

Sustainable Urban Mobility in Asia (SUMA) Program and EST Linkages

Sophie Punte & Bert Fabian
CAI-Asia Center

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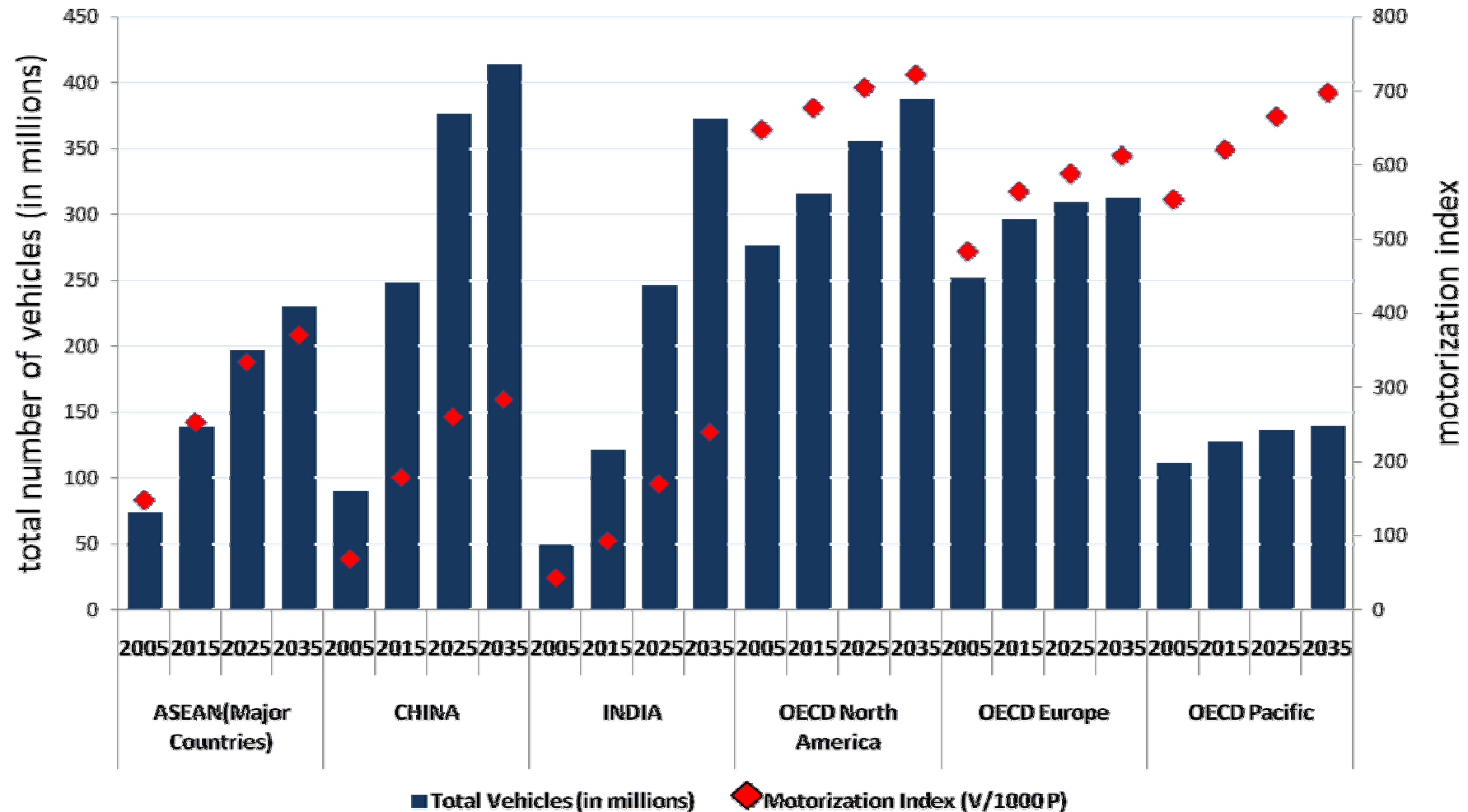


Part 1

Why Sustainable Transport in Asia?



Increasing Motorization and Vehicle Growth



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



Impact of Transport: CO2 and PM

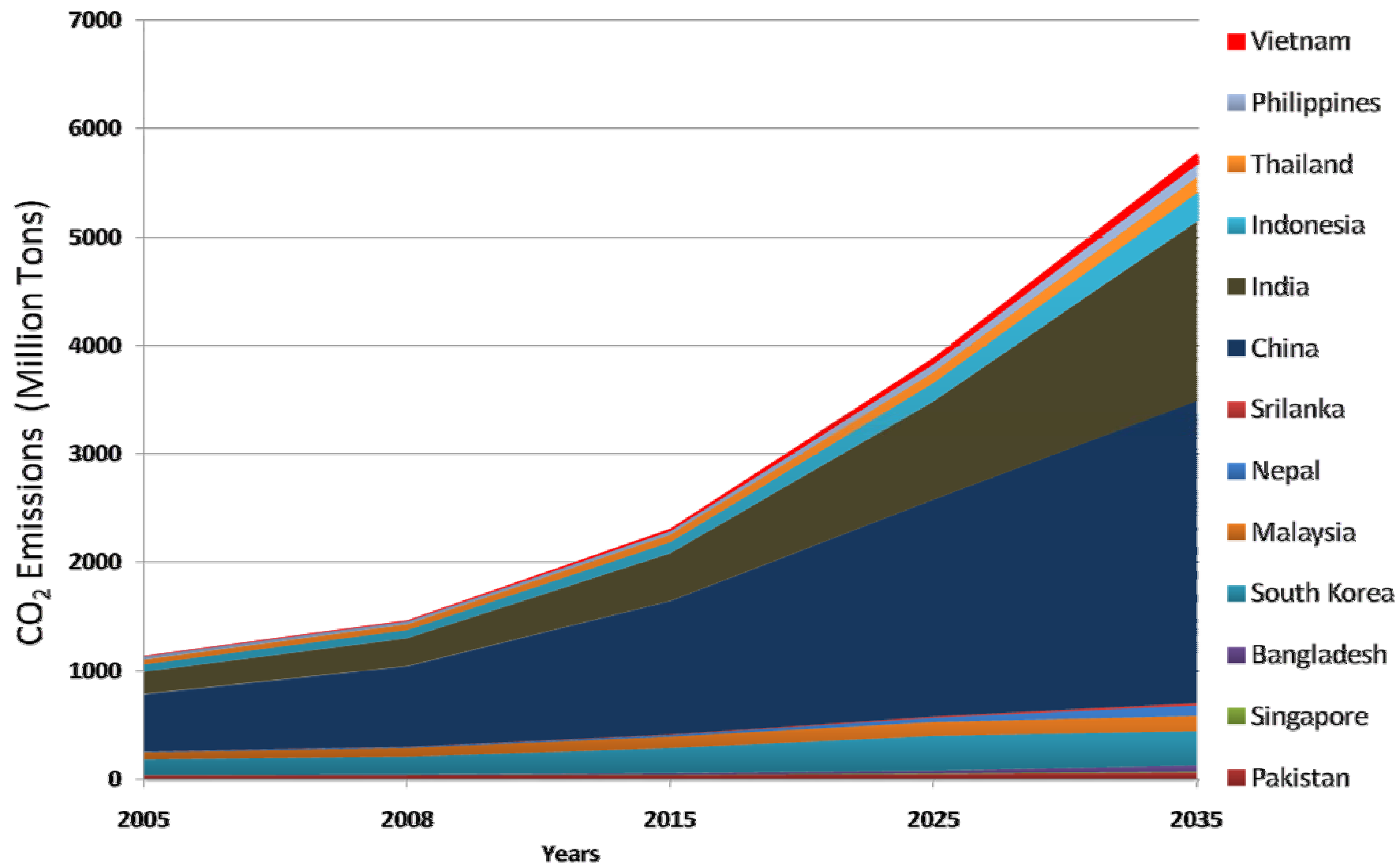
Per capita CO2 Emissions (Land Transport) Tons					Country	Per capita PM Emissions (Land Transport) Kg				
1-2	0.5-1	0.2-0.5	0-0.2				0-0.1	0.1-0.2	0.2-0.4	0.4-1
				2005	Vietnam	2005				
				2015		2015				
				2025		2025				
				2005	India	2005				
				2015		2015				
				2025		2025				
				2005	Indonesia	2005				
				2015		2015				
				2025		2025				
				2005	China	2005				
				2015		2015				
				2025		2025				
				2005	Philippines	2005				
				2015		2015				
				2025		2025				
				2005	Thailand	2005				
				2015		2015				
				2025		2025				

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

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CO₂ Emissions in Asia - Road Transport



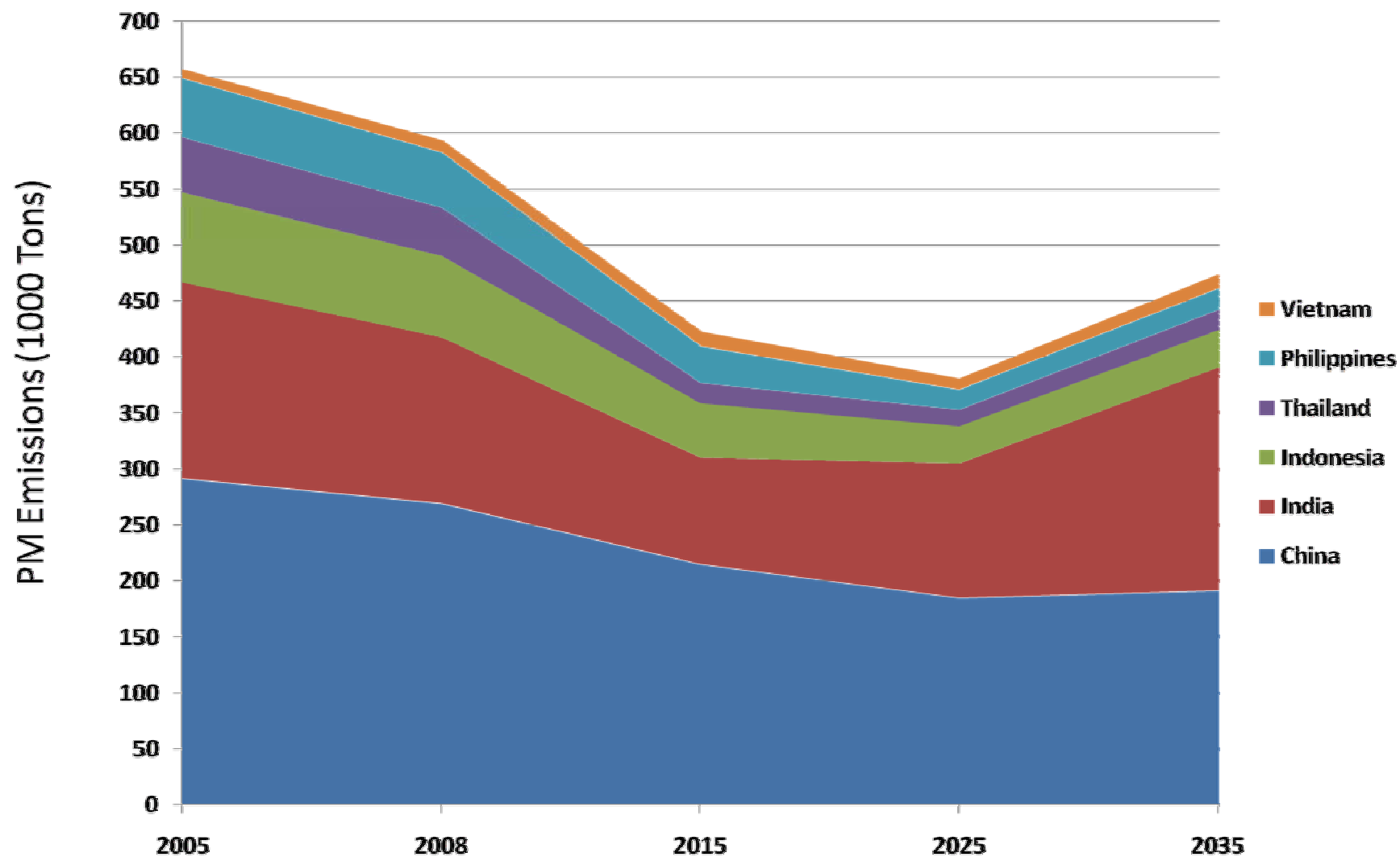
Source: 2008. ADB, CAI-Asia, and Segment Y Ltd

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PM Emissions in Asia - Road Transport



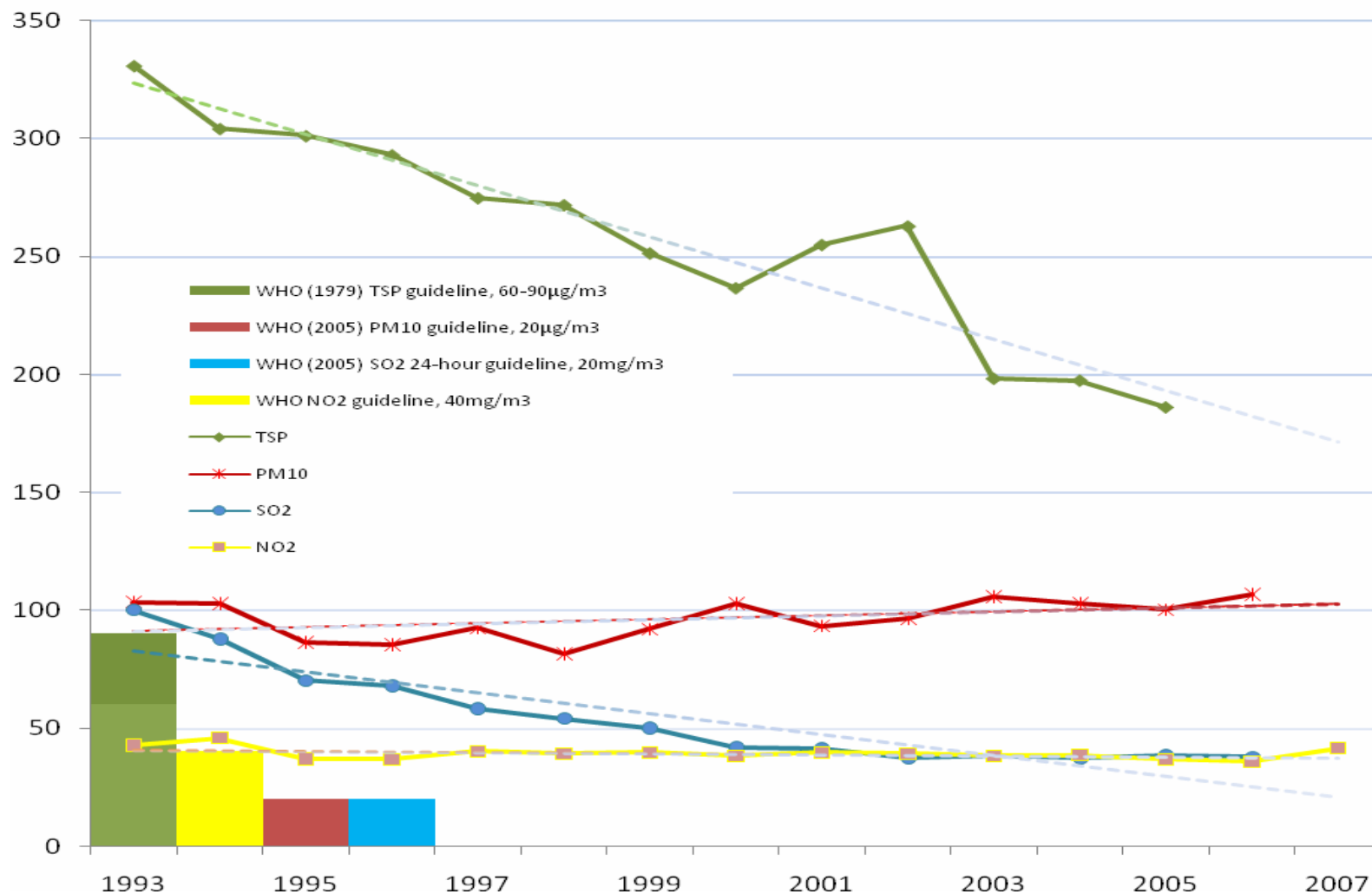
Source: 2008. ADB, CAI-Asia, and Segment Y Ltd.

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Urban Air Pollution Trends in Asia 1993-2007



Source: CAI-Asia, 2008

Aggregated Annual Ambient AQ Trends, µg/m³ (1993 to 2007)

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Issues: Safety, Social Equity, Noise, Congestion



Source: CAI-Asia

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Part 2

What is SUMA Program and how it is linked to EST?



Environmentally Sustainable Transport (EST)

Includes all the key facets of transport

- Vehicle emission control, standards and I/M
- Cleaner fuels
- Strengthening road side monitoring and assessment
- Land-use planning
- Public transport planning and travel demand management
- Environment and People Friendly Infrastructure Development
- Road safety and maintenance
- Traffic noise management
- Public health
- Social equity and gender perspectives
- Strengthening roadside air quality monitoring and assessment
- Strengthening knowledge base, awareness, and public participation

Concept of EST is centered on the transportation system and activity that meets social, economic and environmental objectives

– People and not vehicles are the objective

Source: UNCRD

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SUMA Program: objective and partners

Objective

To accelerate the development of capacity for urban AQM and SUT in Asia through better integration of AQM and SUT in the strategies, policies, programs and projects of developing Asian countries and development agencies

The SUMA program is supported by ADB through a grant from Sida
<http://www.cleanairnet.org/suma>

ADB Sida CLEAN AIR INITIATIVE for Asian Cities EMBARQ The World Bank Centre for Sustainable Transport UNITED NATIONS CENTRE FOR REGIONAL DEVELOPMENT gtz Marie Thynell ITDP Institute for Transportation & Development Policy Christopher Cherry


SUT Partnership for Asia

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SUMA Program and EST


IMPROVING PUBLIC TRANSPORT

- Providing technical assistance to Ahmedabad, Indore and Pune to develop Bus Rapid Transit Systems in India (Institute for Transportation and Development Policy (ITDP) and World Resources Institute Center for Sustainable Transportation (EMBARQ))
- Developing guidelines for integrating motorized two-wheelers and three-wheelers in urban traffic (ITDP) with urban traffic and public transport




DEVELOP CYCLE INCLUSIVE GUIDELINES FOR ASIAN CITIES

- Guiding Pune and Nanded in India in implementing bikeways and developing studies to better understand and promote cycling in Asia (Interface for Cycling Expertise (I-CE))




TRAINING URBAN TRANSPORT PROFESSIONALS


- Training Future Trainers on Mass Rapid Transit, Transportation Demand Management and Cycle Inclusive Planning (led by German Technical Cooperation Agency-Sustainable Urban Transportation Program in cooperation (GTZ-SUTP) with SUMA partners)



SUSTAINABLE URBAN MOBILITY IN ASIA




CHANGING MINDS. CHANGING CITIES.




INSTITUTIONALIZING POLICIES

- Strengthening and developing policies at the regional and city levels to promote socially inclusive and environmentally sustainable transportation policies (United Nations Centre for Regional Development (UNCRD) with SUMA partners)




PARTNERING WITH CITIES AND CIVIL SOCIETY

- Reaching out and bringing together stakeholders from various sectors to promote and implement sustainable urban transport policies (CAI-Asia Center and SUMA partners)



REDUCING EMISSIONS

- Ensuring the reduction of air pollution and green house gas emissions from transport sector through "tailpipe" policies (SUMA partners)





Improving Public Transport

- Providing technical assistance to Ahmedabad, Indore and Pune to develop Bus Rapid Transit Systems
- Developing Social Impact Assessment guidelines for Urban Transport project with an emphasis on Public Transport
- Developing policy guidelines for Integrating motorized two and three wheelers in urban traffic and with public transport



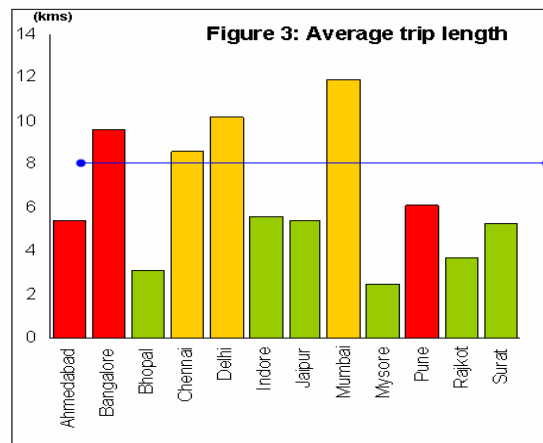
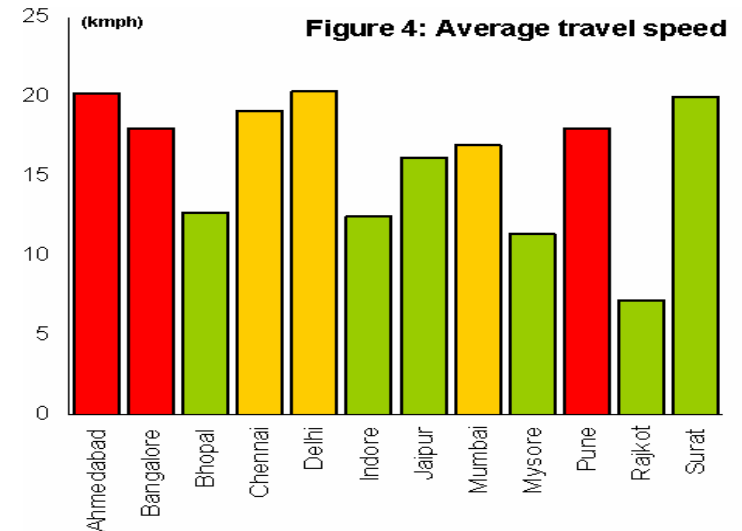
Source : ITDP, EMBARQ and <http://www.ahmedabadbrts.org/>



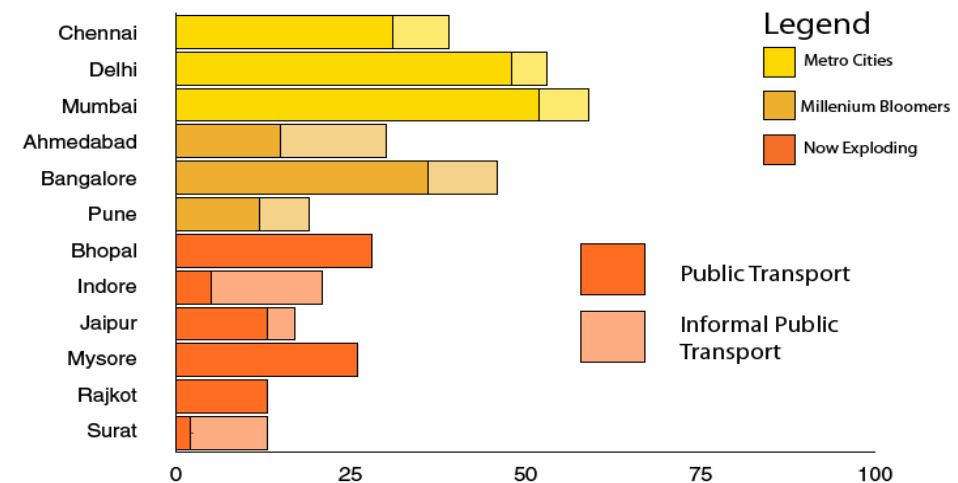
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Improving Public Transport: City Survey for India

- Developing City Transport Indicators for 12 Indian cities
- Developing comprehensive indicators for before and after evaluation of BRTS projects in two Cities



Public Transport & Intermediate Public Transport modal share



Source : ITDP, EMBARQ

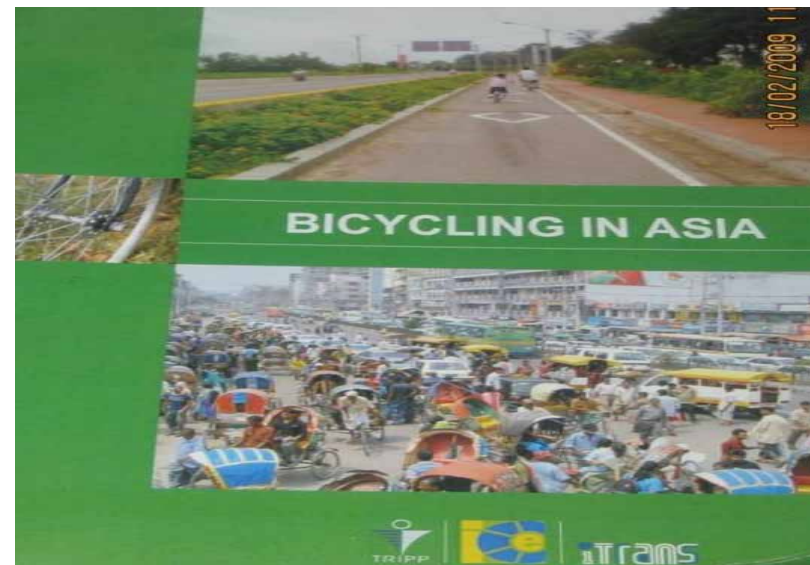


Developing Cycling Inclusive Guidelines

- Guiding Pune and Nanded in India in implementing bikeways
- Developing a Design Manual on integrating cycling in urban transport for India
- Develop Position paper on the relevance of Cycling in Asia



Source : I-CE



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Training Urban Transport Professionals

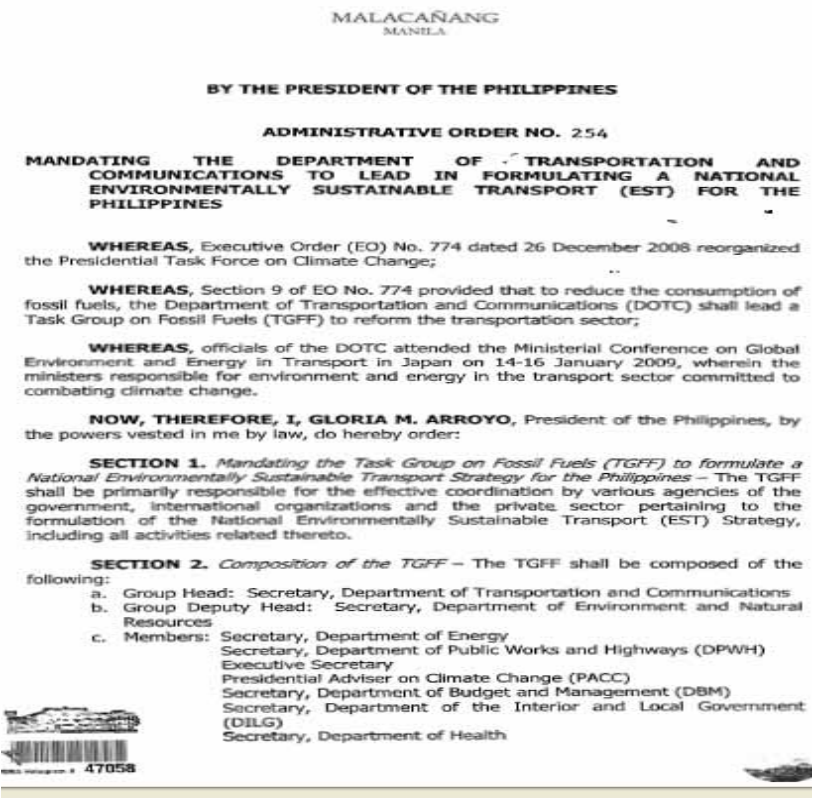
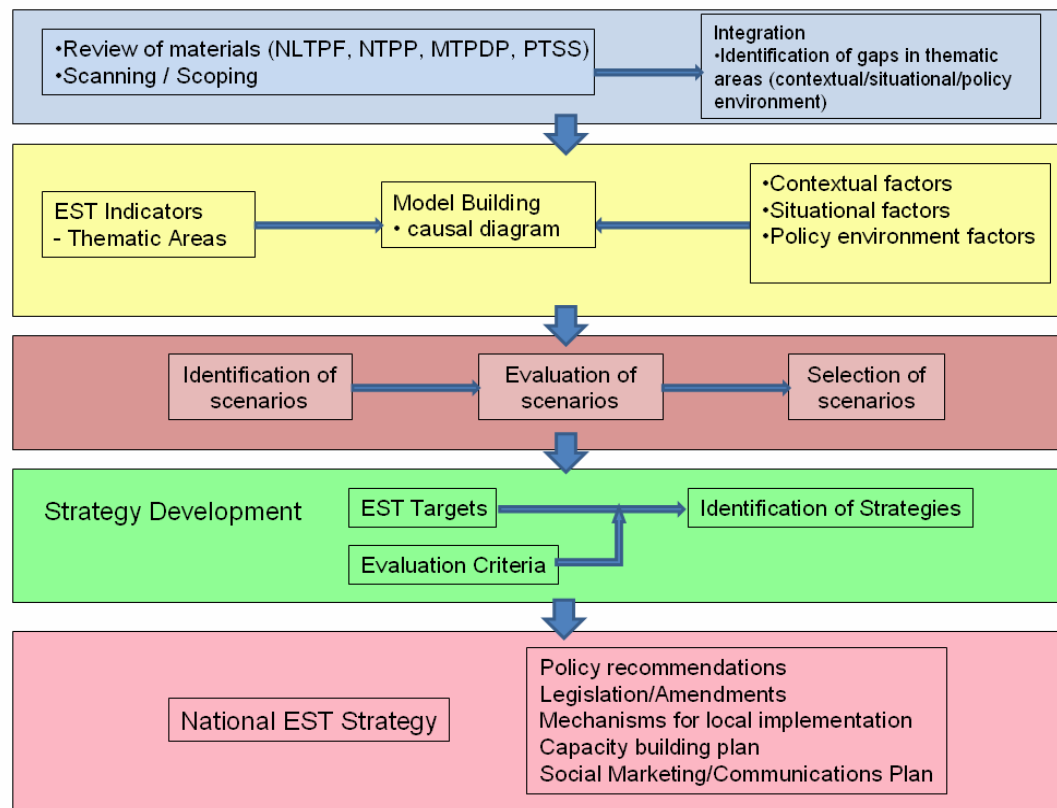
- Training of Master Trainers: 20 urban transport professionals from India & China
- Development and delivery of SUT training courses: TDM, MRT and NMT



Source : GTZ SUTP

Institutionalizing Policies: EST Framework

Formulating Environmentally Sustainable Transportation (EST) Strategies in Philippines and Indonesia



Source: DOTC and UP-NCTS



Partnering with Cities and Civil Society

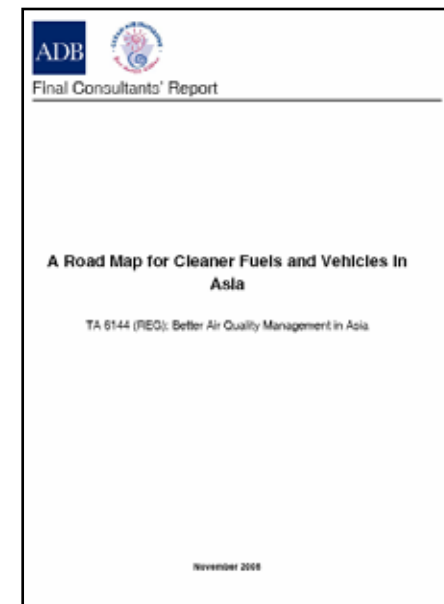
- Dialogues with development partners, cities and other stakeholders
- Road Show for Clean Fuels and Vehicles in Asia in Philippines, Viet Nam and Pakistan (with UNEP PCFV)
- Research, publications and projects on SUT and air quality in Asian cities and countries

Compendium of Air Quality Projects and Programs in Asia

4th edition 2007 ¹⁶



Compiled by the Clean Air Initiative for Asian Cities





Reducing Emissions: Study on E-Bikes in China

- E-bike emissions per passenger km compared with:
 - Bus with 50 passengers: 15% less CO₂, but more PM and SO₂
 - Motorcycles: less CO₂, but more SO₂
 - Cars: less CO₂ and less air pollutants (PM, SO₂, CO, HC, NO_x)
- Reasons for higher SO₂ emissions is coal-fired power plants
- E- bikes can result in increased lead emissions –lead acid batteries, however lithium ion battery technology can prevent this

Table 2.8: Lifecycle Environmental Impact Per Passenger Kilometer Traveled^{a,b}

	Energy Use (kWh/100 pax-km)	CO ₂ (g/pax-km)	SO ₂ (g/pax-km)	PM (g/pax-km)	CO (g/pax-km)	HC (g/pax-km)	NO _x (g/pax-km)	Pb ^c (mg/pax-km)
Car ^d	47-140	102-306	0.23-0.69	0.09-0.28	3.4-10.1	0.57-1.67	0.44-1.32	18-53
Bus	8.7-26.2	24.2-96.8	0.01-0.04	0.04-0.14	0.08-0.32 ^e	0.008-0.030 ^e	0.14-0.54 ^e	1-4
Motorcycle	21-42	64-128	0.04-0.08	0.20-0.40	6.3-12.5 ^e	1.13-2.25 ^e	0.08-0.15 ^e	16-32
Bicycle	4.88	4.70	0.01	0.06	Unkn	Unkn	Unkn	0
BSEB	3.8-7.6	15.6-31.2	0.07-0.14	0.07-0.14	0.007-0.014 ^e	0.027-0.053 ^e	0.010-0.020 ^e	145-290
SSEB	4.9-9.9	20.2-40.5	0.09-0.17	0.10-0.19	0.009-0.017 ^e	0.032-0.064 ^e	0.014-0.027 ^e	210-420



Reducing Emissions

- Retrofit Project: demonstrate the effectiveness of retro-fit direct injection technology to 240 in-use two-stroke tricycles in Manila with support from the Philippine Institute of Petroleum
- Projects in development together with CAI-Asia Country Networks
 - Nepal: Emissions from brick kilns
 - China: Pilot project for trucks fuel economy and emissions
 - Asia: Fuel economy research
 - Philippines: Fleet Management Toolkit with UNEP PCFV
 - ASEAN: Promoting SUT considering CIVITAS model of cities implementing SUT
 - Sri Lanka: Vehicle Emission Testing program
 - Viet Nam: State of the environment report with air quality theme



EST Elements and Future Priorities





CAI-Asia Center

www.cleanairnet.org/caiasia

Sophie Punte, Executive Director

sophie.punte@cai-asia.org

Bert Fabian, Transport Program Manager

bert.fabian@cai-asia.org

Sudhir Gota, Transport Specialist

sudhir@cai-asia.org

Unit 3510, 35th Floor, Robinsons-Equitable Tower, ADB Avenue, Pasig City, Metro Manila, 1605 Philippines

www.cleanairnet.org/caiasia