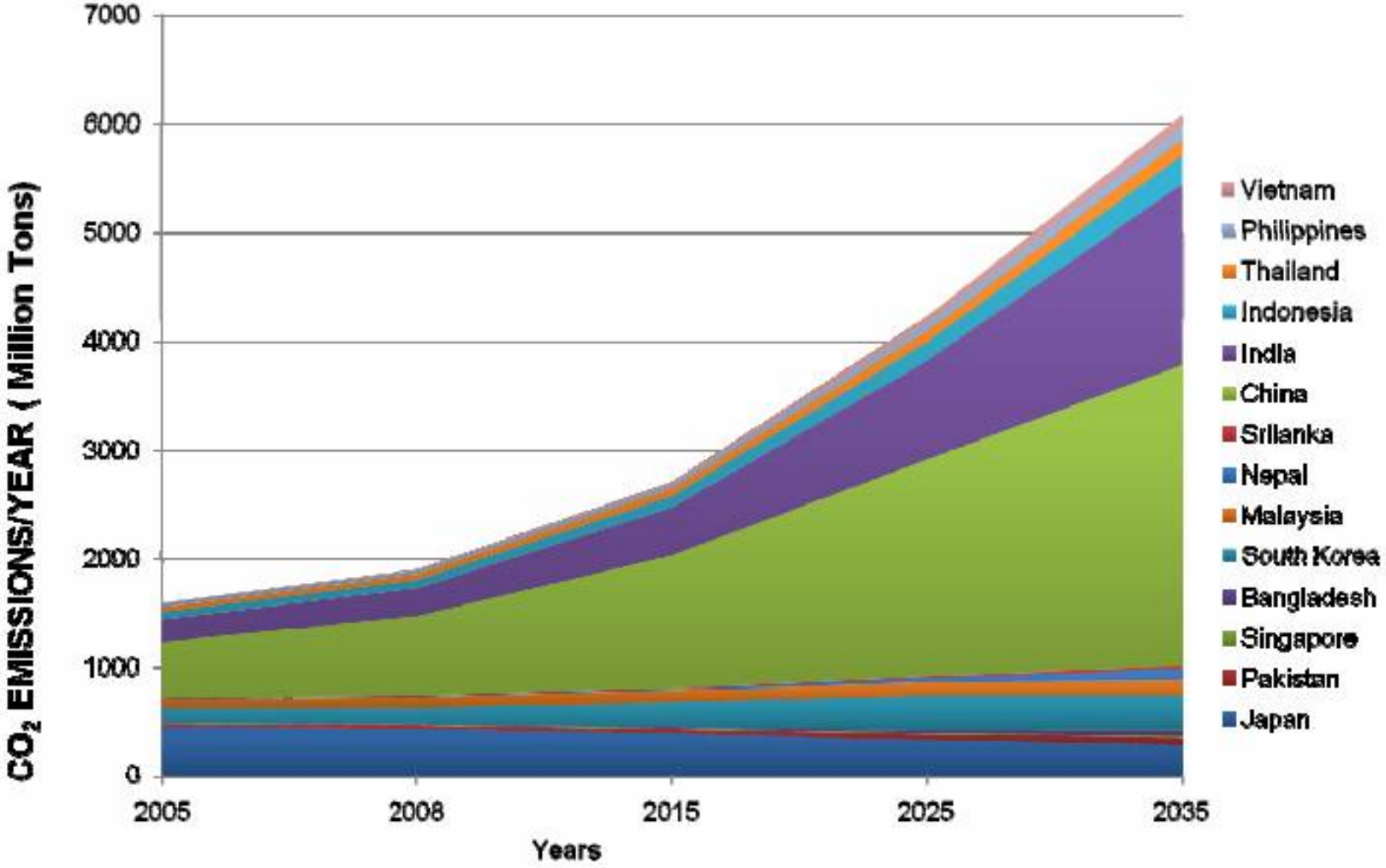
Source: IPCC, 2005

CO2 concentration in the atmosphere



Source:http://www.2think.org/keeling_curve.shtml

Transport CO2 Emissions in Asia



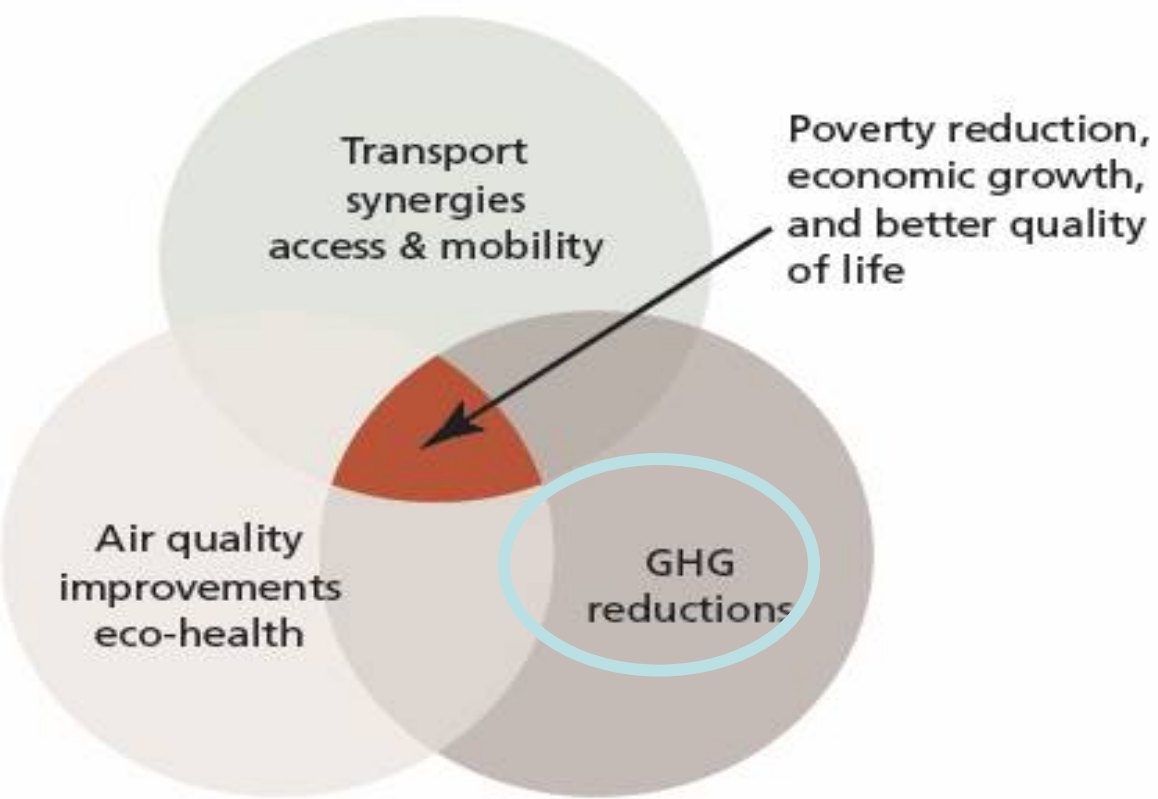
Source: 2008. Segment Y, ADB and CAI-Asia from various sources

Problems

- Transport consumes a quarter of the world's energy,
- accounts for some 25 percent of total CO2 emissions,
- 80 percent of which can be attributed to road transport.

Source: UNEP data, 2004

Poverty reduction, urban transport, improved air quality, and reductions in greenhouse gas (GHG) emissions



Source: World Bank (2006) “Promoting Global Environmental Priorities in the Urban Transport Sector”

Need of “Green logistics”

- The “typical” logistical: efficient, effective, and fast handling and movement of goods
- Logistical activities do not usually pay the full costs of using the infrastructures
- Logistical operators use the most polluting, least energy efficient and most infrastructure-intensive transportation modes to increase the speed of distribution.
- Environmental impacts of logistical activities are most severe where population densities are highest; i.e. in cities.

for people and goods

The principles for green city logistics

- Mobility
- Livability
- Sustainability

The harmonization of efficiency, environmental friendliness and energy conservation is vital for ensuring sustainable development of transport in urban areas.

Strategies to reduce GHGs in Transport sectors

- Avoid transport needs
- Shift to energy efficient and less polluting modes
- Increase energy efficiency

Infrastructure

Behaviour

Technology

Emissions	=	A. Activities (pkm = trips x distance) Determinants: · Population · Demographics · Income · Urban form ·	x	S. Mode Share (per cent pkm) Determinants: · Income · Motorization rate · Infrastructure Conditions · Service provision · Urban form ·	x	I. Fuel Intensity (liters per pkm) Determinants: · Fuel efficiency · Engine type · Vehicle load · Vehicle age · Congestion levels · Capacity mix · Urban form ·	x	F. Fuel Choice (emission per liter) Determinants: · Fuel type · Fuel quality · Engine type · Vehicle technology · Vehicle age · Temperature · Altitude · ....

Source: Lee Schipper *et al*., 2000

Speakers

- **Prof. Hisa Morisugi** - The efficient Highway Toll Level Taking Account of the Marginal Cost of Funding from Gasoline Taxes
- **Dr. Agachai Sumalee** - Road Pricing: Why, How, and When?
- **Prof. Atsushi Fukuda** - CO2 Reduction, JPN experience
- **Mr. Yasuki Shirakawa** - CDM in Transport Sector
- **Dr. Nuwong Chollacoop** - Sustainable Bio-Diesel Development in Thailand