Urbanisation and Transport Energy Use – A Global Overview

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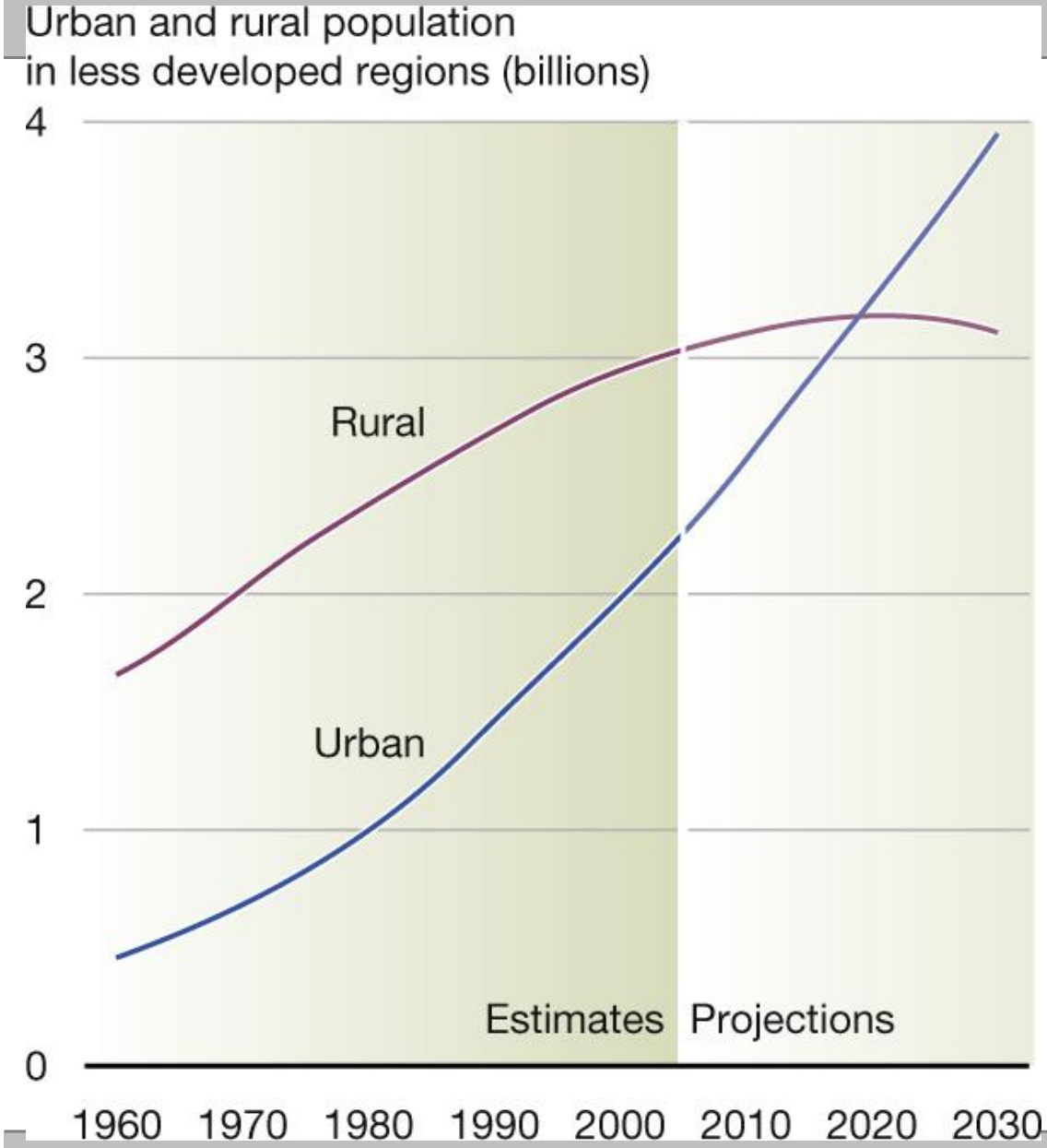
Urbanisation

The process of transition from a rural to a more urban society. Statistically, urbanization reflects an increasing proportion of the population living in settlements defined as urban, primarily through net rural to urban migration. The level of urbanization is the percentage of the total population living in towns and cities while the rate of urbanization is the rate at which it grows.

- UNFPA (http://www.unfpa.org/swp/2007/english/chapter_1/index.html)

Trends in Urbanisation



In 2008, for the first time, half the world's population is living in towns and cities. By 2030, the urban population will reach 5 billion — 60 per cent of the world's population

- http://www.peopleandplanet.net/doc.php?id=1489

Lifestyles are also changing in the cities

Source: UNEP/GRID-Arendal, 2009

What does development mean in some cities….

- Flyovers / expressways
- Foot over bridges
- Multistoried parking
- Increase in road space

Current way of addressing issues…

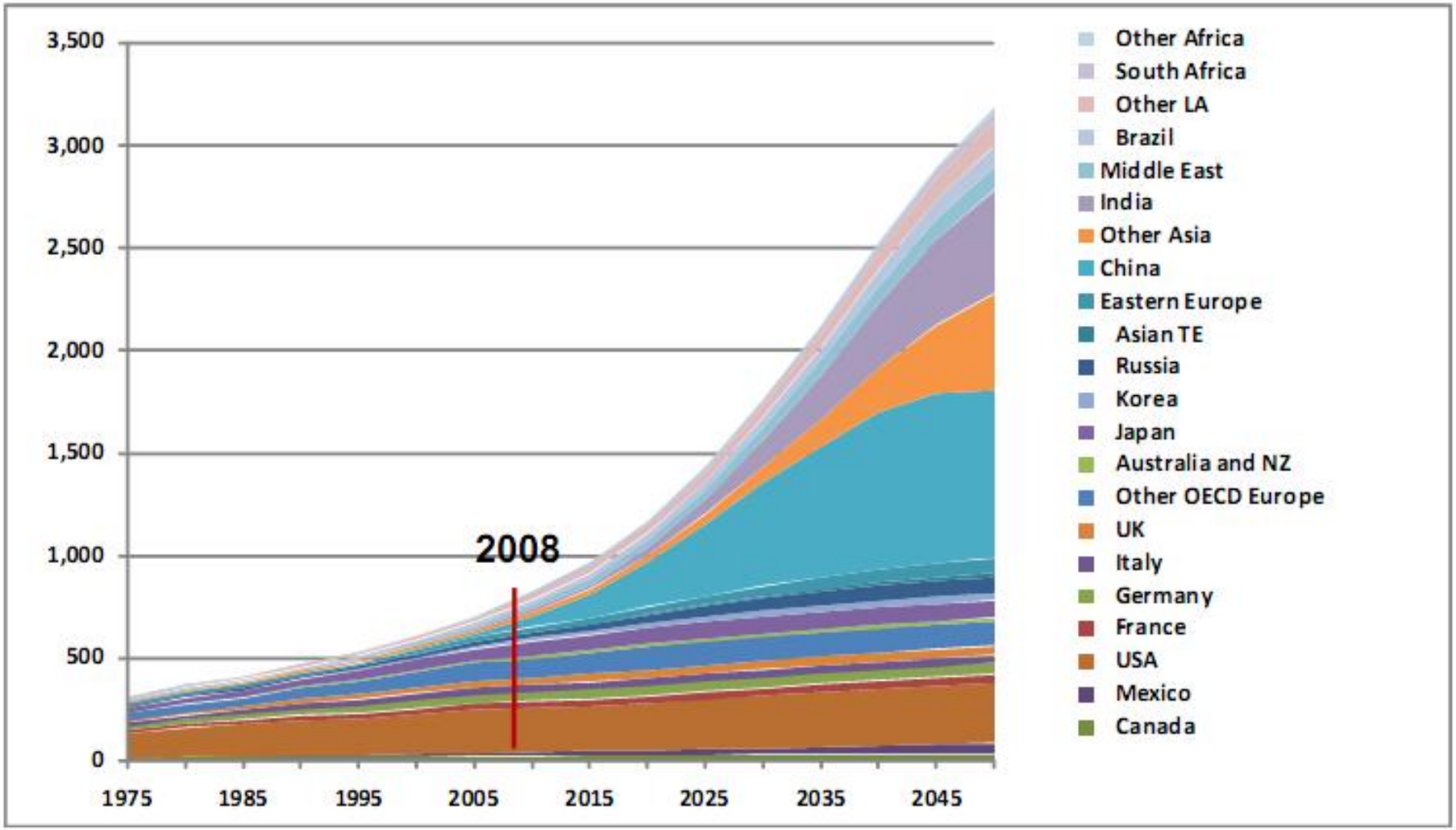
People seldom use under/over passes

4 Building subways or pedestrian overpasses

Footpaths that serve a few or none

4 Whom does this footpath serve?

Vehicle Ownership Projections

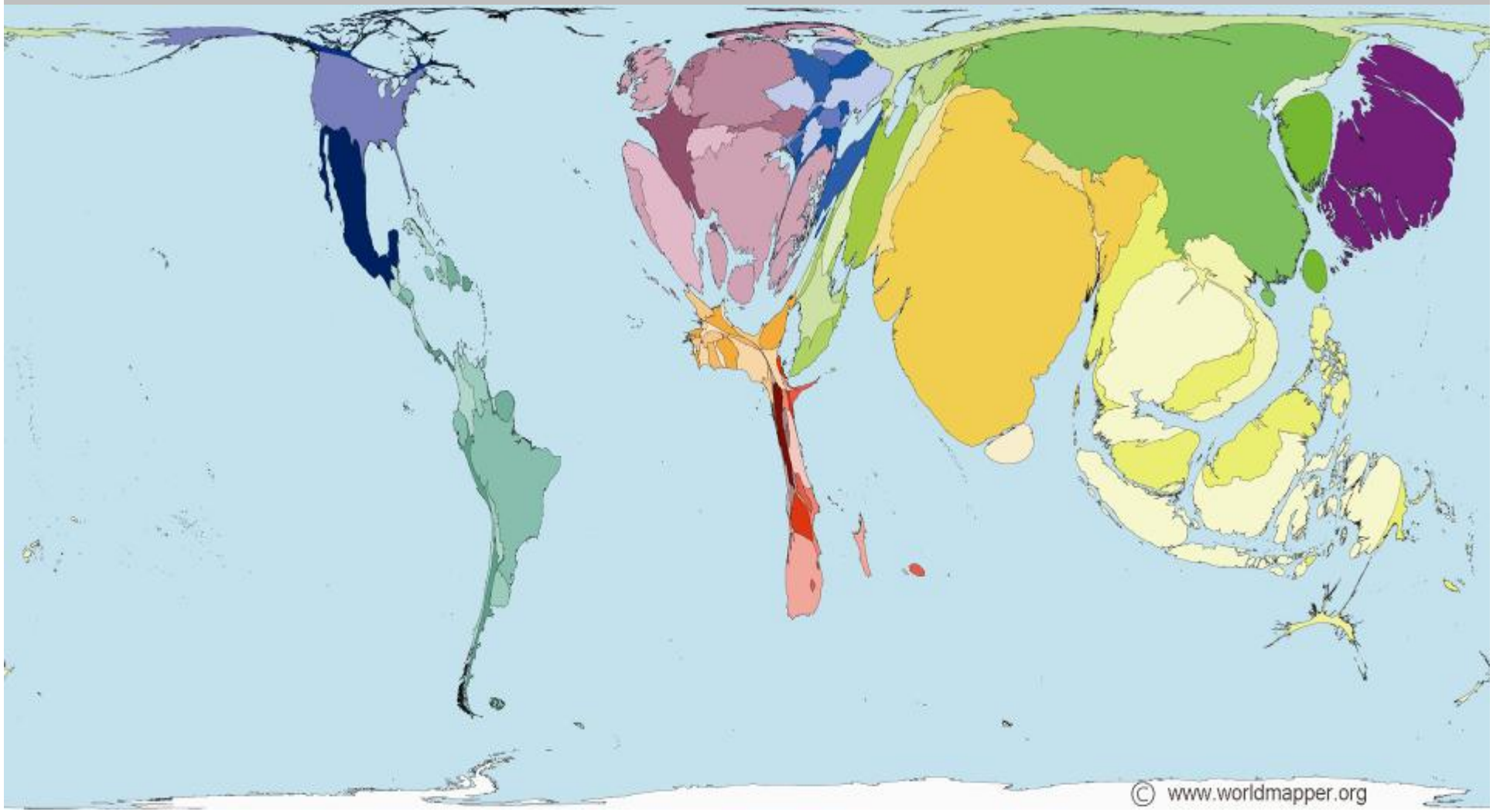


Total car stocks by region

Source: IEA ETP 2008

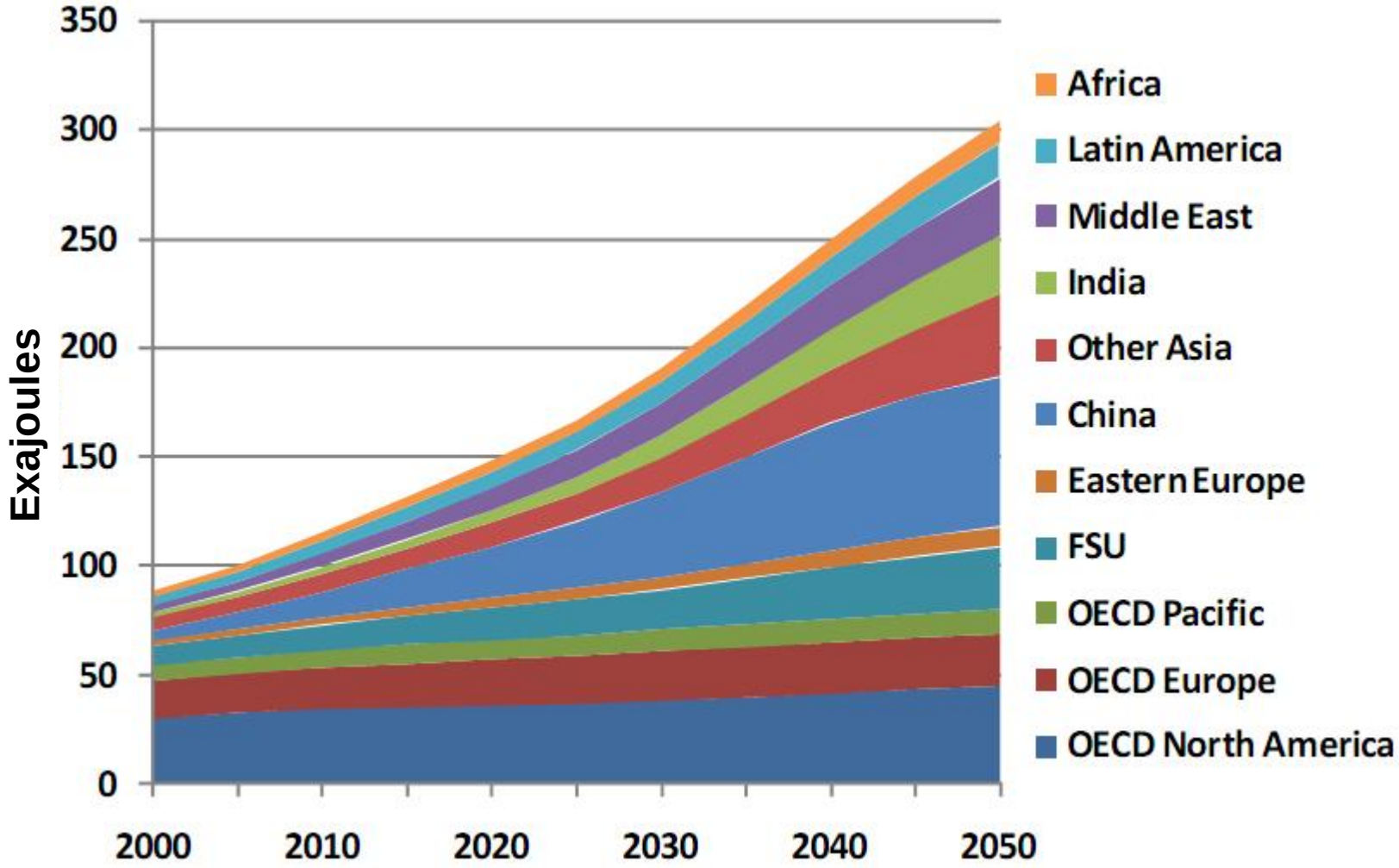
2050: Five times more vehicles

…motorcycles are primarily an Asian issue…



Territory size shows the proportion of the motorbikes and mopeds in the world found there.

Transport Energy Demand Projections



2000 – 2050 : About to triple world-wide

Source: IEA ETP 2008

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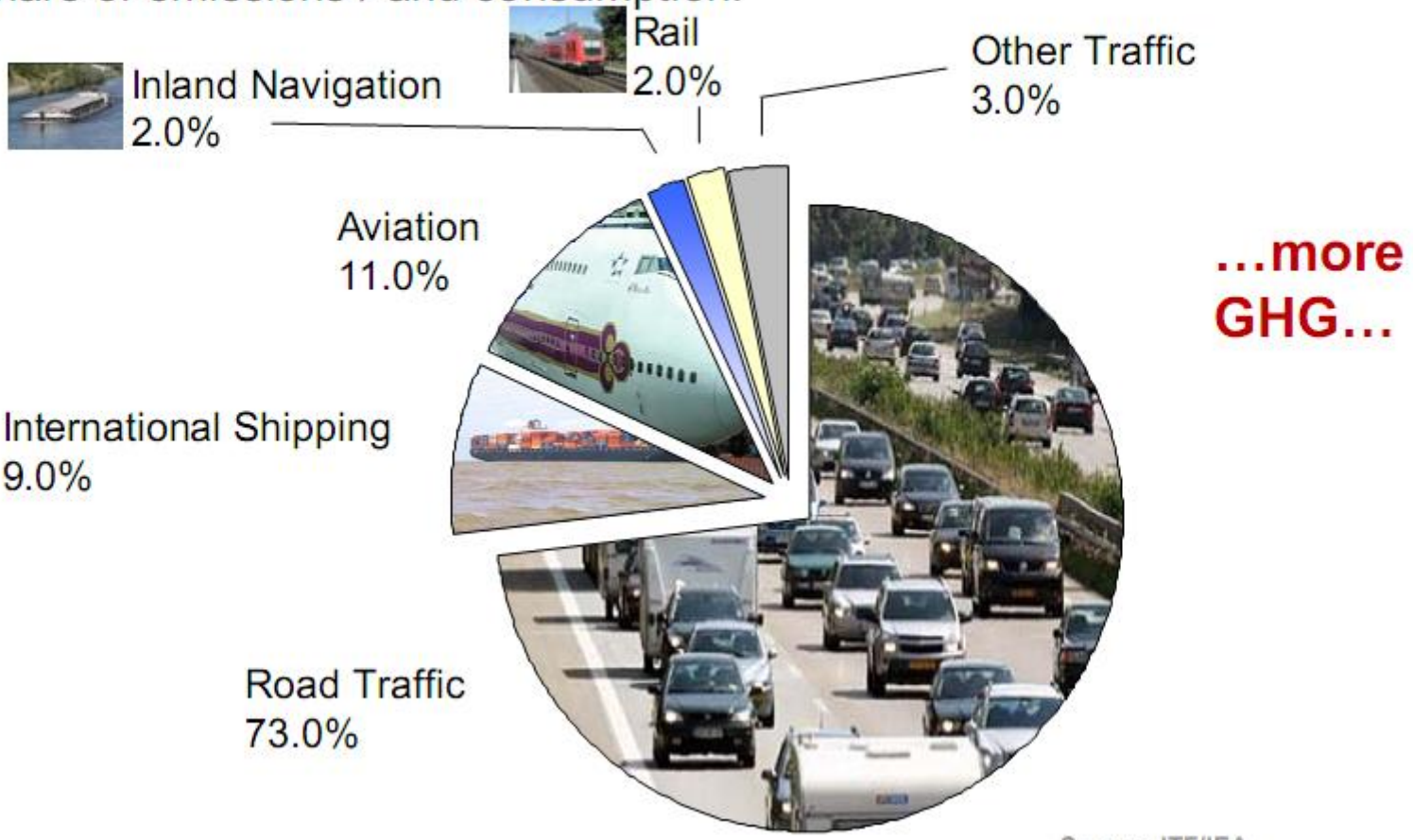
Transport and Energy Consumption / CO_2-Emissions by mode (2005)

Within the transport sector, road traffic is responsible for the largest share of emissions / and consumption:



Who are the ones who don't benefit?

- Physically challenged
- Non-motorists
- Women (in some cities)
- Senior citizens
- Children
- Poor

How does our travelling affect energy demand?

Traffic generation & Carbon emissions: What aspects should we concentrate on?

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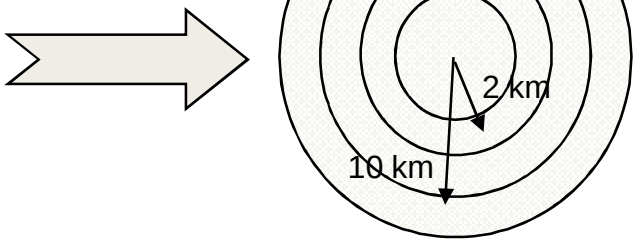
§ Example: Shopping

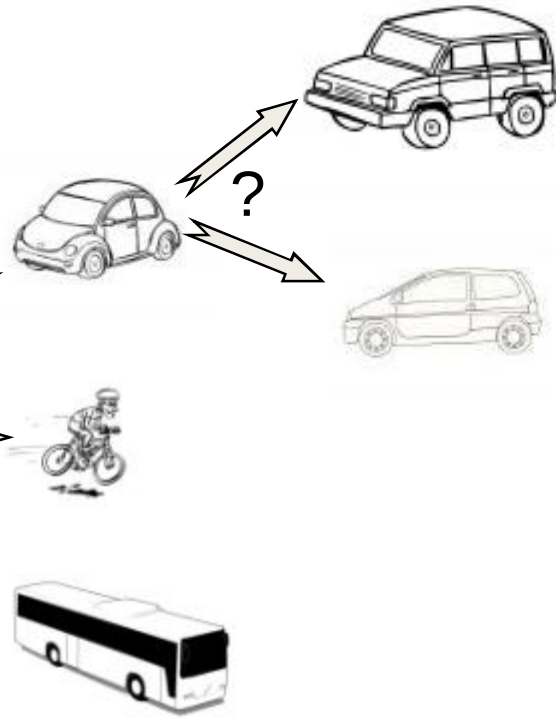
Starting point:
A household requires a wide range of goods, with varying frequency.

First decision:
How far do you have to go?

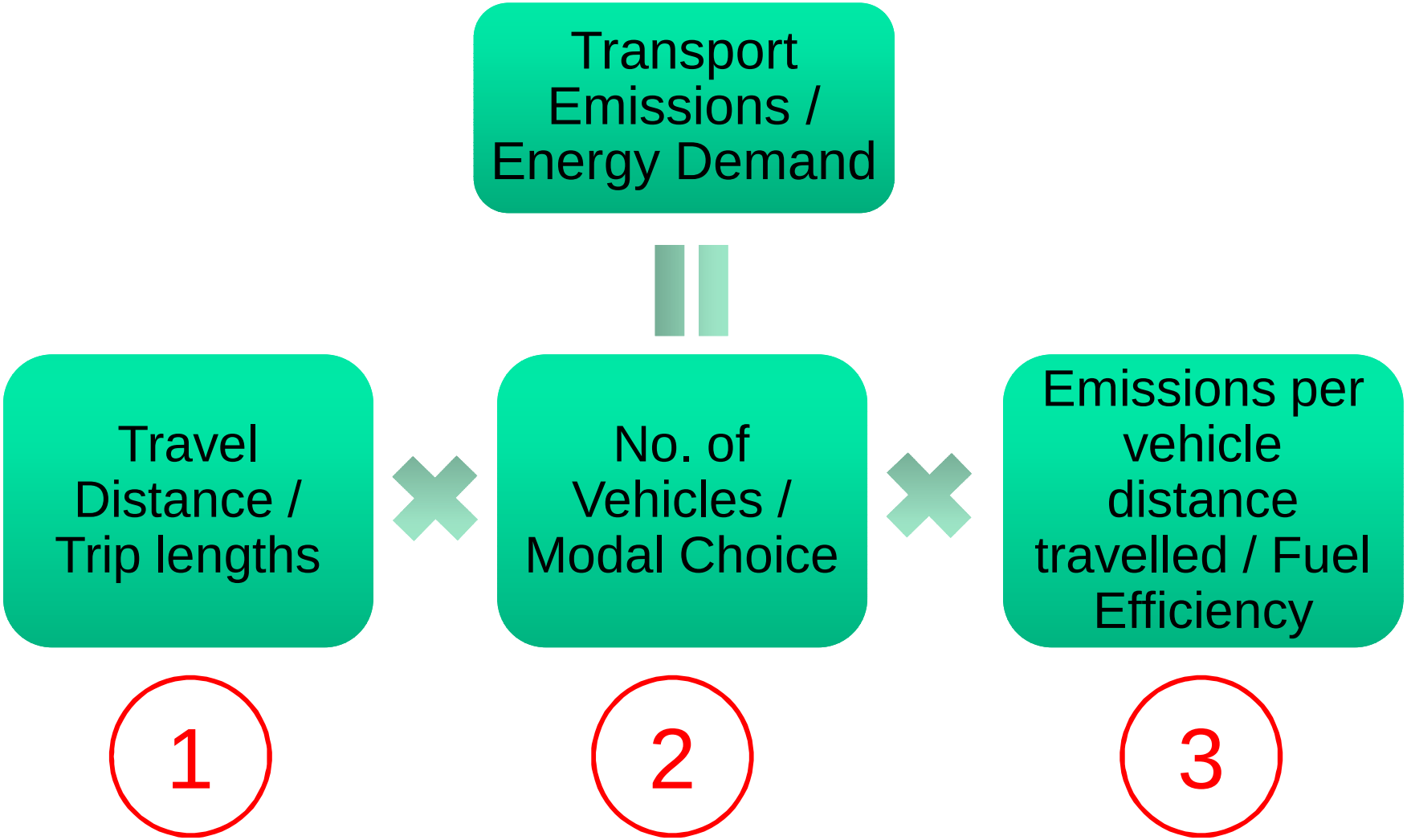


Second decision:
Which mode of transport will you (have to) use?

Third decision:
Which type of vehicle + use?



Factors affecting energy demand



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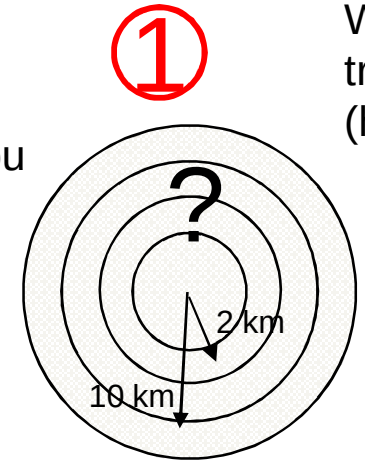

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②

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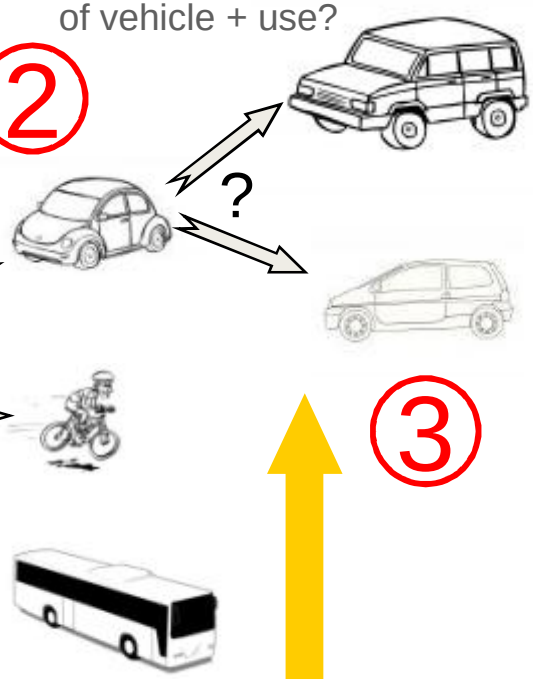

③

Smart infrastructure planning: Reduces need for travelling!

AVOID

Encourage use of non-motorized and public transport!

SHIFT

Reduce car size and consider using alternative fuels!

IMPROVE

How to reduce, shift and improve?

4 Concentrating more on

- Land Use and Density
- Public Transport Improvement
- Non-motorised Transport
- Efficiency (Fuel / Vehicle)

Land Use and Transport

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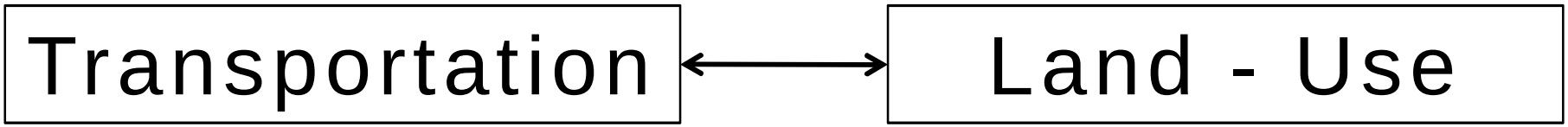
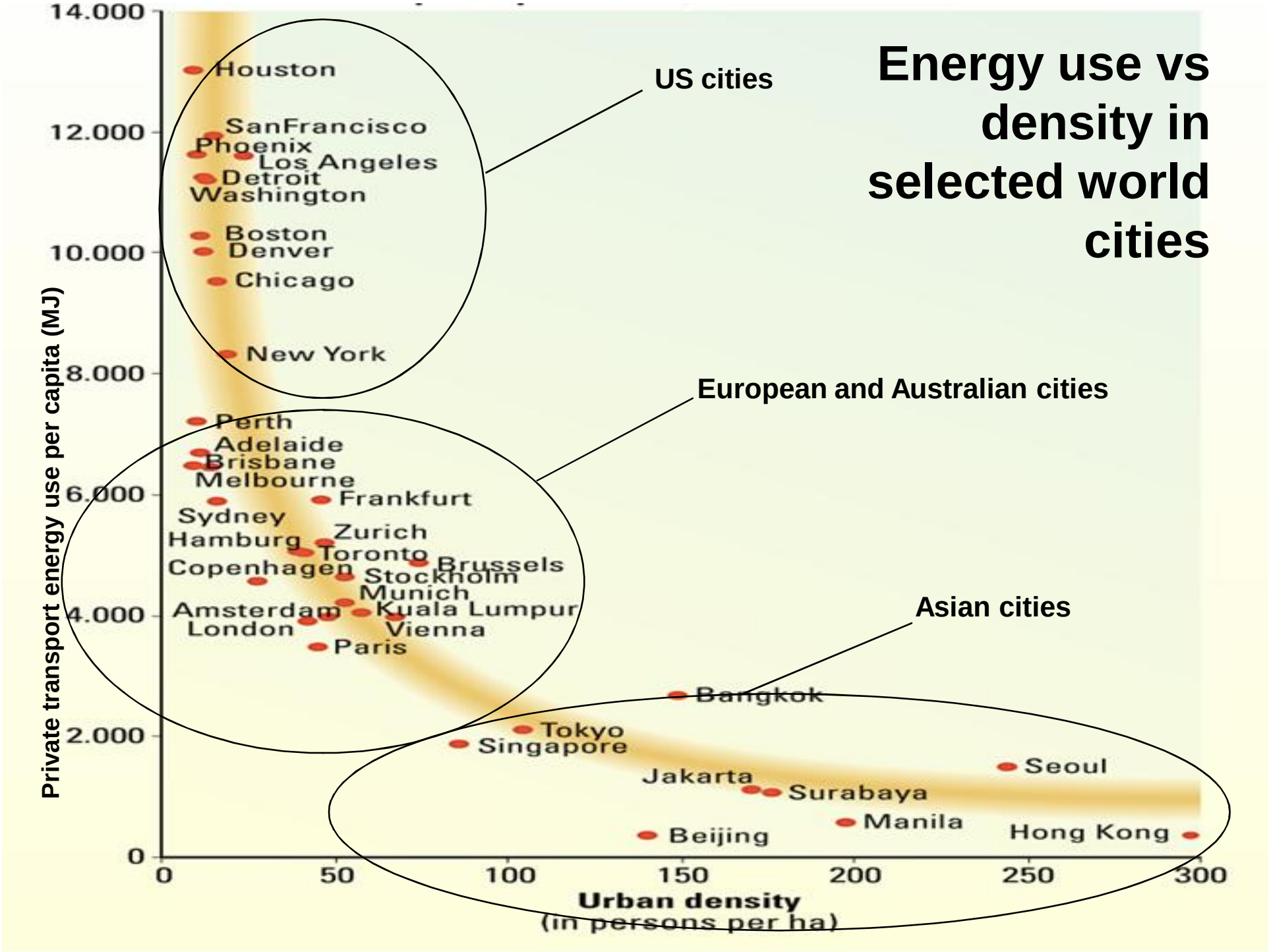


Transportation Policies, investments affect the accessibility, mobility and also the connectivity

The kind, size and location of a particular land can have direct effect on transport system



Segregated Land-use

Separating office, residence, shopping areas.

Hence, travel is more than required

Mixed-land Use

Source: GTZ Photo DVD

- Distance traveled is greatly reduced
- More efficient use of land
- Less investment on infrastructure
- Less energy consumption

Modal Choice:
1 ton of CO2 can take you ….Pkm

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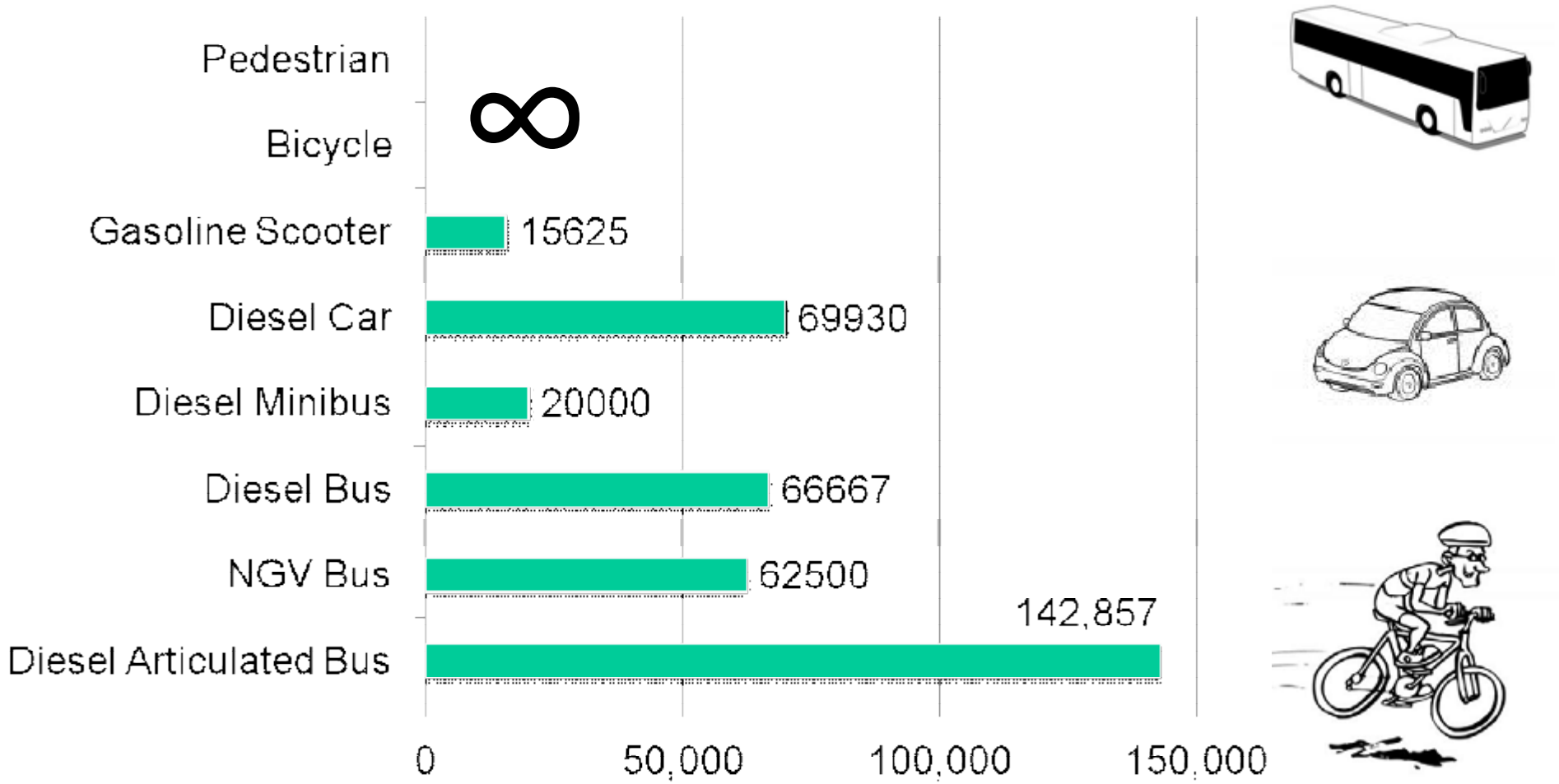


Source: GTZ Sourcebook Module “Transport and Climate Change”, 2007, based on Hook / Wright, 2002

Transport systems that benefit the poor and disadvantaged

- Efficient Public Transport
- Efficient Non-Motorised Transport

TransMilenio SA

Efficient Public Transport includes…

- Fast boarding and alighting
- Affordable and integrated fares
- Comfort while riding the system
- Predictable service
- Comprehensive network
- Integrated with other modes
- Hassel free interchanges
- Own right-of-way

By 2015, TransMilenio will serve 5 million passengers per day over 388 kilometers of busways.

Efficient Non-Motorised Transport…

- Coherence (Connectedness)
- Rapid and direct routes (without detours and delays)
- Safety (and security)
- Comfort
- Attractiveness

The poor depend on NMT

This works only in the developed countries!

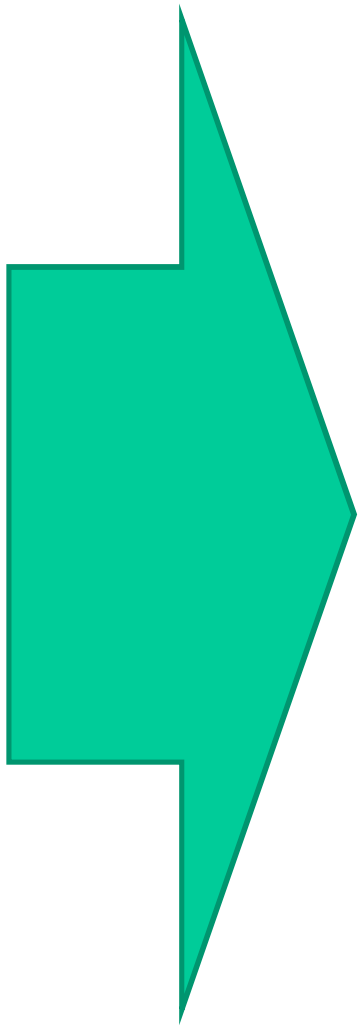
Is it true?

Shanghai

Bogotá

Efficiency (Fuel / Vehicle)

- Kind of fuel used could influence the carbon emissions
- The price of fuel influences the amount of travel by cars
- The design/type of the vehicle determines the consumption of fuel



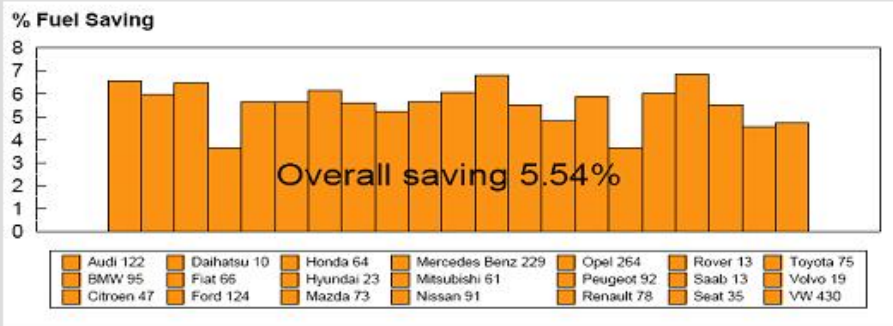
Lowers energy Demand from fossil fuels

Maintenance and Eco-driving

- **Tire pressure:**
  - 0.2 bar under-inflated: 1 % increase in fuel consumption
  - 0.4 bar under-inflated: 2 % increase in fuel consumption
  - 0.6 bar under-inflated: 4 % increase in fuel consumption

  Estimation: if all tires had the correct pressure, potential fuel saving in the EU would be 700 million litres of fuel

- **Low friction lubrication oil:**
  - Potential saving: 5 %



- **Eco-Driving:**
  - Early gear change, traffic anticipation, less cold-start short trips, …
  - Potential fuel saving: 5 - 10 %, sometimes even 25 %

The three basic routes to improve efficiency in **urban transport**

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REDUCE	SHIFT	IMPROVE
Reduce or avoid travel or the need to travel	Shift to more environmentally friendly modes	Improve the energy efficiency of transport modes and vehicle technology
• Integration of transport and land-use planning • Smart logistics concepts • …	• Transport Demand Management • Mode shift to Non-Motorized Transport • Mode shift to Public Transport • …	• Low-friction lubricants • Optimal tire pressure • Low Rolling Resistance Tires • Speed limits Eco-Driving (Raising Awareness) • *Shift to alternative fuels* • …
1	2	3

GTZ – Sustainable Urban Transport Projects – SUTP and SUTIP

Key activities of SUTP project

Developing and Disseminating Resources

4 Increasing **capacity** of municipal staff

Sharing Experiences and Best

4 Changes in urban transport **policy**

Implementing Projects

•World Cup 2010: Bus Rapid Transit System Johannesburg
• Improvement of Transport Conditions in Sibiu / Romania
•Sustainable Urban Transport Implementation Project, Indonesia

4 Development of sustainability oriented **projects**

GTZ SUTP Cooperation agreements (selected Partners)

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SHELTER FOR ALL
United Nations Human Settlements Programme
UN HABITAT

CAF

LTA ACADEMY
SINGAPORE

UNITAR

CITYNET

United Nations Economic and Social Commission for Asia and the Pacific
United Nations ESCAP

UITP

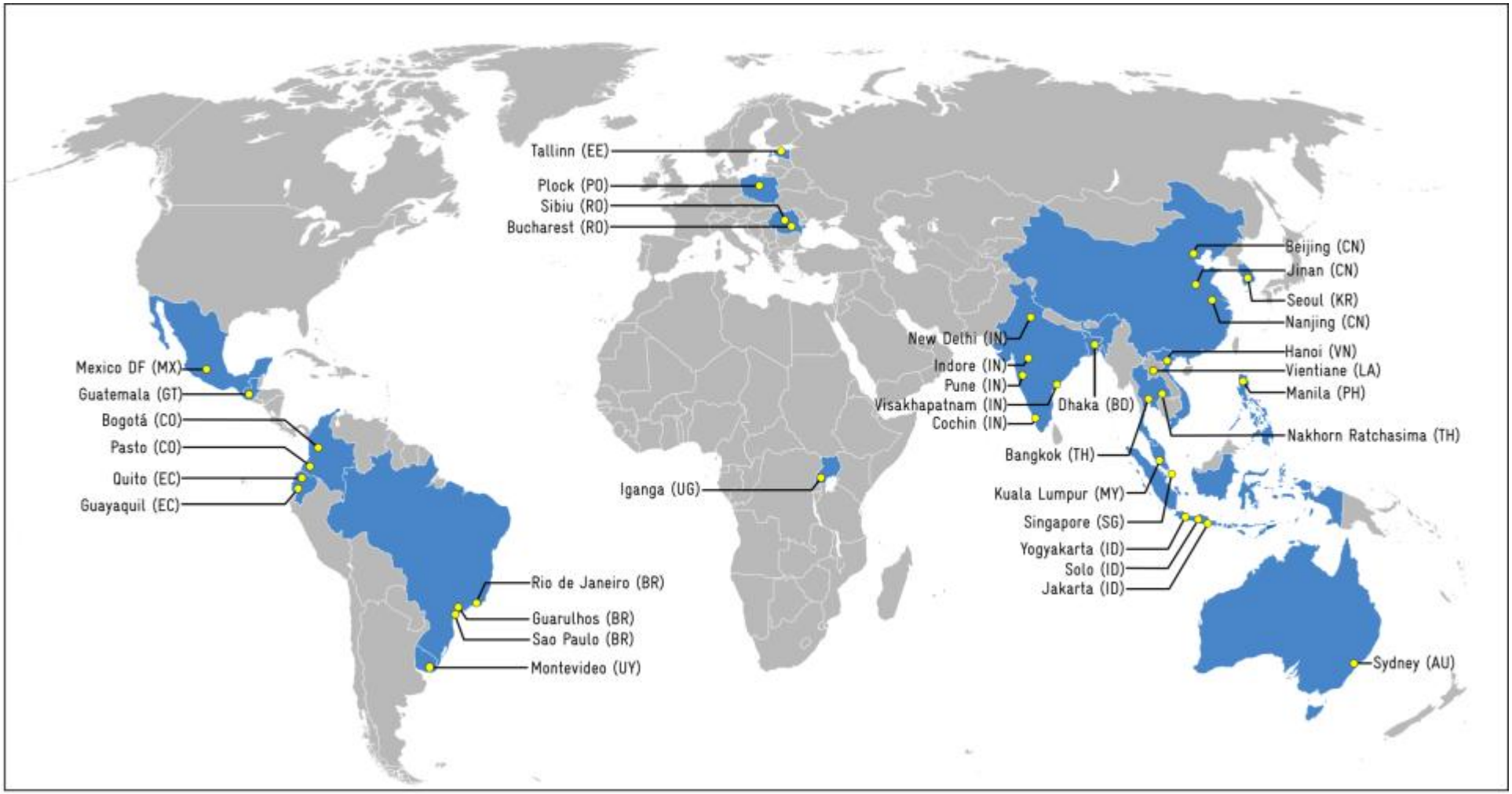
TRANSMILENIO

trans power

cities for mobility

ITDP Institute for Transportation & Development Policy

Delivery of training courses



Training courses conducted by GTZ-SUTP until May 2009

Material for Sustainable Transport

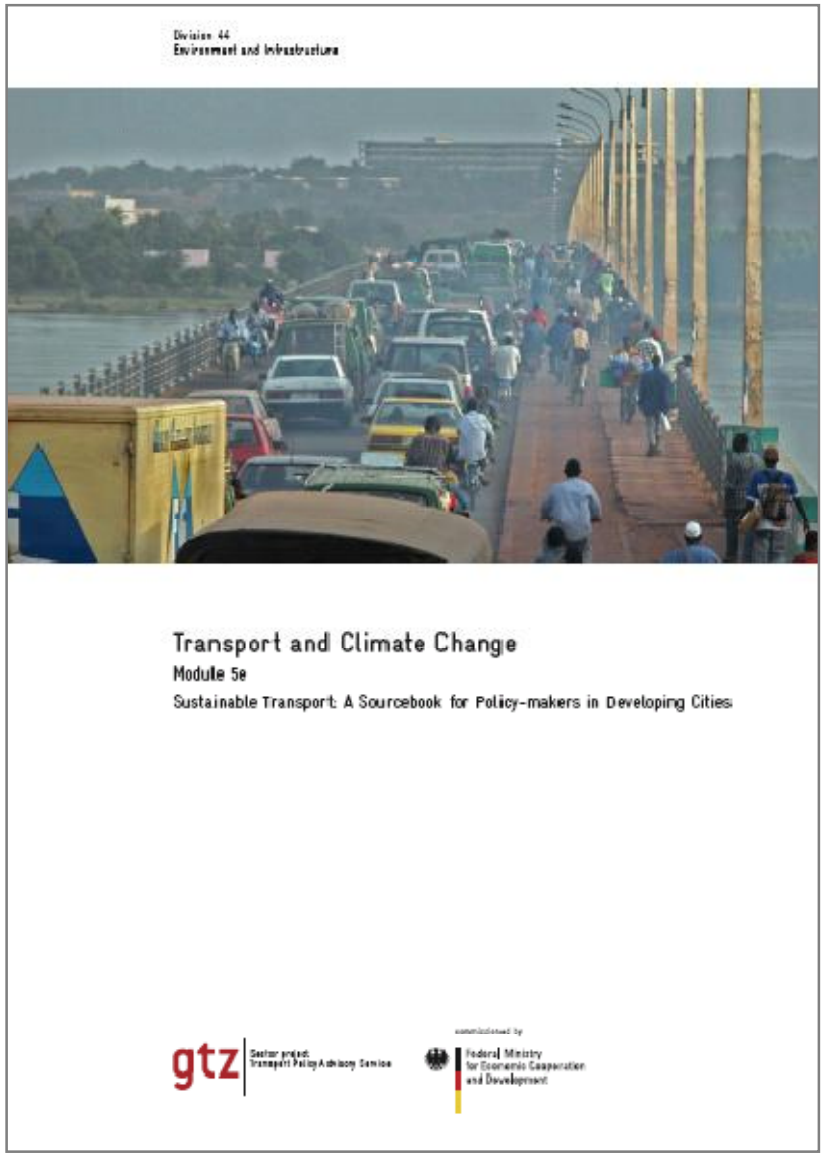
- Sourcebook **(at present 26 modules)**
  - print
  - online version
  - PDF
  - HTML format
  - PowerPoint presentations
- Training material
  - print
  - online version
  - PDF and partially HTML
  - PowerPoint presentations
- Online training courses material
- Photo CDs/DVD
- Videos

Reactions on the sourcebook

- “One of the most resourceful guides for Urban Transport Planning, a must for every consultant and government agencies”
- “Easy to read, good references and practical examples”
- “An excellent source of good advice for emerging and developing countries”
- “Excellent overview to the most pressing topics regarding urban transport in developing countries”
- “Useful background information, well researched and excellently structured but obviously with focus on solutions relevant to developing cites”

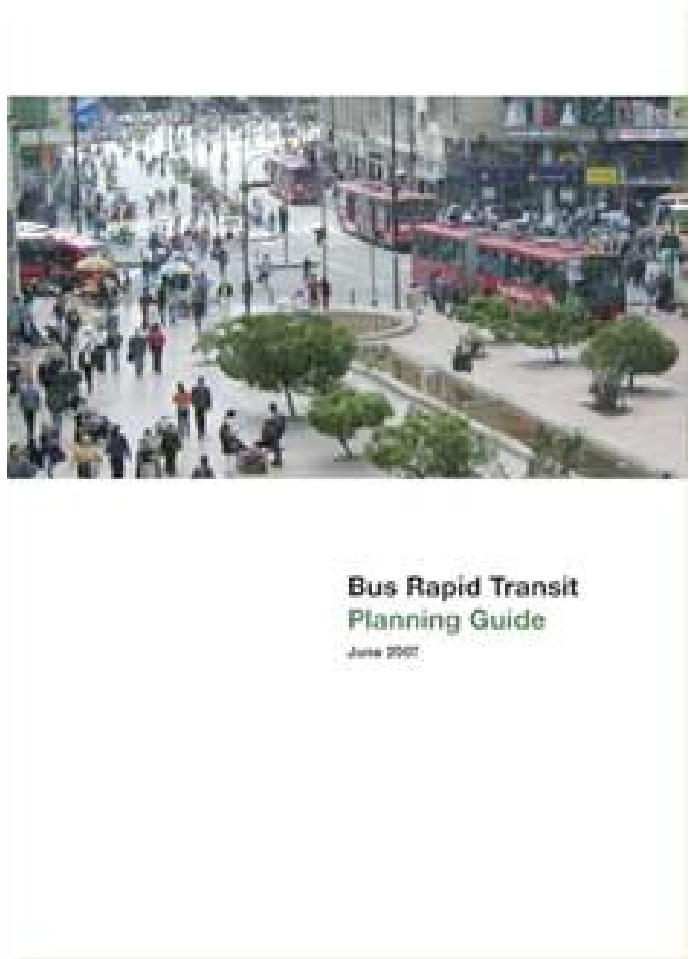
Transport and Climate Change

- Key issues of linkage between Transport and Climate Change
- Planning, Economic, Technological and other instuments and how they can be applied
- CDM methodologies
- GEF financing
- Translated to Spanish, Chinese under way

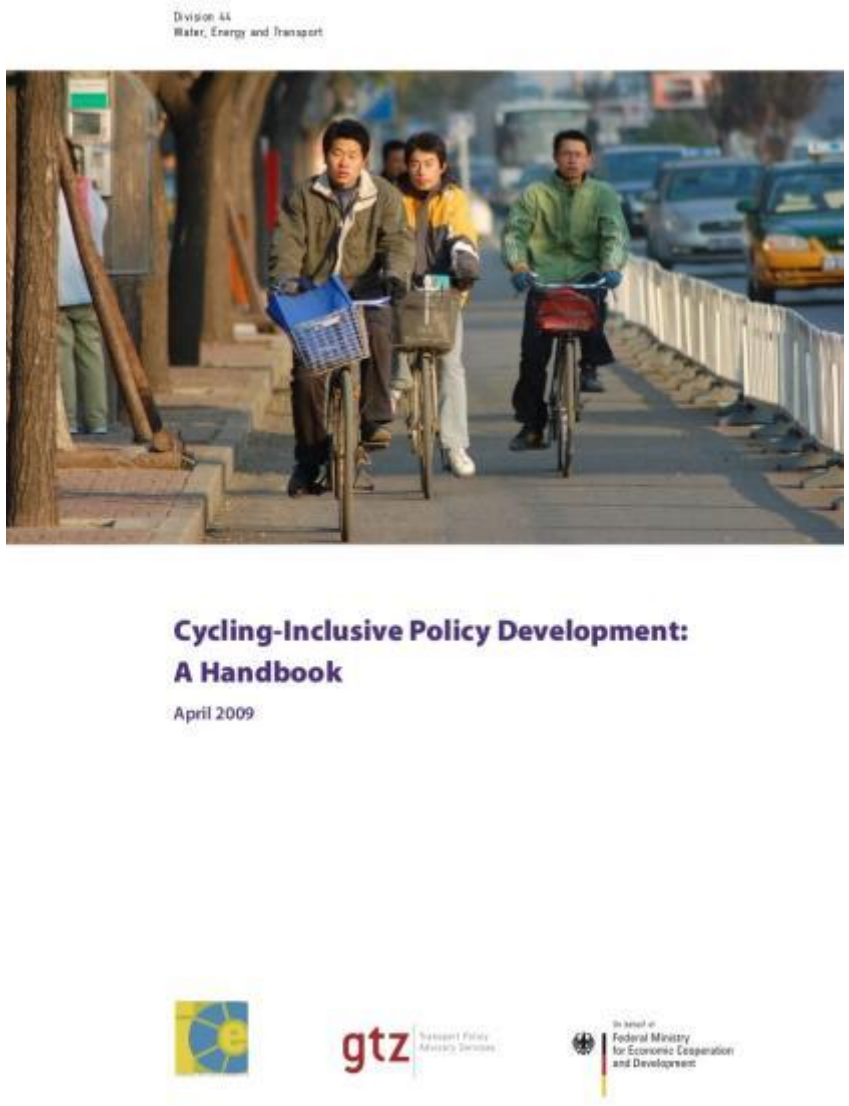


Bus Rapid Transit Planning Guide

- The Institute for Transportation and Development Policy (ITDP), together with the United Nations Environment Programme, Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ), the Hewlett Foundation, and Viva, announced today the publication of the **Bus Rapid Transit Planning Guide**, the most comprehensive effort to date to provide detailed technical guidance for developing a Bus Rapid Transit (BRT) system.
- Available on www.sutp.org
- 830 pages



Publication on Cycling-inclusive Policy Development: A Handbook



- Developed by GTZ, I-Ce
- Written by 12 authors
- Information on
  - Developing cycling-friendly infrastructure policies
- For policy makers planners, engineers, community leaders

Project objective

"Indonesian cities plan and implement environmentally compatible, energy-efficient and climate-friendly urban transport schemes"

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URBAN TRANSPORTATION IMPROVEMENT PROJECT

CAPACITY BUILDING

Next Steps for Component I (Support for MoT in 2009)

1. Evaluate current national policies on urban transport and assist in elaborating appropriate policies and strategies

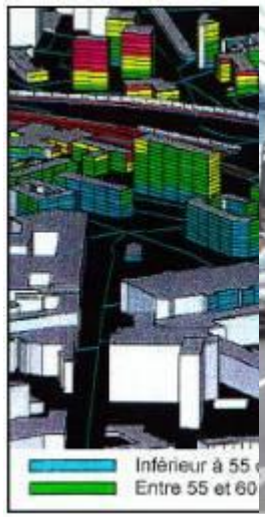
2. Assist MoT with national pilot projects in 3 main areas:
   - Non-Motorized Transport
   - Transportation Impact Control
   - Bus restructuring

Next Steps
for Component II (Direct Support to Cities)

Assist Cities directly in
implementing sustainable
urban transport
improvements:

Non-motorized Transport

Transportation Impact
Control



Bus Restructuring Initiatives

TDM measures

Executing agency & Implementing Organizations

- The executing agency:

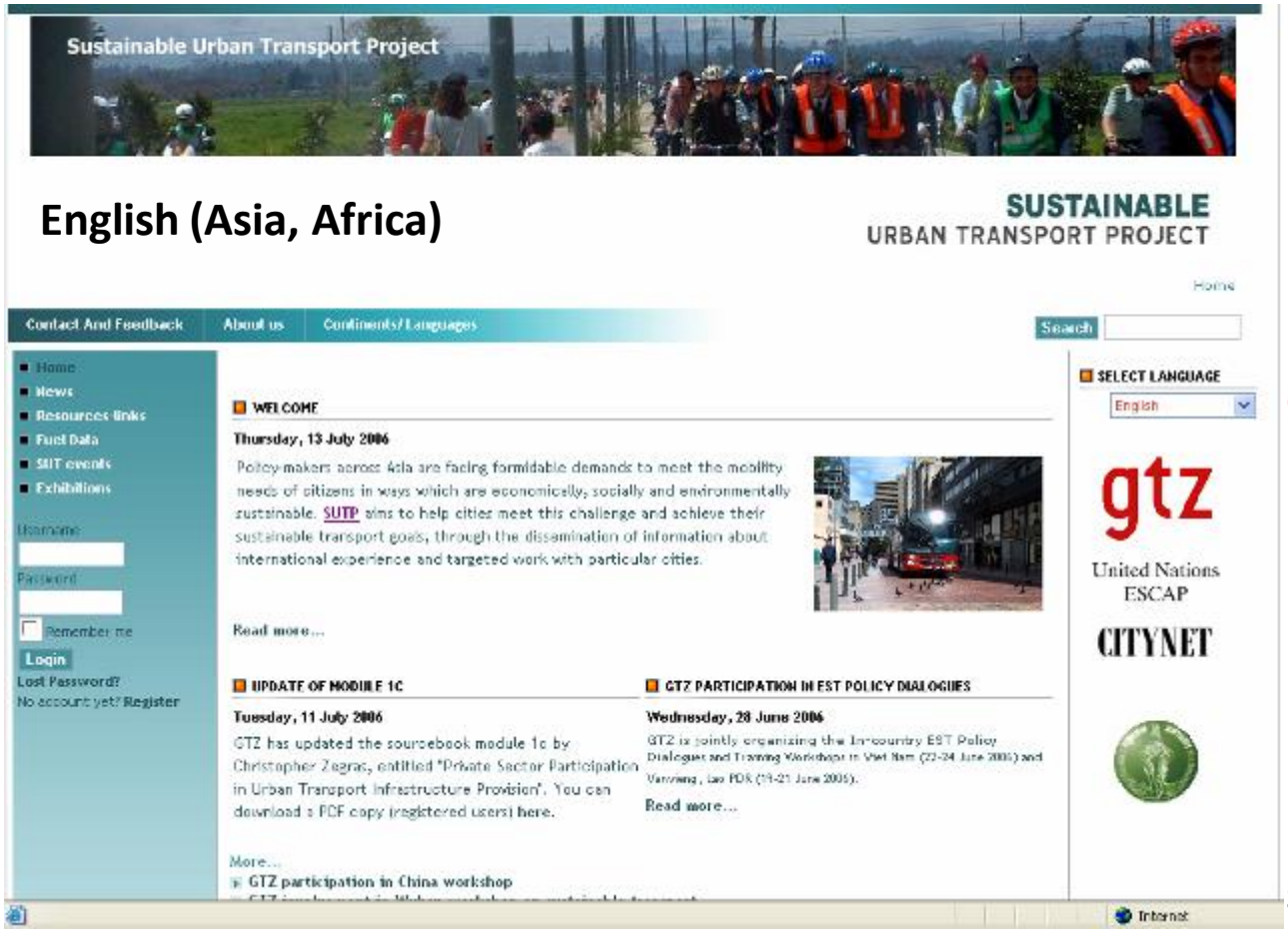
  Ministry of Transportation (represented by the Director General of Land Transport)

- Implementation:

  - Central Level: Directorate for Urban Transport System Development of the Directorate General of Land Transport, Ministry of Transportation

  - Local Level: Transportation Departments of selected City Administrations

Development of web site – 3 (5) languages



English (Asia, Africa)

Chinese (Asia)

Spanish and Portuguese (LAC)

www.SUTP.org (Chinese website: www.SUTP.cn)