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ASIF: How Urban Regions Count Traffic, Transport Activity, Energy, and Emissions – Experiences From Surabaya / Indonesia

Manfred Breithaupt , GTZ

TRB 82nd Annual Meeting, Washington, 16 Jan. 2003

Sustainable Urban Transport Project in Surabaya, Indonesia

www.sutp.org

(1998 to Dec. 2001)

Project objective and approach

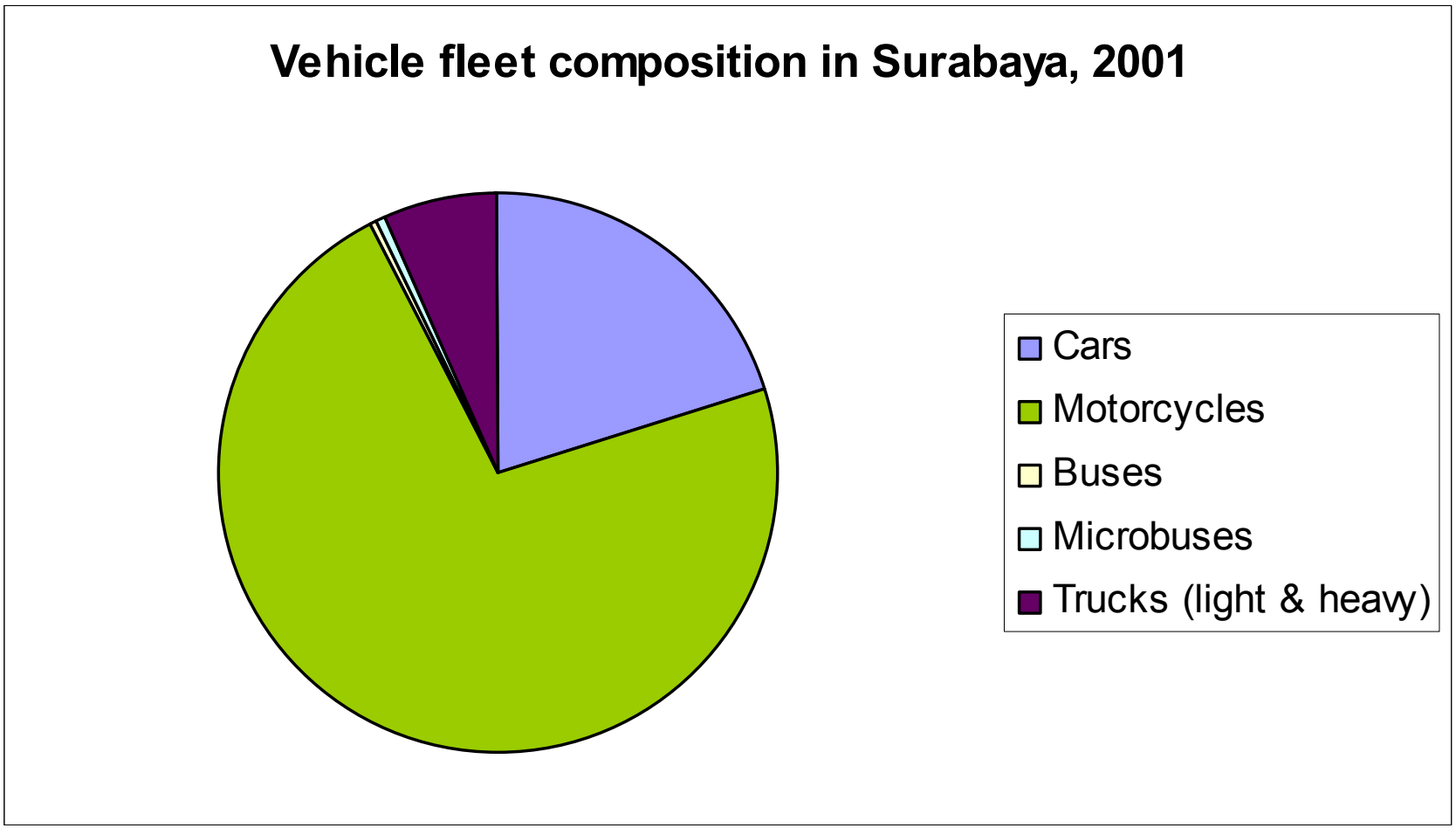
- The objective was to develop approaches for CO2 reductions from urban transport, which could be replicated in other developing cities. This objective would be approached through working with the City of Surabaya to move toward a sustainable urban transport system
- The approach is to link GHG mitigation to policy initiatives and goals – such as congestion and air pollution – which are perceived to be of immediate relevance to developing cities.

Background information: Surabaya

- Population 2.6 million (2000), 2nd largest city in Indonesia, pop. growth slowed to 0.52% p.a., 1990-2000. Wider metro. region population approx. 6 million.
- Area of 326 sq. km, with a north-south orientation and current suburban expansion to the east and west
- Cars 1995 crossing into central area (24hrs): 243,000
- Modal split (passngr. trips): 65% private, 35% public
- Motor vehicle fleet (2001; graph over): approximately 180,000 cars, 640,000 motorcycles, 300 large buses, 5,000 microbuses and 60,000 trucks (light and heavy).

Yangon
Vientiane
Đà Nẵng
Baguio
THAILAND
South China Sea
Philippine Sea
Bangkok
Qui Nhơn
Manila
CAMBODIA
Nha Trang
Naga
PACIFIC OCE
Port Blair
Ho Chi Minh City
Phnom Penh
Iloilo
MICRO
Andaman Sea
VIETNAM
Spratly Islands (disputed)
Cebu
PHILIPPINES
Nakhon Si Thammarat
Kota Kinabalu
George Town
Kota Baharu
Cotabato
Davao
nda Aceh
Bandar Seri Begawan
Kuala Lumpur
MALAYSIA
Celebes Sea
Medan
Singapore
Manado
Pekanbaru
Kuching
Equator
Padang
Pontianak
Samarinda
Jambi
Palembang
Fakfak
Bengkulu
INDONESIA
Kendari
Banjarmasin
Tanjungkarang-Telukbetung
Java Sea
Banda Sea
Ujungpandang
Cirebon
Jakarta
Surabaya
Yogyakarta
Raba
Denpasar
Kupang
INDIAN OCEAN
Darwin

Background information: Vehicle fleet composition



Source: Surabaya In Figures, 2001; Motor Vehicle Registration Office, 2002

Background information: Projections & trends

- Based on a World Bank-funded project executed by Dorsch Consult, 1993–1998 (SITNP) forecasts (Report B3, 1998):
  - Change in mode split for motorised trips from 65% private and 35% public in 1995 to 77% private and only 23% public by 2010
  - With unconstrained development, by year 2010 more than 50% of the major road network would be operating with traffic volumes at or above the practical capacity of the road links, with speeds generally below 10 km per hour
  - A substantial level of private car restraint will be necessary by the year 2010, in order to avoid intolerable congestion. Some 54% of private car trips will need to be restrained

Main features of the approach adopted

- Focus on measures open to rapid implementation by the local govt., with limited reliance on foreign help.'Win-win'measures provide incentives for implementation
- 'Least cost principle'considering how to maximise mobility at the lowest cost, including demand management options
- Working with stakeholders and partners. This was a key part of trying to gain local acceptance of policy measures, involving:
  - Numerous consultative workshops & seminars
  - Identifying the key local stakeholders, who are interested and motivated (primarily at the **city** rather than **provincial** level)
  - Implementing a public awareness campaign
  - Cooperating with national and international organisations
  - Forming Working Groups in key policy areas (public transport; non-motorised transport; CNG; TDM; Public awareness)

Policy areas (1): Public transport

- Introduction
  - Existing PT services
- What is wrong with public transport in Surabaya?
  - For passengers
  - For owners
  - For drivers and crews
  - For the general public
  - For the regulators
- Reform through a demonstration route
  - Political support/policy basis
  - Industry consolidation
  - Planning, regulation, incentives
  - Physical improvements
  - Bus priority measures
  - Institutional reform
  - Tender program and further development
- Demonstration route details
- Implementation
  - Progress already made
  - Implementation schedule

Overview presentation of demonstration route project, 40 slides: www.sutp.org
Detailed project reports on public transport reforms in Surabaya: www.sutp.org

SuraMetro

Public transport: Results and lessons learned

Results

- As with similar recent demonstration routes in Denpasar, Bandung, Jakarta, Malang: still not implemented
- High level of media support and interest
- Major public debate initiated
- The proposals are still being developed
- Ongoing GEF, ITDP support

Lessons learned

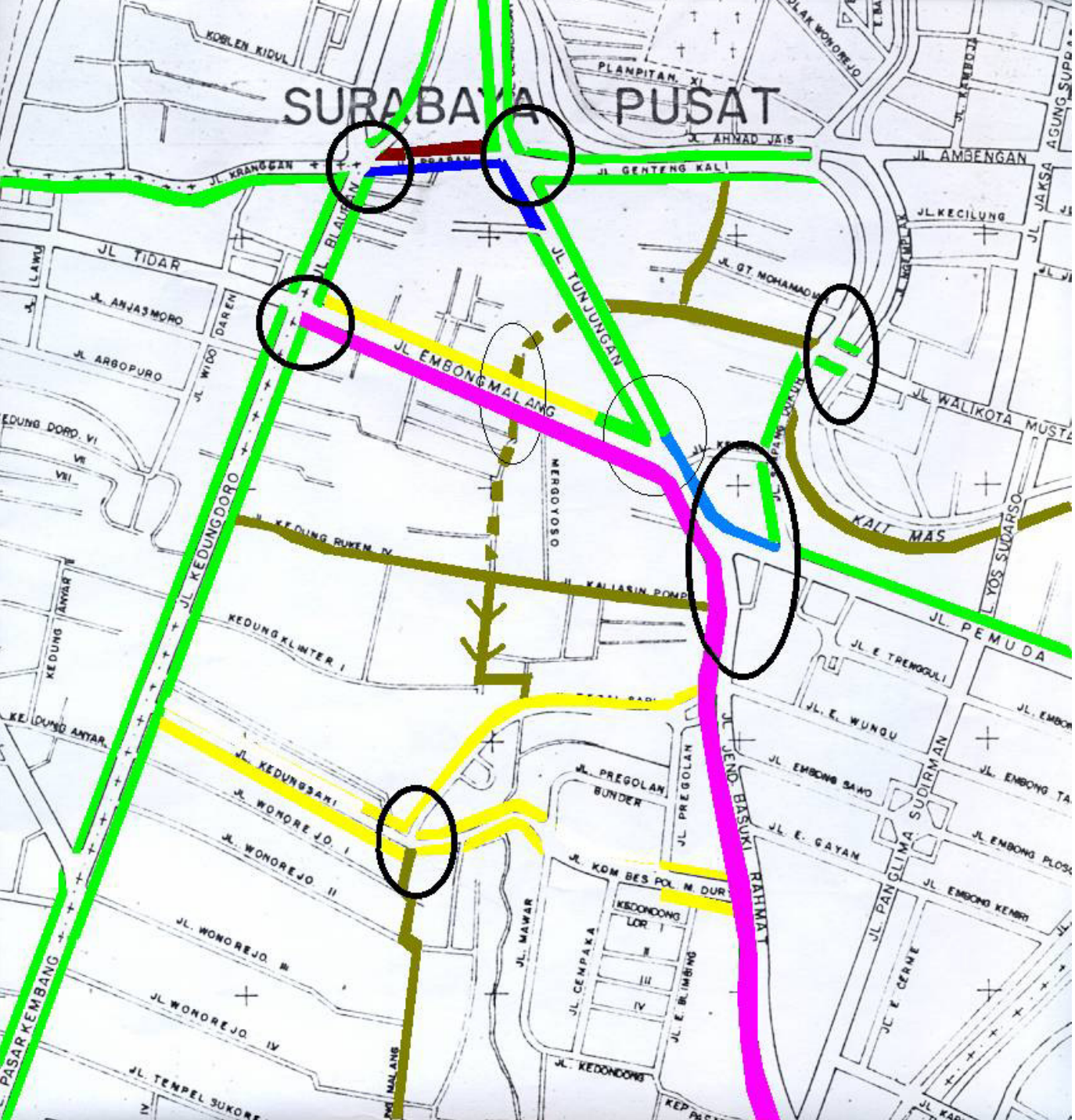
- Institutional capacity a major obstacle
- Need for ongoing involvement and outreach (media, city council, officials, operators, etc). Not enough simply to complete a study
- ‘Clean break’needed from existing system (e.g. Bogota)?
- Slow city budgetary process (potential outside catalysts)

Policy measures (2): Non-motorised transport

- Why improve NMT conditions?
- Background: NMT in Surabaya
- Improving efficiency of the transport system
- Pilot project
  - Two neighbourhoods
  - Household interviews
  - Surveys / counts
  - Proposed improvements
  - Consultation/workshops
  - Further refinements
- Detailed engineering diagrams

- Data collected included:
  - Trip distances
  - Modal splits by distance
  - Origins & destinations
  - Average bike trip lengths
  - Traffic flows (motorised and non-motorised)
  - Gender/age/occupation breakdown
  - Detour factors
  - Accident blackspots
  - Existing facilities (inventory)
  - (see report for full details)

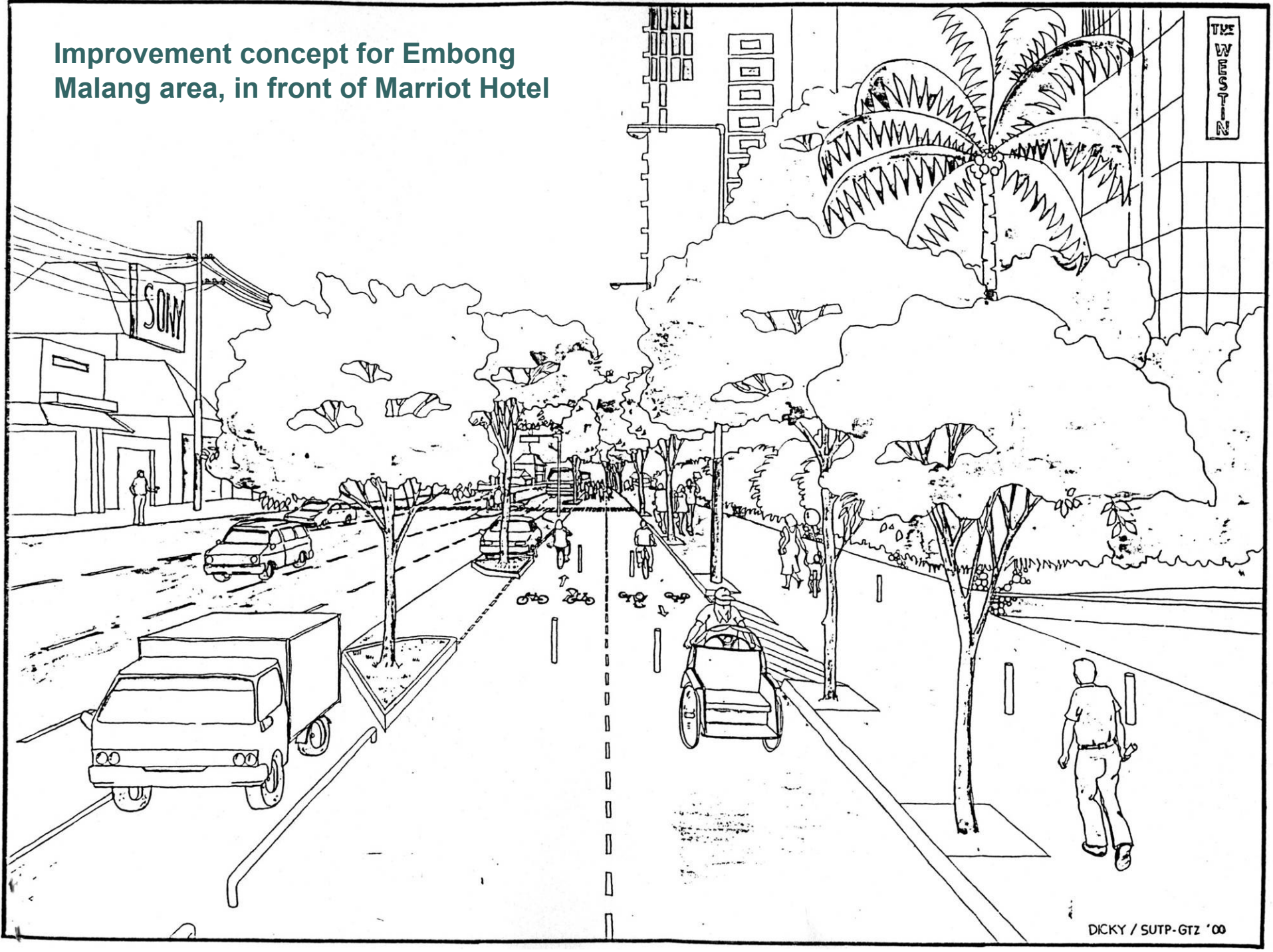
Overview presentation on NMT in Surabaya: www.sutp.org
Detailed project reports on NMT improvement project in Surabaya: www.sutp.org



NEW NMT ROUTES KEDUNG-DORO

- SEE DETAIL
- 2.4M 2 WAY NMT LANE & SIDEWALK
- 4 M 2-WAY NMT LANE & SIDEWALK
- NEW SIDEWALK
- SERVICE ROAD
- SHARED NMV & PEDESTRIAN
- EXISTING NMV ROUTE
- ONE-WAY NMV

Improvement concept for Embong Malang area, in front of Marriot Hotel



Non-motorised transport: Results and lessons learned

Results

- Excellent study & proposals, and consultative process, detailed diags. & costings
- Budget submission for 2003: At least one key component now likely to be included for implementation 2003
- Slow progress to date
- Component of GEF project (2003); ongoing support

Lessons learned

- Slow process, despite support of City Council, Mayor. Need NMT Regulation
- Opposition from some 'traditional' transport planning officials, who focus on motorised traffic
- Modest outside funding can provide required catalyst
- 'Low status' of NMT needs to be addressed in information, awareness campaigns

Policy areas (3): Compressed natural gas

Activities

- Feasibility study with trial of 3 microbuses showed economic feasibility
- Extensive promotion, information dissemination activities
- Involvement of leading stakeholders (microbus suppliers, CNG suppliers, financiers, officials, owners/drivers assocations)

Results & lessons learned

- No widespread expansion so far, beyond existing 800 taxis, some microbuses
- The primary obstacle to investment (conversion kits; infrastructure) is the lack of a central govt. pricing policy on CNG
- City Govt. will lead in 2003 with retrofits of City vehicles

Policy areas (4): Driver training

Activities

- Driver training events for bus operators, with support of Mercedes, Swisscontact
- Drivers of the main operator (Damri) trained & certified as trainers
- Support equipment purchased
- Support for training manual
- Trained drivers lead a training program in Surabaya

Results & lessons learned

- Substantial savings in fuel (and emissions) is possible; around 7 – 14% reductions in fuel consumption; larger reductions in emissions
- Better to work with the large bus operators (generally better management)
- Progress achieved toward 'institutionalising' driver training

Policy areas (5): Inspection & maintenance

Activities

- Strong study was conducted (Kolke, UBA) and a detailed, viable reform program and implementation schedule presented
- Workshops/meetings held to disseminate results and findings, stressing 'win-win' nature of reforms

Results & lessons learned

- No progress made toward implementation
- Lack of institutional capacity (personnel) and strong vested interest in current (non-functioning) system
- City of Surabaya unable/unwilling to pioneer a new approach

Overview presentation on I/M in Surabaya: www.sutp.org
Detailed project reports on I/M reforms in Surabaya: www.sutp.org

Policy areas (6): Economic instruments & TDM

Activities

- Working Group formed; many related government agencies at city & provincial level
- Regular, two-weekly meetings over 6 months
- Proposals developed and refined by Working Group
- Proposals presented by WG members at a major seminar in Dec. 2000

Results & lessons learned

- Policy proposals not implemented, though retain support with govt. and still being developed, for application with pilot bus route & NMT facilities
- Working Group successful
- Develop TDM measures as a package of measures
- Public awareness important to overcome resistance to car restrictions; pricing

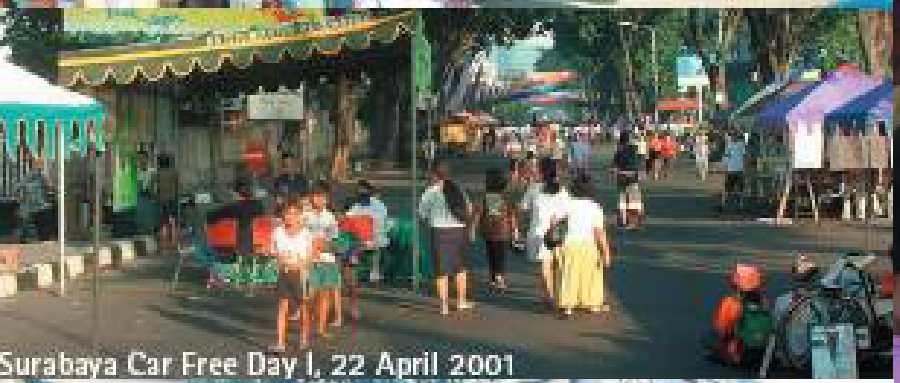
Policy areas (7): Public awareness

The need for an awareness campaign

- Measures cannot be implemented without the support of the citizens
- Need pressure for action!
- Low level of awareness & debate on worsening congestion, air pollution
- Lack of awareness of available options; lack of a vision about possible futures
- Lack of information about international successes and modern approaches
- Need for support of key decision-makers and officials
- A precondition for sucessful implementation

Aspects of the approach

- Key role of the **City Press Office**: "Core Group" (Working Group) and larger group. Regular meetings
- **Government agencies**: Transport Office should be involved; also Environment Office, Planning, other
- **NGOs, community organisations** – key sources of personnel & ideas. They can help idenfity the local priorities for action
- Strategic approach (forming strategies; involving group members; establishing goals; setting priorities and deadlines; being realistic; getting early success; sharing the work)



Surabaya Car Free Day I, 22 April 2001

Surabaya Car Free Day II,
18 August 2001

Surabaya Car Free III,
9-10 November 2001

Public awareness
Results & lessons learned

Results

- Major impact on the public agenda & debate
- More than 100 articles in major newspapers, in 18 months
- Three Car Free Days, many radio talk shows, information displays, print materials, special events, etc. An ongoing campaign
- Total cost to GTZ: approx. $5,000

Lessons learned

- Strategic approach is required (see earlier slide)
- Large budget useful, but not essential. 'Fancy'public relations firm is not essential
- Traditional media (newspapers, TV, radio) are excellent, cheap ways of reaching a wide audience and key policy-makers
- Seek partners for every campaign activity
- Assess cost-effectiveness of each activity

Car Free Day reports: www.sutp.org
Campaign Implementation Report: www.sutp.org

Reducing transport sector CO2 emissions: Potential impact on travelled kilometres

Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH

Scenarios / Vehicle Type	Travelled kilometres		
	2000 Status quo (BAU) estimates	2010 Status quo projection	2010 Improvement of public transport
Private cars (gasoline)	1,420,402,680	2,491,416,899	1,837,755,725
Private cars (diesel)	28,987,810	46,924,017	37,505,219
Motorcycles (gasoline)	2,347,046,485	3,172,716,826	2,572,075,009
Public transport: Angkots gsln	460,800,000	497,571,840	563,541,602
Public transport: Angkots CNG	n.a.	n.a.	n.a.
Public transport: Taxis gsln	218,400,000	276,494,400	276,494,400
Public transport: Taxis CNG	69,600,000	88,113,600	88,113,600
Public transport: Buses (Diesel)	16,250,000	19,275,750	22,750,000
Other Diesel Vehicles	n.c.	n.c.	n.c.
Other CNG Vehicles	n.c.	n.c.	n.c.
Total	**4,561,486,975**	**6,592,513,332**	**5,398,235,555**

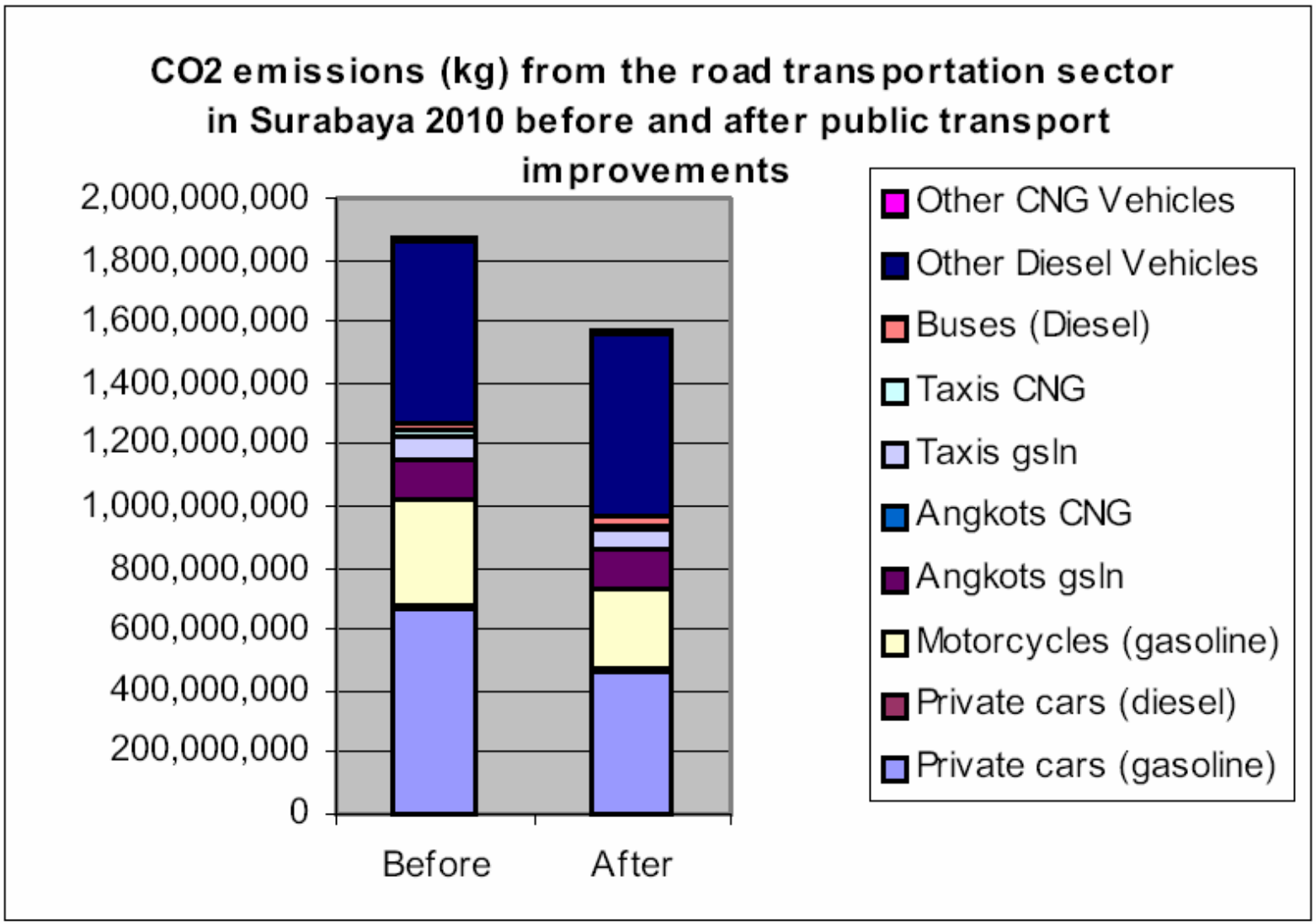
n.c. = not calculated

n.a. = not applicable

Source: GTZ SUTP, *CO2 Emission Reductions from Sustainable Transport Policy Measures*, Draft Final Report, July 2001

Similar substantial CO2 reduction potential is possible with traffic restraint and other measures promoting modal shifts.

Reducing transport sector CO2 emissions: Public transport improvements



Reducing transport sector CO2 emissions: Transport demand management

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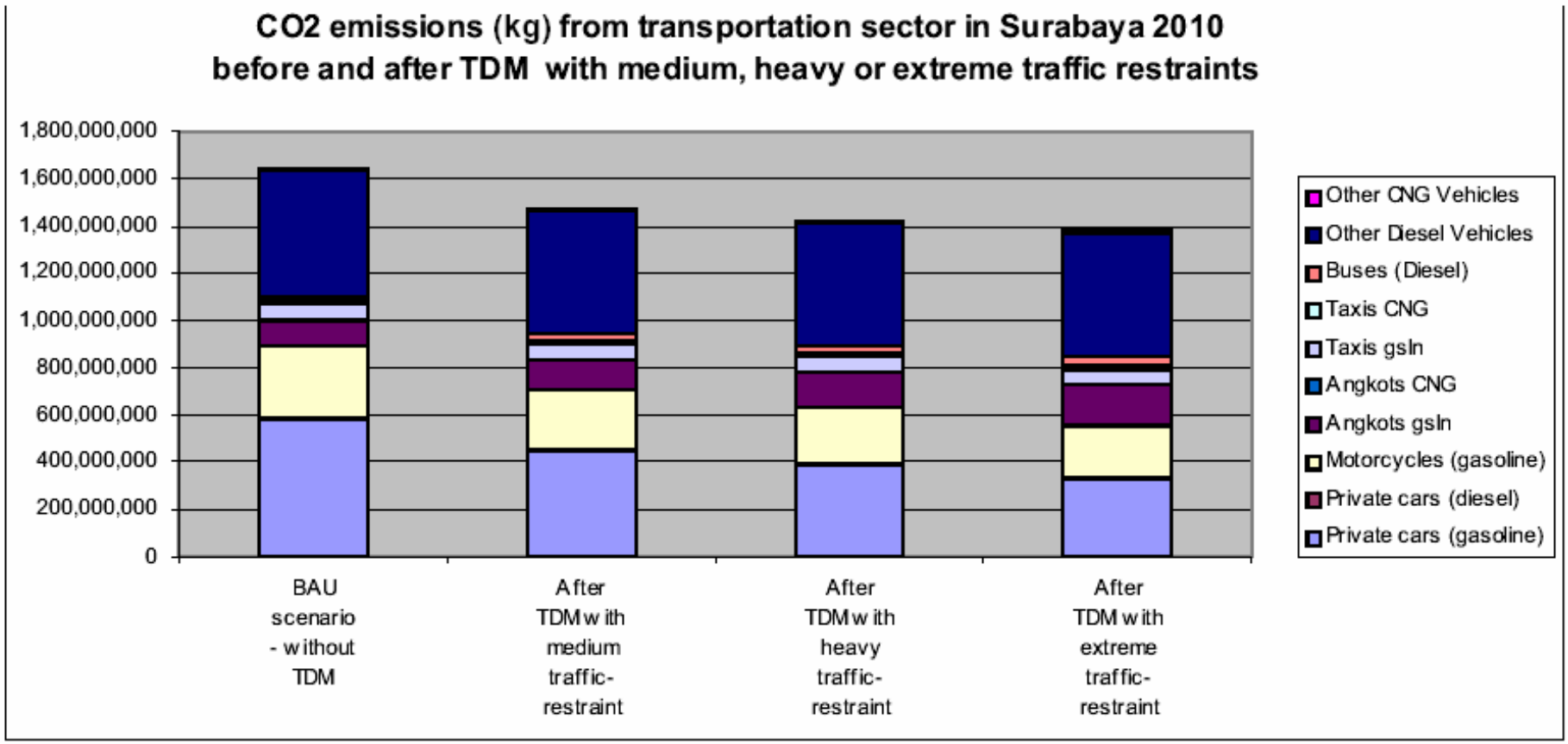

Source: GTZ SUTP, *CO2 Emission Reductions from Sustainable Transport Policy Measures*, Draft Final Report, July 2001

General observations

- What matters to people?
  - Issues of congestion, safety, public transport, non-motorised transport, parking, provision of public space, equity, are as important as “clean air”
- Work with the stakeholders who are interested and motivated. Primarily this is at the city rather than provincial level
- Political paralysis in a city can be a major obstacle. Development initiatives should ideally have capacity to ‘switch’ agencies and cities, and ‘play off’ one city against another
- Generate a public debate on issues and proposals
- Institutional weakness of government is a major constraint. Support and desire for implementation does not guarantee it will occur
- Working Groups should be formed in the key policy areas
- There should be a strong counterpart contribution to all activities. This ensures cost-effective approaches and demonstrates commitment
- Cooperation with other devt.-oriented organisations highly beneficial