

The Co-benefits of addressing Air Pollution and Climate Change

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COP 14
December 2008
Poznan, Poland



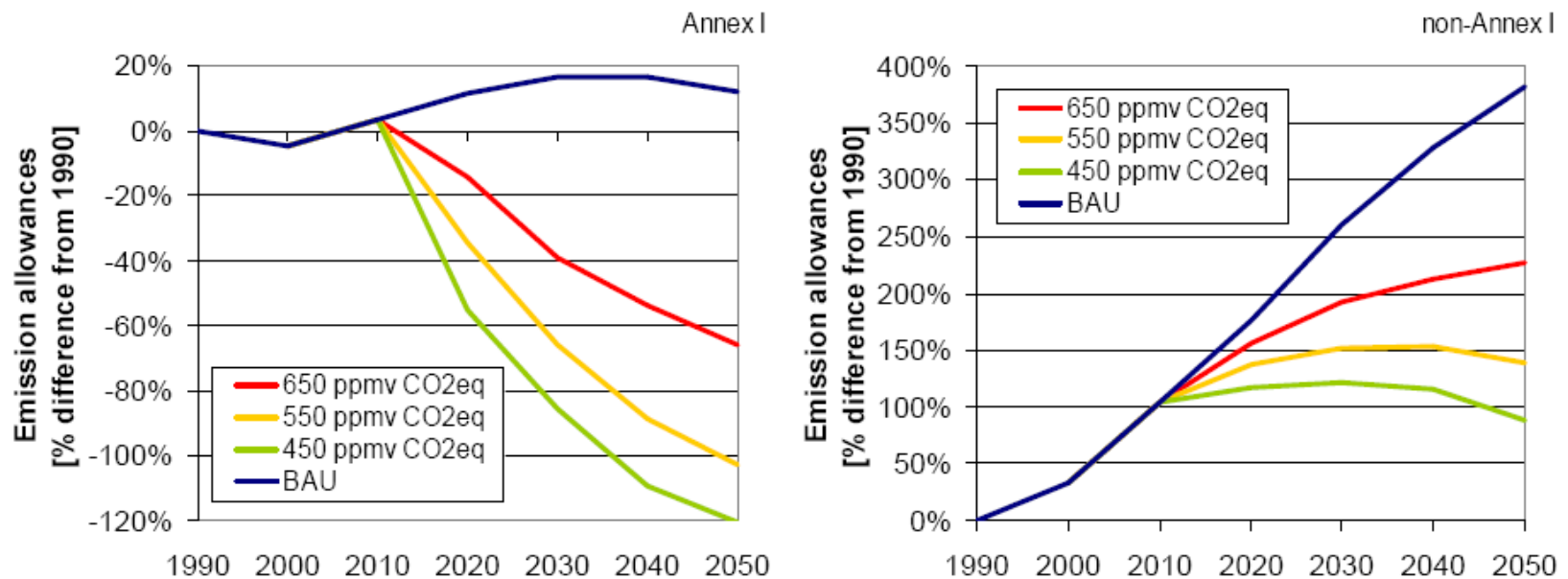



Figure 1. Reference emissions and emission allowances of Annex I and non-Annex I countries under the Greenhouse Development Rights approach between 1990 and 2050 for three stabilisation pathways (450, 550 and 650 ppmv CO₂eq)


Distribution of emission allowances under the Greenhouse Development Rights and other effort sharing approaches
 By Niklas Höhne, Sara Moltmann, Heinrich Boell Foundation, Ecofys, 2008


Urban Air Quality Levels in Asia


Aggregated Annual Ambient AQ Trends, $\mu\text{g}/\text{m}^3$ (1993 to 2007)

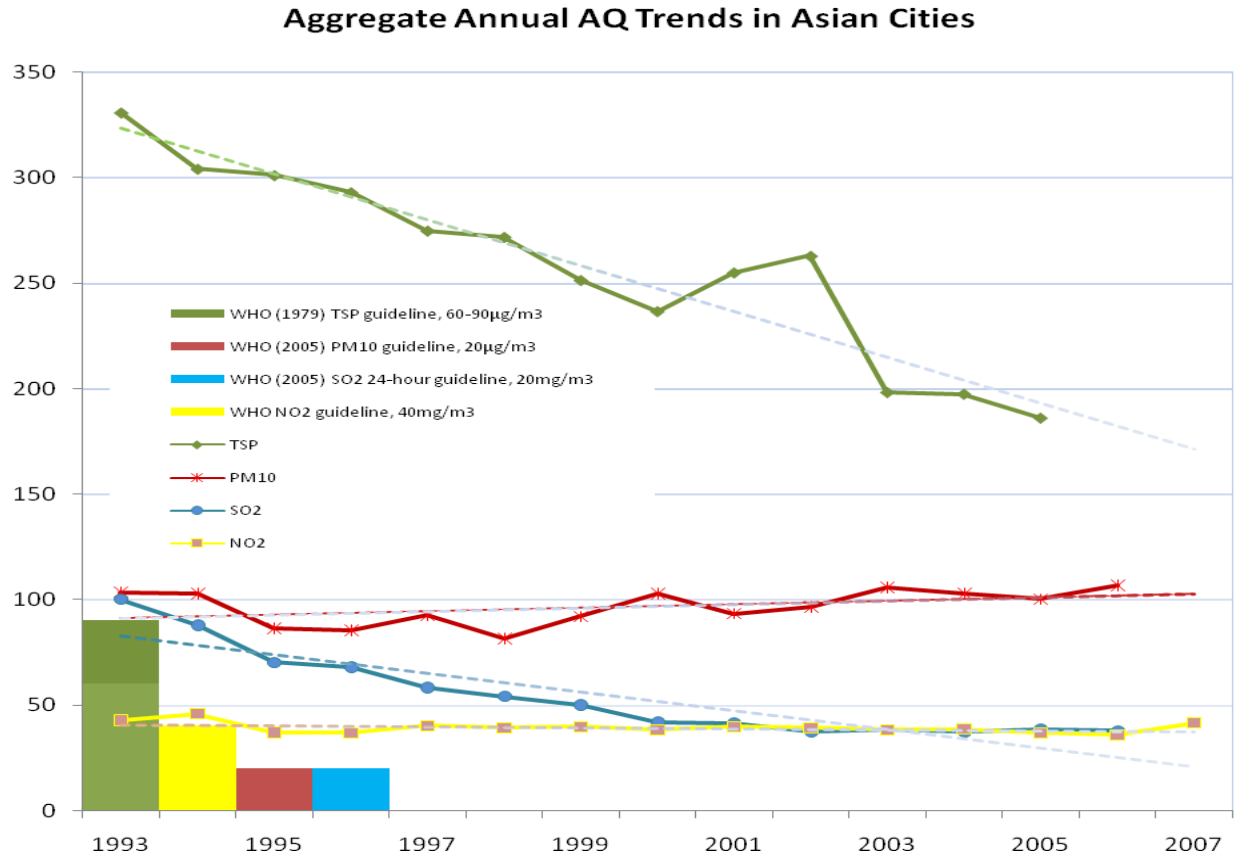
- Air quality in Asia is improving but still far above WHO limits
- PM is main pollutant of concern
- Ozone becoming a problem

 WHO (1979) TSP guideline, $60\text{--}90\mu\text{g}/\text{m}^3$

 WHO (2005) SO_2 24-hour guideline, $20\mu\text{g}/\text{m}^3$

 WHO NO_2 guideline, $40\mu\text{g}/\text{m}^3$

 WHO (2005) PM_{10} guideline, $20\mu\text{g}/\text{m}^3$

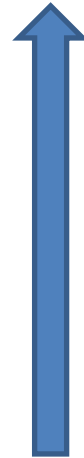
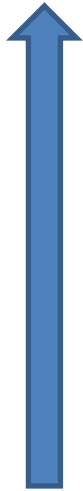


Source: CAI-Asia, 2008

Interacting effects

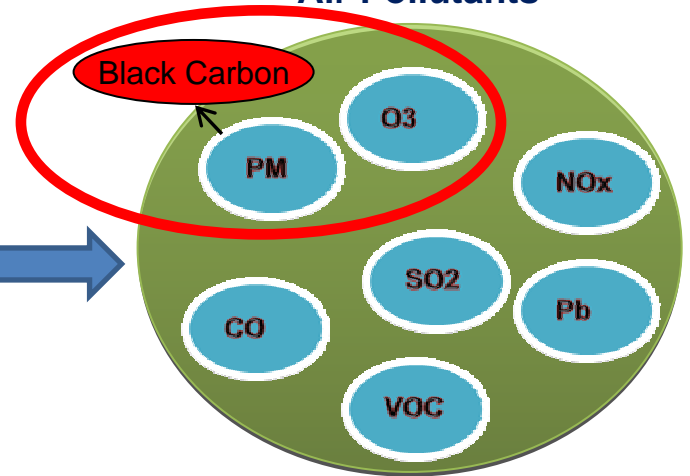
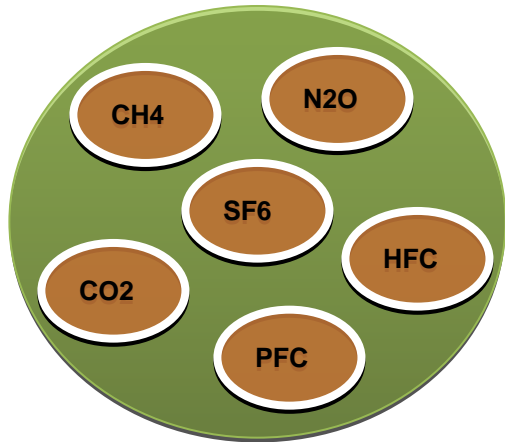
CLIMATE CHANGE

AIR POLLUTION
(Global, Regional, Urban)



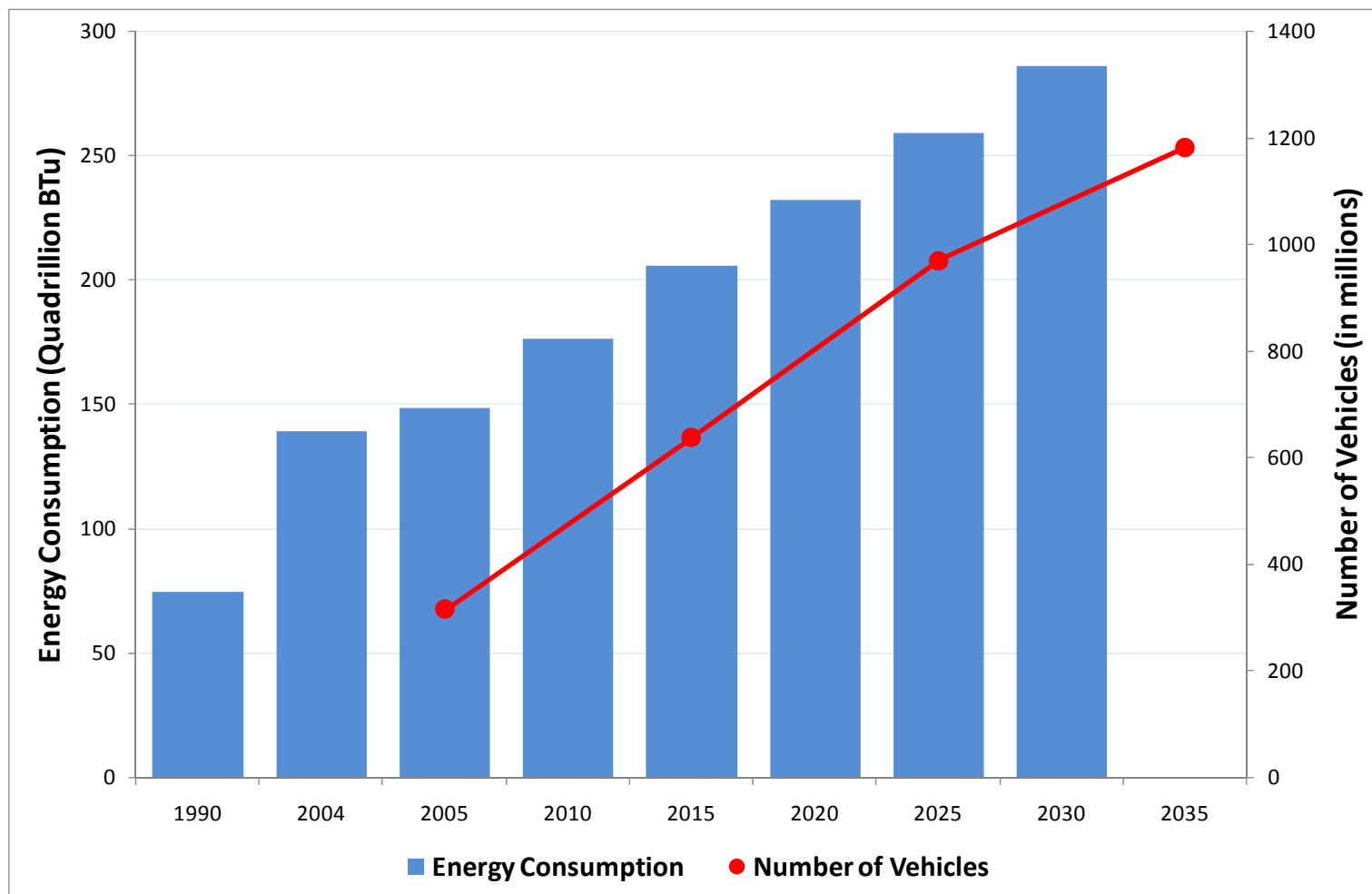
Greenhouse gases (Kyoto Protocol only)

Air Pollutants



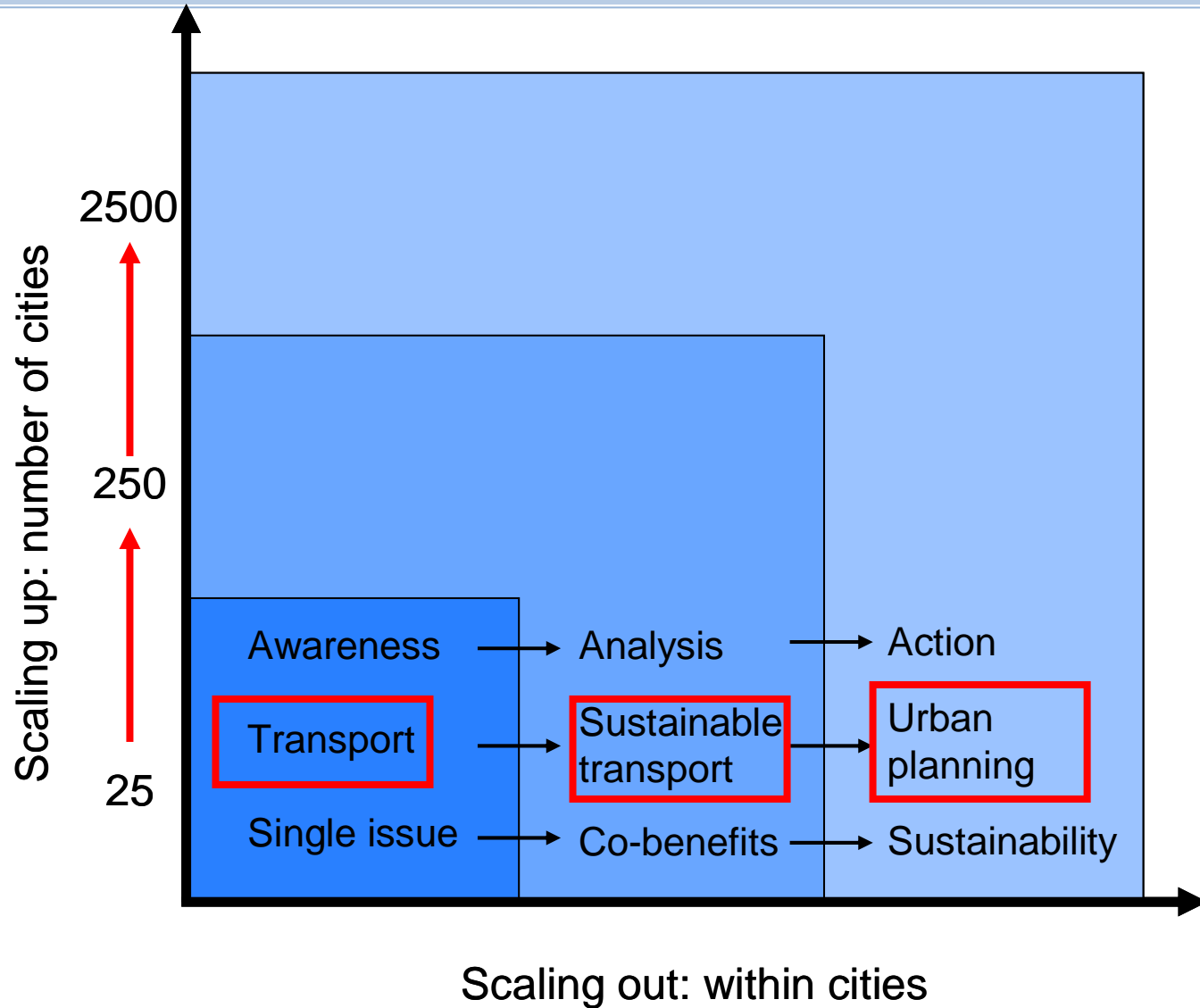


Energy Consumption and Vehicle Growth in Asian Countries



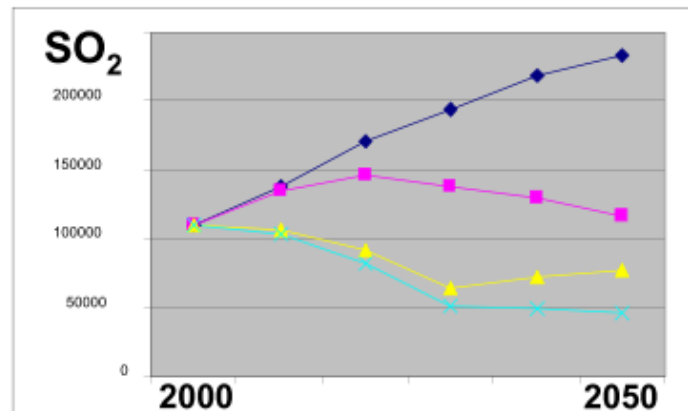
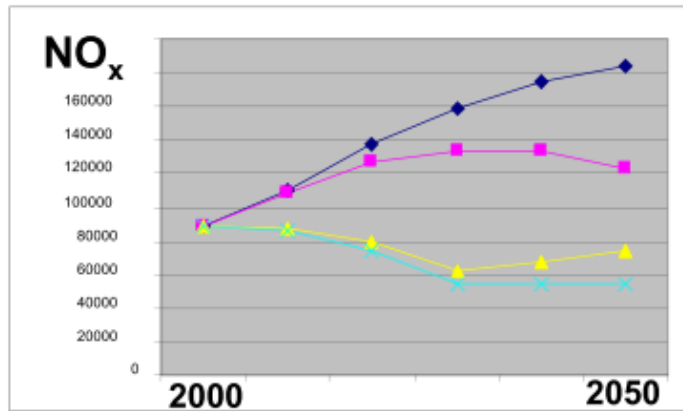
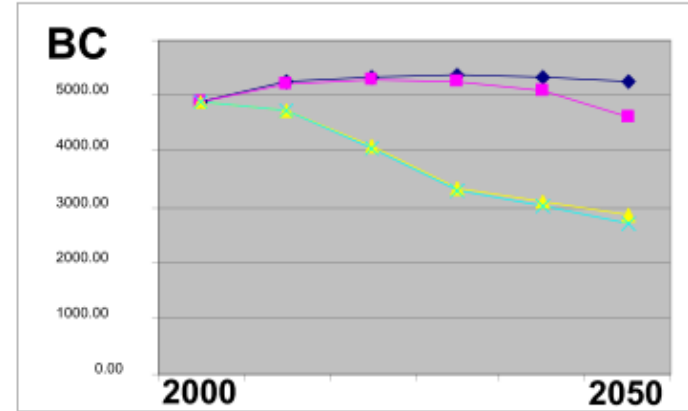
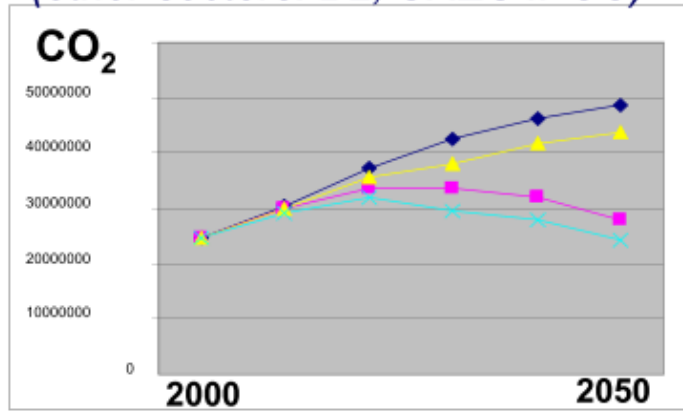
Notes:
The energy consumption figures reflect Non-OECD and OECD countries as stated in the EIA Annual Energy Outlook 2008. The vehicle projection figures include Japan, Pakistan, Singapore, Bangladesh, South Korea, Malaysia, Nepal, Sri Lanka, China, India, Indonesia, Thailand, Philippines, Viet Nam.
Sources: EIA (2008) and CAI-Asia calculations based on Segment Y Ltd

The importance of scale: think integrated and big



Combined AP and CC policies most effective

consistent global GHG and air pollutant emission scenarios
(energy production & use, industry: global 25% reduction by 2050, POLES)
(other sectors: B2, SRES IPCC)



■ 1:BAU
 ■ 2:CC-only
 ■ 3: AP-only
 ■ 4: CC + AP

Source: "Air Pollution and Climate Change – scientific understanding as a basis for integrated policy making."
 Frank Raes et al., Joint Research Center, European Commission



Transport options to reduce air pollution and CO₂

	AP ↓	CO ₂ ↓	\$ Costs
Reduce emissions per kilometer			
Technology/ vehicle change	+++	++	low
Behavioral change (e.g. Fleet mgm't, driver's training)	++	+	low
Fuel-switch (e.g. gas to CNG/LPG, to biofuels)	++	?	?
Reduce emissions per unit transported			
Passenger transport:			
Mode switch	+++	++	low-med
Usage of larger units	+	+	low
Improved occupation rates	++	++	low
Freight transport	++	++	low-med
Reduce number of trips			
Land-use – Behavioral change	+++	+++	? - high
TDM	++	+++	? - med

Source: Authors, adapted from GTZ, 2007

Policies on AP and CC relevant to Asia

Climate Change

- **Global/regional level**
 - UNFCCC / Kyoto protocol: No obligations developing countries, Clean Development Mechanism (CDM)
 - Bali Action Plan: nationally appropriate mitigation actions by developing country Parties
- **National level policies**
 - e.g. China, Korea, India
 - Limited target setting
- **Sectoral targets:**
 - Energy efficiency (e.g. China, Viet Nam)
- **Urban level**
 - Limited but growing level of activity



Air Quality

- **Global/Regional level**
 - No global agreement
 - CLRTAP in Europe a success
 - Regional agreements in Asia emerging: EANET, ASEAN Haze agreement, Male Declaration
- **National level**
 - Clean air legislation, AQ standards in place but not well enforced
 - No or limited targets
- **Sectoral policies and targets**
 - Power sector, industry, transport
- **Urban level**
 - Wide range of capacity



For more information



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