

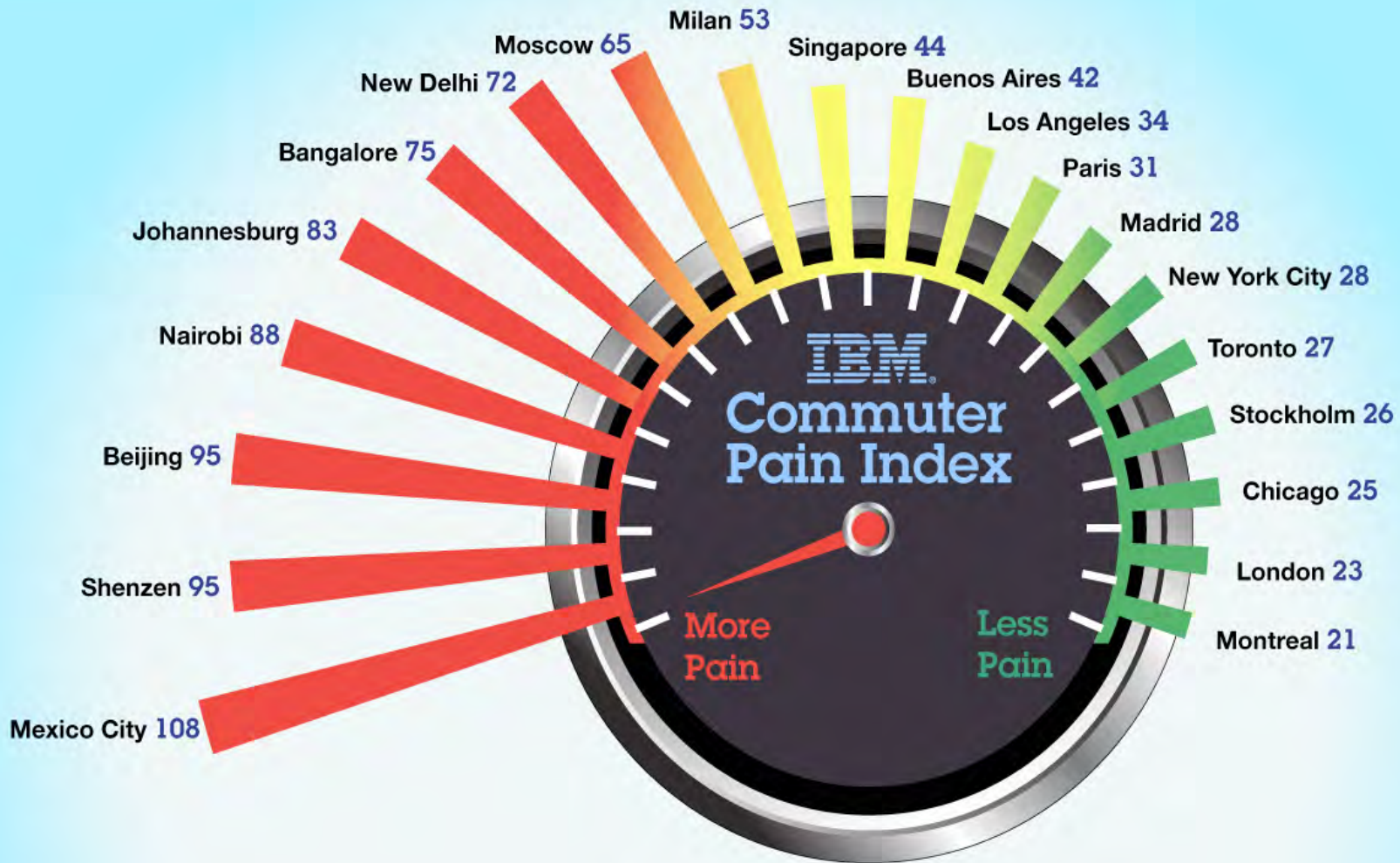


The Role of TDM in Urban Development



Manfred Breithaupt
Urban Transport Advisor

IBM commuter pain index





TomTom 2017 results

CITIES NEAR YOU

● 46% Beijing

● 42% Shijiazhuang

● 41% Tianjin

● 39% Shenyang



Map Data © 2017 TomTom

WORLD RANK	CITY	CONGESTION LEVEL
1	Mexico City	66%
2	Bangkok	61%
3	Jakarta NEW	58%
4	Chongqing	52%
5	Bucharest	50%
6	Istanbul	49%
7	Chengdu	47%
8	Rio de Janeiro TOP	47%
9	Tainan NEW	46%
10	Beijing	46%

[GO TO FULL RANKING](#)



Transport Demand Management shall

- Urban areas require proper road networks
- New roads attract more traffic and reduce the viability of public transport
- Transport benefits will be offset by future congestion



- **reduce the total volume of traffic**
- **promote shifts towards more sustainable modes of transport**

with the objectives to

- reduce traffic congestion
- reduce adverse effects on the environment or public health
- generate additional revenue to improve public transport and NMT by pricing mechanisms



125 A.D.

Rome saw in 125 A.D. a serious traffic problem.

As a result a regulation has been imposed that restricted the number of ox carts, food delivery transport, and chariots in the center of Rome.



Mosaic from a bathroom in Ostia/Rome

Today

TDM emphasises on the movement of people and goods, not just on motor vehicles, and gives priority to public transit and non-motorized modes, especially under congested urban conditions.



Karl Fjellstrom

Singapore has implemented a range of mobility management measures in the Chinatown area, including pedestrianised streets, evening road closures, widened and attractive newly-paved walkways, tree-planting for shade, more parking restrictions, transit improvements (including bus and MRT expansion in the area), an ERP-System, and an innovative 'smart bike' program providing free bicycle use.

■ International Experiences

Examples: Berlin – Shared Space in Berlin 1908



Unter den Linden/ Friedrichsstraße:

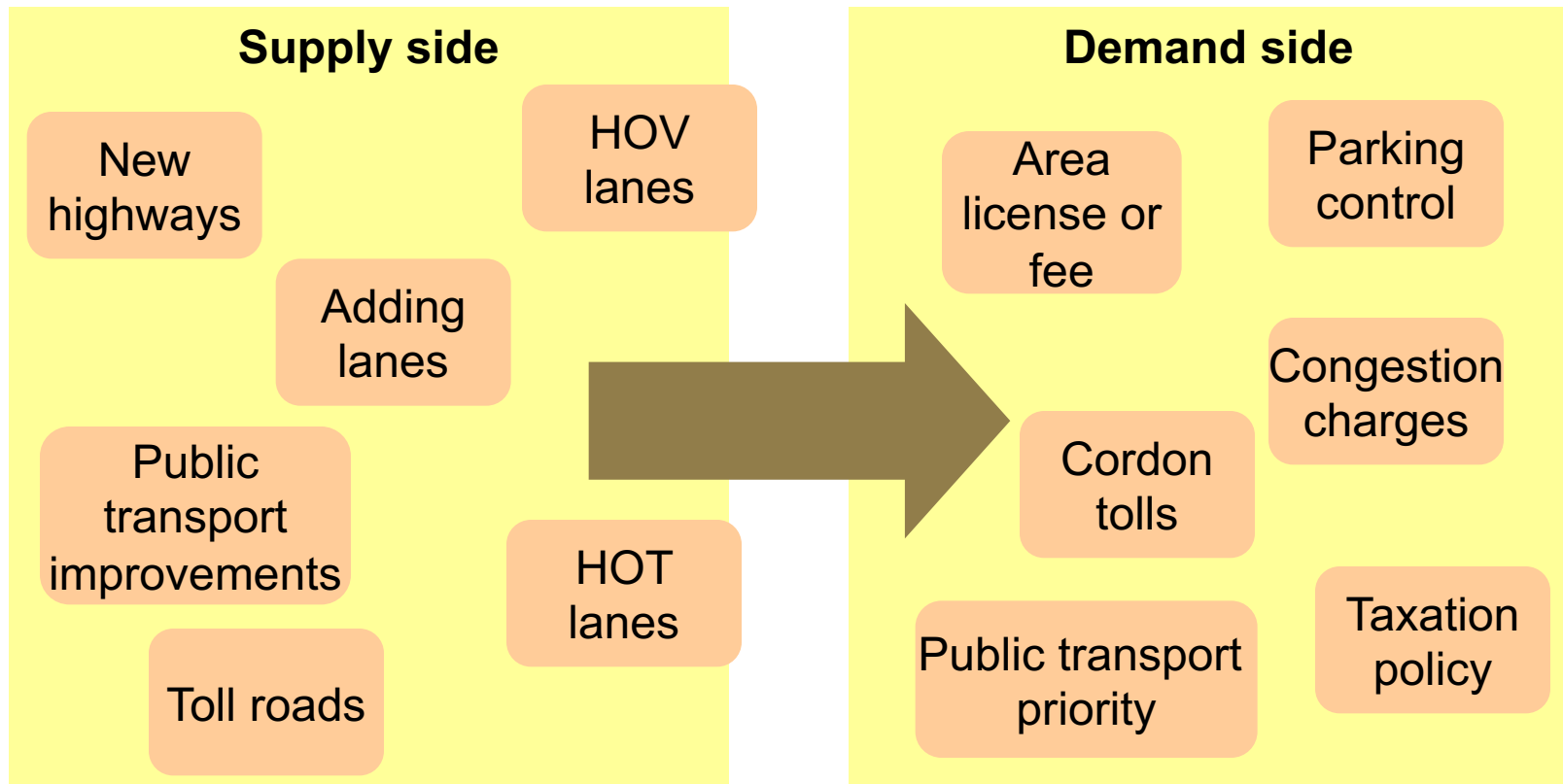
The street belonged to everyone:

automobiles, autobusses, carriages,
pedestrians

In this era, people were enthusiastic about technology and the achievements of modernity; while at the same time they felt anxious about the rapid and radical changes in their social and economic life. In Germany, this contradictory experience was especially harsh and perceptible in the urban metropolis of Berlin.

Can we build our Way out of Congestion?

The Shift: Thinking **Demand** instead of **Supply**



Adapted from Derek Turner Consulting

Transport Demand Management measures



Transport demand management measures (including fiscal policies)

- Land use development controls
- Public transport integration
- Parking controls and management
- Regulatory controls such as odd/even systems
- Physical measures such as bus and pedestrian priority
- Pricing & charges through fuels, annual taxes
- Congestion charging

TDM policies should never be implemented as isolated instruments, but – for being successful – have always to be embedded in a comprehensive framework of Transport Demand Management measures.

The push and pull approach



Measures with push-effects

Area-wide parking management, parking space restrictions in zoning ordinances, car limited zones, permanent or time-of-day car bans, congestion management, speed reductions, road pricing...

Measures with pull-effects

Priority for buses and trams, high service frequency, passenger friendly stops and surroundings, more comfort, park-and-ride, bike-and-ride..., area-wide cycle-networks, attractive pedestrian connections...



Measures with push- and pull-effects

Redistribution of carriageway space to provide cycle lanes, broader sidewalks, planting strips, bus lanes..., redistribution of time-cycles at traffic lights in favour of public transport and non-motorized modes, public-awareness-concepts, citizens' participation and marketing, enforcement and penalizing...

Source: Müller, P., Schleicher-Jester, F., Schmidt, M.-P. & Topp, H.H. (1992): Konzepte flächenhafter Verkehrsberuhigung in 16 Städten", Grüne Reihe des Fachgebiets Verkehrswesen der Universität Kaiserslautern No. 24.

TDMs relevance for lower income developing cities



The so-called „push and pull strategy“ is the key for sustainable transport development, and when consequently followed may have significant influence on modal split

How much of the “push” (getting people out of their cars) and the “pull” (getting people into public transport and NMT) will be applied depends on the financial resources of a given city, but even the more on the dedication and leadership of the mayor and the city council.

With very limited financial resources, for example parking management and access restrictions (push) can be implemented, while on the other hand public bus transport can be made considerably more attractive by a bus regulation and concessioning scheme and a reallocation of public space (for example into cycle lanes and/or bus lanes/BRT systems).

Curitiba: the unique advantage that a city development matured over more than 25 years. This influenced heavily land-use patterns. Initial spark: a dedicated and visionary mayor (Jaime Lerner)



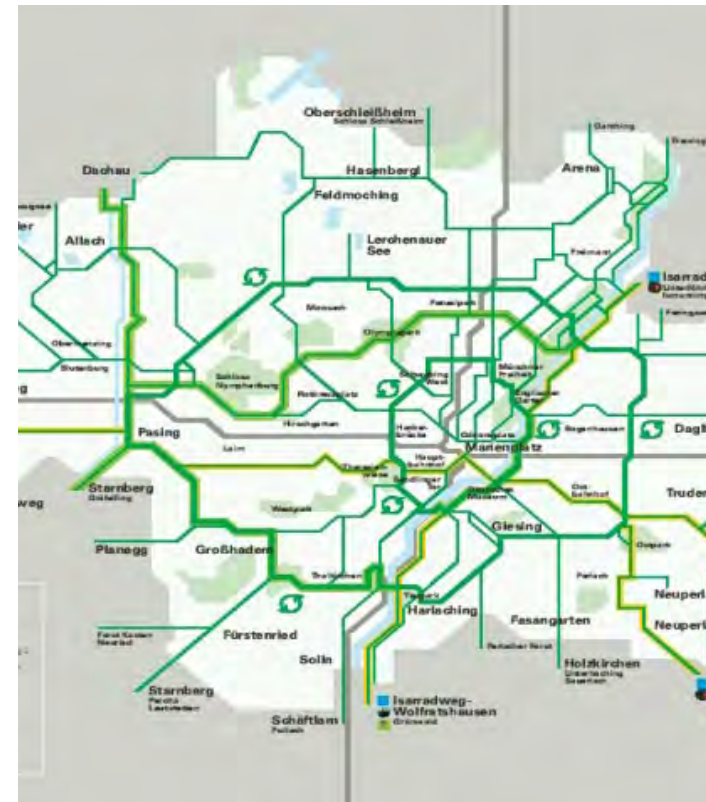
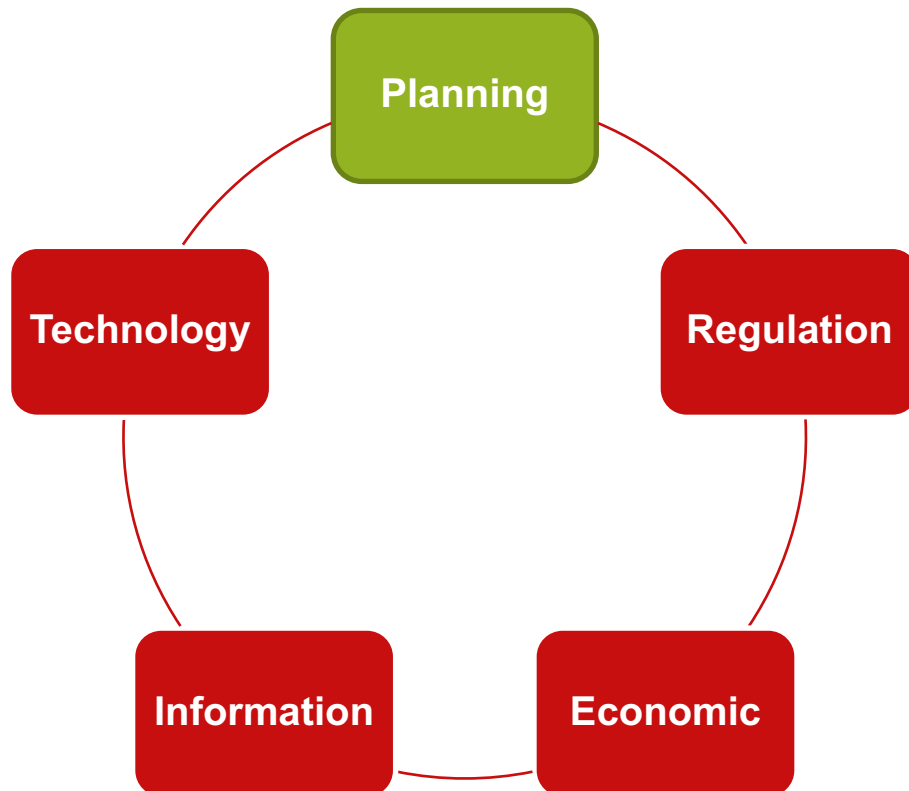
Travel Demand Management

Recognizes that **travel demand is not given**, but is a function of transportation policies, pricing and investments (supply) that lead to **choices** (demand).





Travel Demand Management: A Toolbox





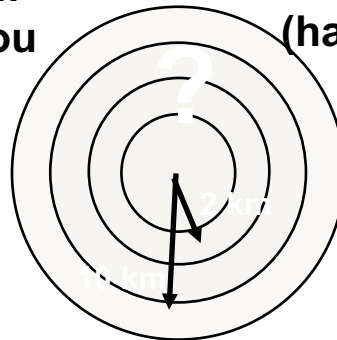
Compact land use (Smart Growth)

Example: Shopping



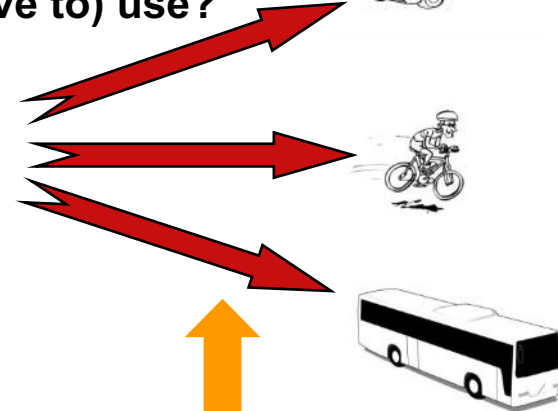
Starting point:
A household requires a wide range of goods, with varying frequency.

**First decision:
How far do you have to go?**



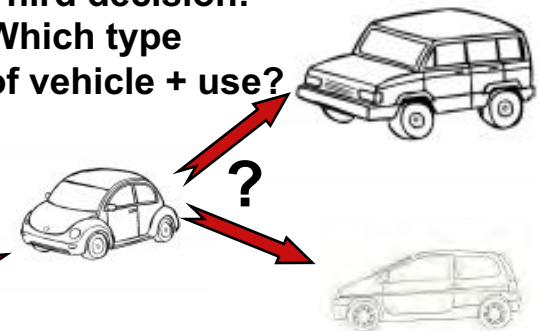
Smart infrastructure planning: Reduces need for travelling!
AVOID/REDUCE

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



Encourage use of non-motorized and public transport!
SHIFT

**Third decision:
Which type of vehicle + use?**



Reduce car size and consider using alternative fuels!
IMPROVE



Urban mobility planning allows to overcome antiquated paradigms of transport planning

Traditional Transport Planning	↔	Sustainable Urban Mobility Planning
Focus on traffic	↔	Focus on people
Primary objective: Traffic flow capacity and speed	↔	Primary objectives: Accessibility and quality of life
Political mandates and planning by experts	↔	Important stakeholders are actively involved
Domain of traffic engineering	↔	Interdisciplinary approach
Infrastructure as the main topic	↔	Combination of infrastructure, market, services, information, and promotion
Investment-guided planning	↔	Cost efficient achievement of goals
Focus on individual efficiency increase and optimisation	↔	Comprehensive evaluation of impacts and shaping of a learning process

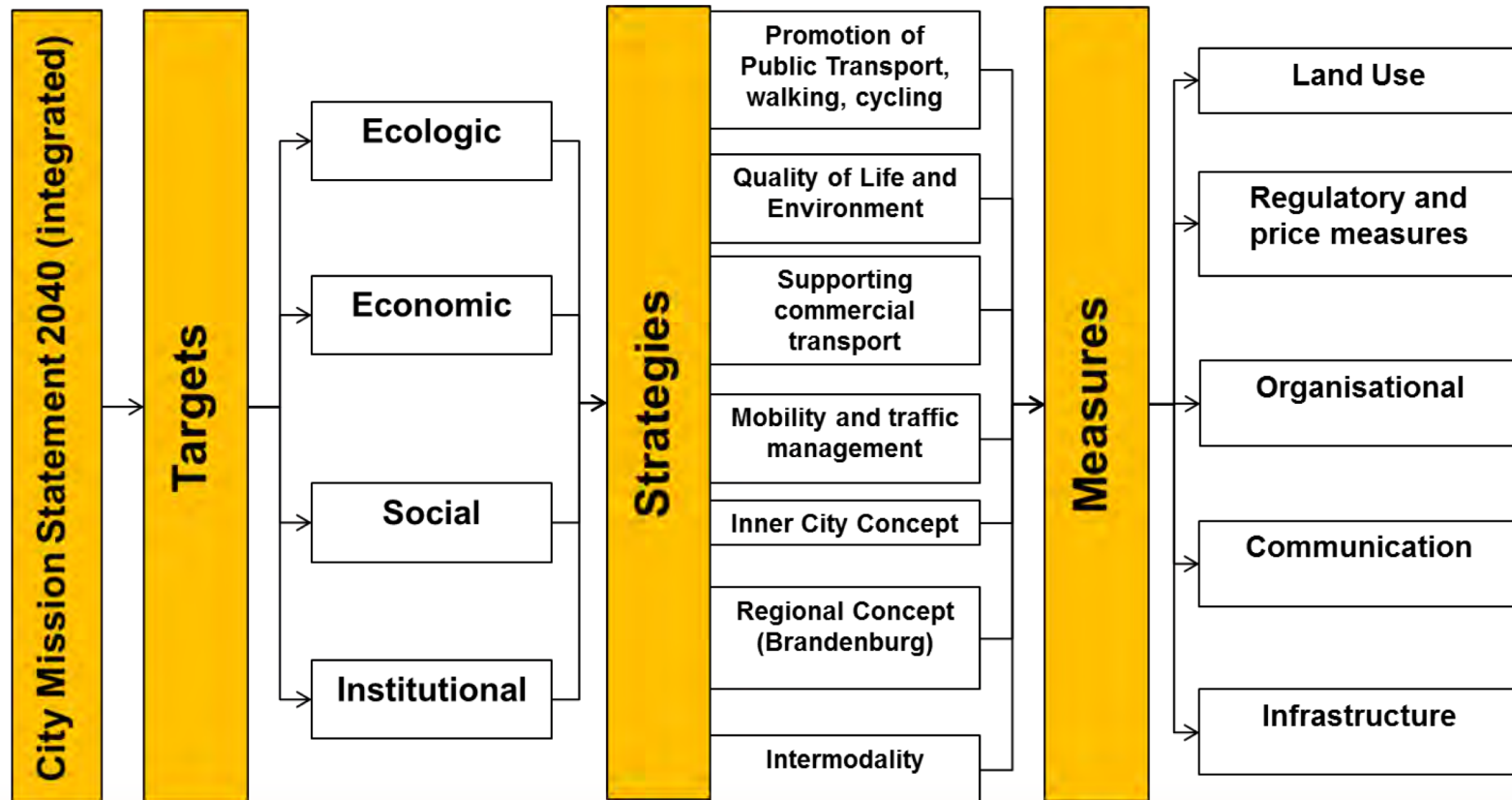
„If you plan for people and places, you get people and places.“

„If you plan for cars and traffic, you get cars and traffic.“



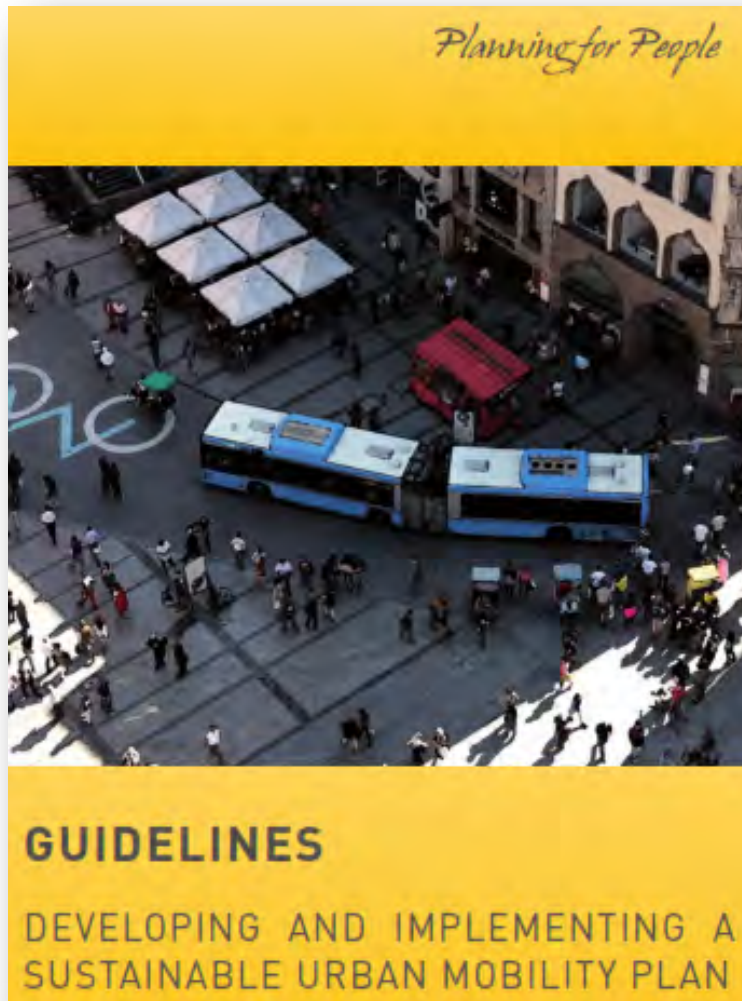
The Power of Urban Mobility Plans

Example: Integrated Mobility Planning in Berlin



SUMP Policy Elements in the EU

SUMP as an instrument to meet European policy targets and to solve local transport problems



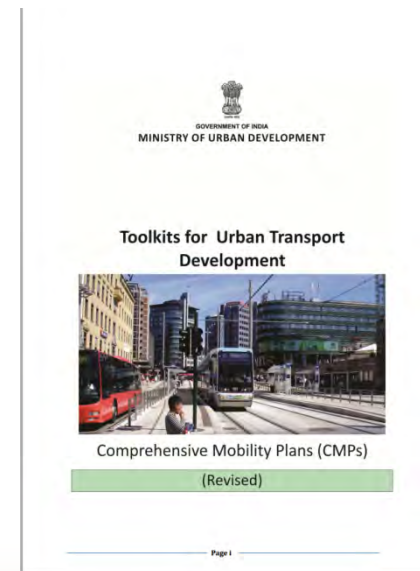
- **EU Recommendation** to all Member States to develop national legal framework for SUMP and support cities
- **EU facilitates** Europe-wide coordination and funds **research and innovation activities**
- EU and national **support for SUMP preparation is taking off**
- Quality SUMP are increasingly a **pre-condition** to attract (major) urban transport funding from EU (incl. Structural and Investment Funds)



Example: INDIA – Comprehensive Mobility Plans

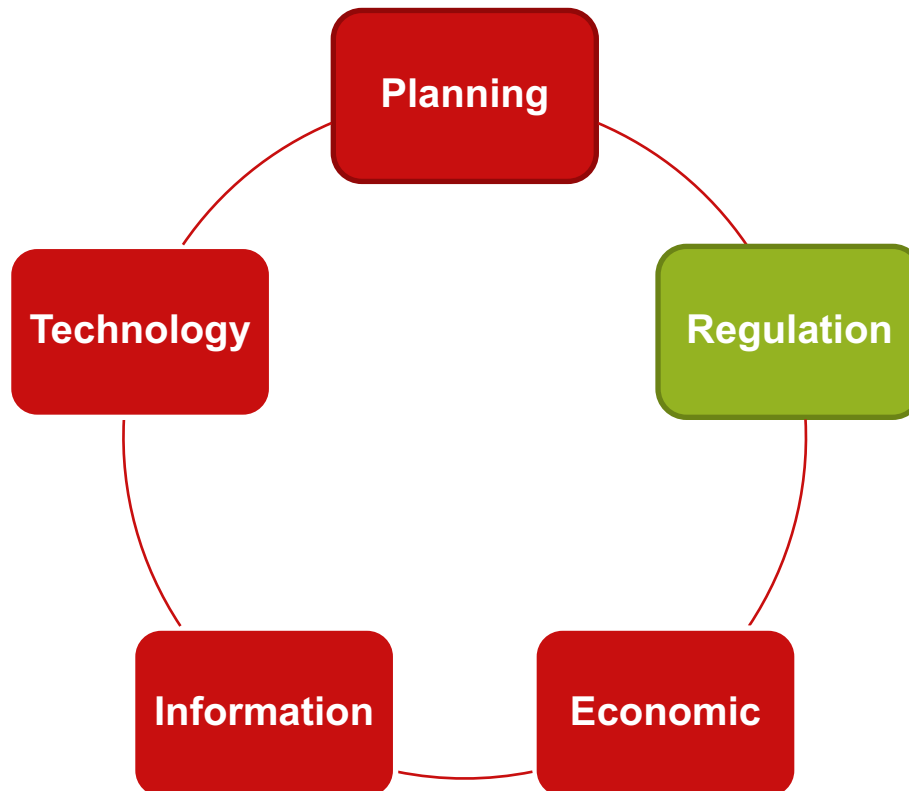
“A CMP presents a long-term vision of desirable mobility patterns (people and goods) for a city and provides strategy and policy measures to achieve this vision. It follows the guidelines set forth by National Urban transport Plan which emphasizes on NMT measures, PT systems and sustainable systems”

- **National Urban Transport Policy from 2005: Comprehensive process description, funding program + national guidance**
- **Toolkits (Guidelines) revised in 2014**





Travel Demand Management: A Toolbox





Travel Demand Management: A Toolbox

	What?	Example
Regulatory Instruments	Physical Restraint	Pedestrian zones
	Parking Management	Parking Maximums
	Access Restrictions	Low Emission Zone
	Speed Restrictions	30 km/h in build-up areas





Case Study: Odd-Even Schemes

Prohibition on motor vehicles from being driven into central areas on certain days of the week.

- **Mexico City**
- **Bogota**
- **Sao Paulo**
- **Manila**

Multiple side-effects limit their effectiveness.





Vehicle Quota

(just for info, not applied anywhere in Europe)



Photo by Rau

Case Study: “license plate auction” in Shanghai, Guangzhou, Beijing, Singapore and...

- Only a given number of vehicles can be registered per month

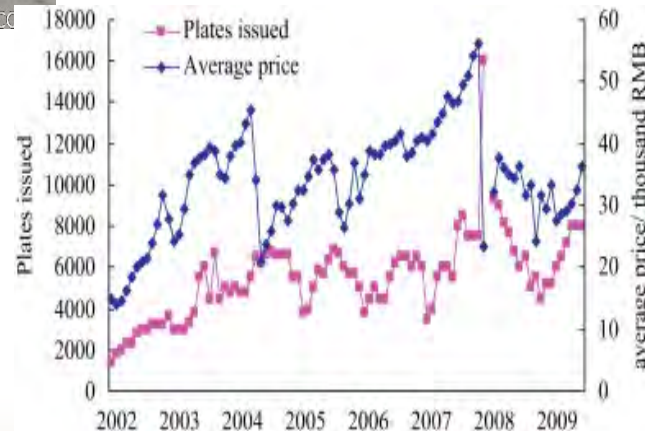


Vehicle License Quota/Auctioning



In Shanghai since 1998:

- Limit number of new vehicles: 7000 – 8000 per month
- Auction system, current price around \$ 10,000 US



City Income \$ 800 million
US per year

[Chinese License Plates Net, 2009](http://www.paizhao.com.cn/html/paizhaoxinwen/2009/0712/262.html) Chinese License Plates Net, 2009. Statistics of license plate auction in Shanghai.

<http://www.paizhao.com.cn/html/paizhaoxinwen/2009/0712/262.html>



Vehicle quotas in Singapore

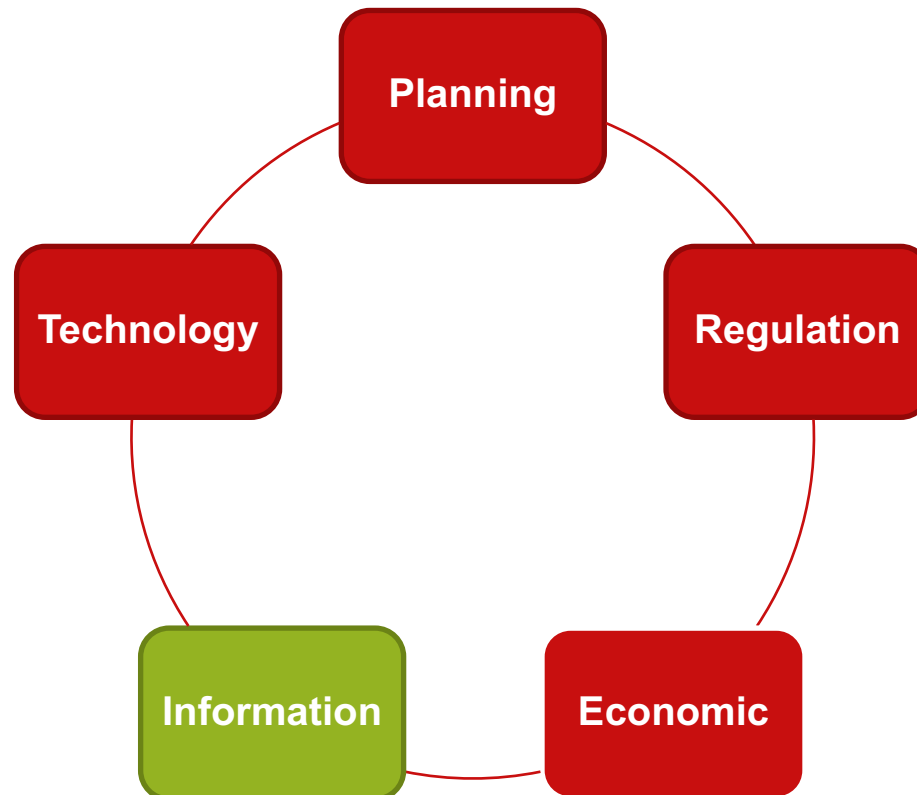
- Each car registered requires a **Certificate of Entitlement** (valid 10 years, extendable), with the COE price determined by auction
- Available quota for new vehicles depends on the targeted growth rate in vehicle population
- **Growth rate target** was 3% (prior to 2009), 1% (from 2012), 0.5% in Feb 2013 **and since Oct. 2017 at zero**)



Photos by Manfred Breithaupt and Carlos F. Pardo



Travel Demand Management: A Toolbox





Travel Demand Management: A Toolbox

Information

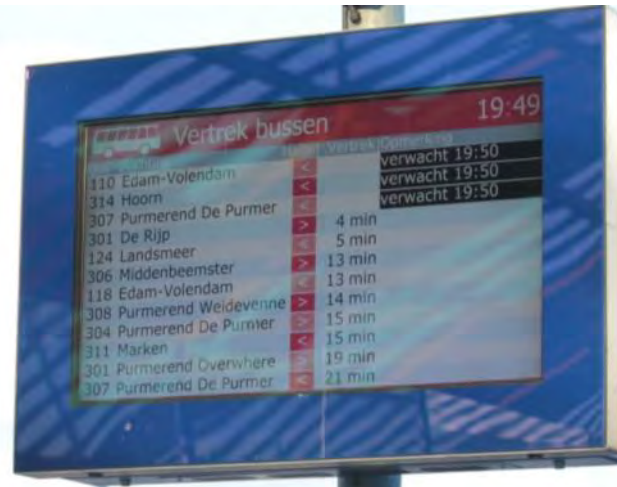
	What?	Example
Information Instruments	Enhance information on congestion	signs and data for navigation systems
	Enhance information on public transport	real time open data
	Driver Training	for bus drivers
	Public Awareness Campaigns	on personal benefits of active transport





The TDM „toolbox“

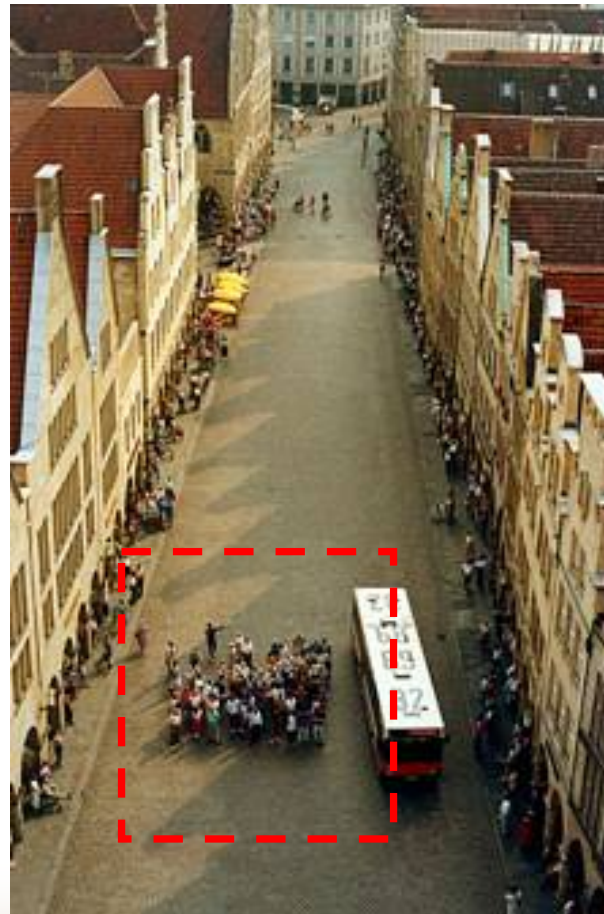
Technology	Promotion of Cleaner Technology	e.g. Green Procurement
	Modern technology for transport systems	ITS, passenger information, etc.



Only to recall.....



Traditional focus was given to road design: More infrastructure for cars, more space for motorized vehicles, unsustainable focus: **Question is, how to use limited road space best**





Space Required To Transport 48 People





The financing challenge

Gap between local needs and the available financial resources



Photos by Manfred Breithaupt, Santhosh Kodulka, Carlos F. Pardo, Santhosh Kodukula, Ko Sakamoto, Soul Development Institut

Photo by Manfred Breithaupt, Transmilenio



The real costs of transport – who is paying what?

- Time costs
- Vehicle and vehicle operating costs
- Public transport fares
- Private accident costs

Paid by transport users

- Infrastructure
- Accidents – health treatment, loss of family income, grief and suffer
- Air pollution, noise, vibration and associated health costs
- Climate Change
- Congestion & urban space consumption

Paid to a large extent by the society through general taxes

Financial Instruments can be integral part of TDM and...

are vital to create high performance, cost-effective transportation systems

- recognize that **travel demand** is not given, but is a **function of transportation policies, pricing, investments and choices**

They aim at

- **creating more revenues to set up a sustainable urban transport system**
- **Reduce car usage in city centers and shift demand to SUT modes**



Type of incentive or disincentive	Possible Economic Instruments	Selected Economic Measure(s)
<ul style="list-style-type: none"> • Discourage motorized vehicle ownership 	<ul style="list-style-type: none"> • Tax/charge on vehicle purchase/ownership/scrappage 	<ul style="list-style-type: none"> • Annual vehicle tax • Registration tax/charge • (Re)sales tax/charge • Scrappage tax/charge
	<ul style="list-style-type: none"> • Restricting the number of vehicles and/or new registrations 	<ul style="list-style-type: none"> • Auction schemes competitive bidding for new licenses • Licensing car ownership
<ul style="list-style-type: none"> • Discourage motorized vehicle use • Encourage switch to public or non-motorized transport 	<ul style="list-style-type: none"> • Tax/charge on vehicle use 	<ul style="list-style-type: none"> • Fuel tax • Pay-at-the-pump (sur)charges
	<ul style="list-style-type: none"> • Tax/charge on road and/or infrastructure use • Restricting access to urban centers or special areas 	<ul style="list-style-type: none"> • Parking fees • City tolls • Road pricing • Bridge tolls • Cordon pricing • Congestion pricing
	<ul style="list-style-type: none"> • Subsidies for public transport and/or multimodal transport (modal subsidies) 	<ul style="list-style-type: none"> • Subsidized public transport fees • Subsidies for public transport networks and operation • Tax-deductible public transport expenses • P%R schemes
<ul style="list-style-type: none"> • Encourage lower emission technology use and innovation 	<ul style="list-style-type: none"> • Taxes/charges on vehicle purchase/ownership/scrappage, • Taxes/charges on vehicle use, • Taxes/charges on road and/or infrastructure use 	<ul style="list-style-type: none"> • Tax differentiations based on emissions • Carbon/energy taxes • Emission fees • Emission-based surcharges • Subsidies, tax rebates for low emission vehicles/technologies



LOCAL Instruments

- Parking Charges
- License plate auction, vehicle quota
- Road Pricing/Congestion Charging
- Employer contributions
- Environmental Zones and related charging
- Land development / land value taxes
- Public Private Partnerships
- Advertising



Parking Charges

Characteristics:

- Strength in efficiency and equity
- Steady revenue stream
- Fostering of public transport use





Parking is a key issue in the push-and-pull approach towards better urban transport with fewer cars and more cycling, walking, and transit.

Parking control and pricing is the most commonly applied demand management measure.

Photo by Karl Fjellstrom

Singapore parking prices (Jan. 2002)



Parking? Why Manage it?

Increasing emissions of green house gases and noise caused by parking-space-search-traffic:

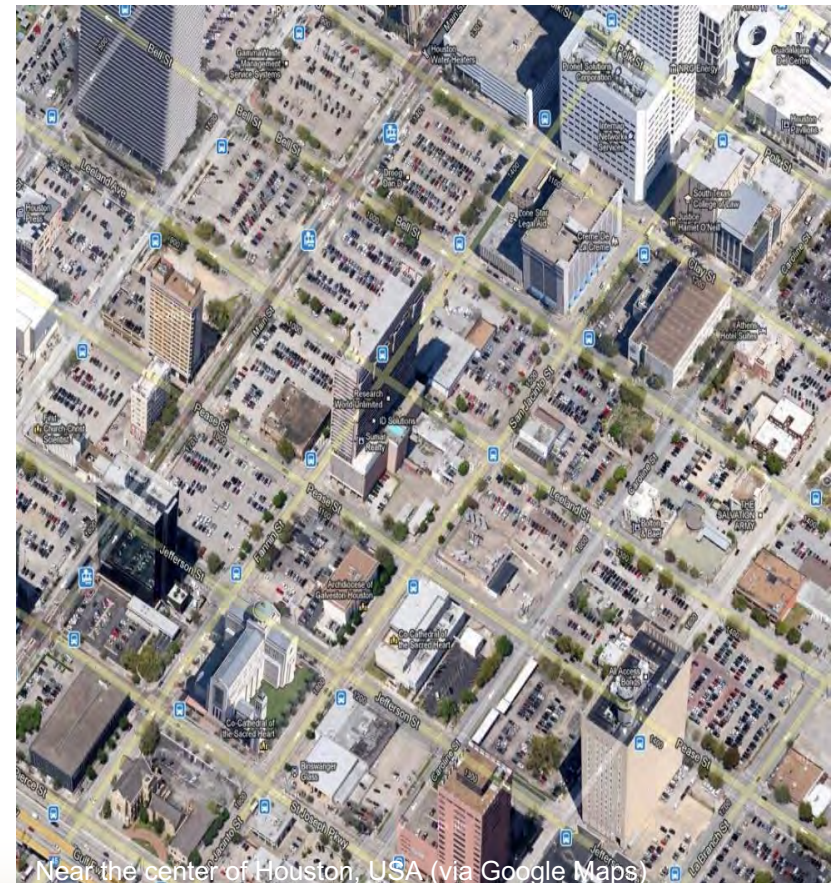
Cruising for curb parking generates about 30% of the traffic in central business districts



Something is wrong with parking



Photo: Paul Barter



Near the center of Houston, USA (via Google Maps)



Source: Brasilia, Manfred Breithaupt



Poorly-managed on-street parking harms everyone



Source: Breithaupt, GIZ Photo DVD



Photo by Karl Fjellstrom



Source: Lloyd Wright

Source: Breithaupt, GIZ Photo DVD



Considerations:

- Off-street parking should be cheaper than on-street parking
- Parking fees should be higher than a single bus fare
- Implementation of workplace parking levies

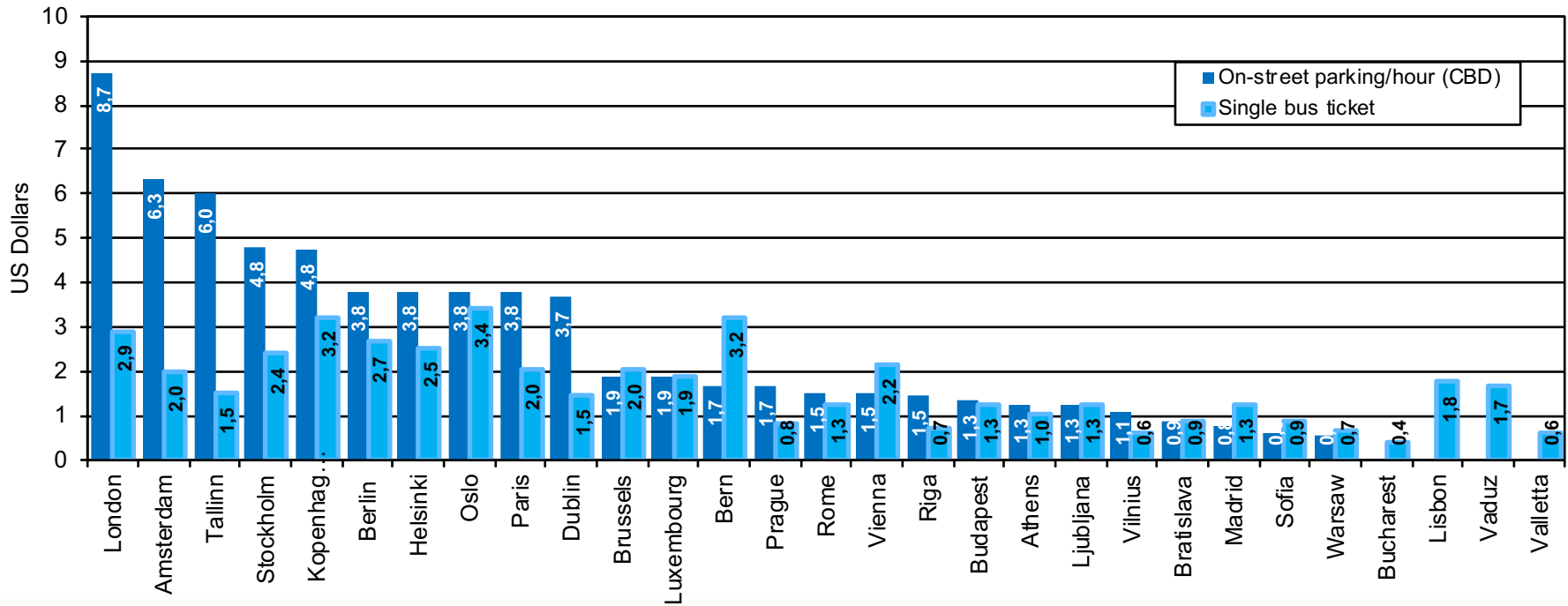


Photo by Manfred Breithaupt 2006 - Jakarta



Comparison of parking fees and single bus fares

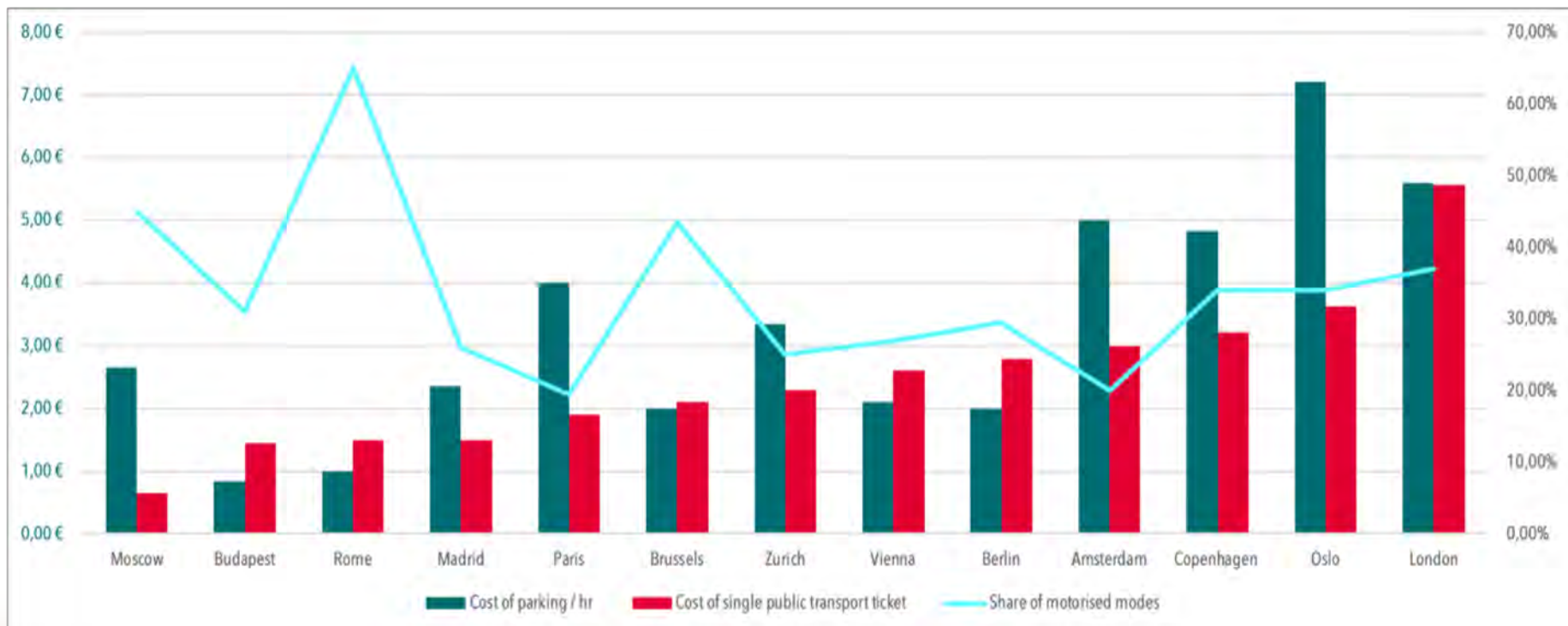
“Parking fees should be higher than a single bus fare”





Comparison of parking fees and single bus fares

“Parking fees should be higher than a single bus fare”



Source: Kodukula et. al, 2018

Parking in Lisbon



The red zone: 1,6 Euro per hour, linear tariff

The yellow zone: 1,2 Euro per hour

The green zone: 0,8 Euro per hour

Parking prices are supposed to be increased, zones (especially the green zone) be expanded

Example: London's parking maximums



How much parking does London's "Gherkin" building have?

None for private cars! Single basement for essential parking (bicycles, people with disabilities, loading/unloading). This also often the case in Hongkong.

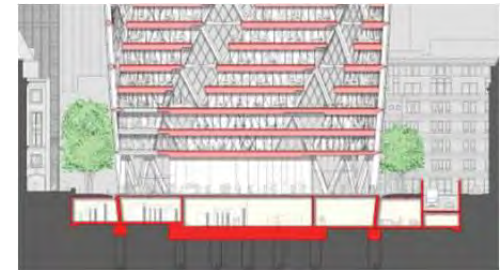
Offices in Canary wharf: MAXIMUM of 1 space per 1100 m²
(and zero minimum except spaces for people with disabilities)



Image via Wikimedia Commons user BaldBoris



Image by Wikimedia Commons user Dave Pape



Slide by Paul Barter, Reimventing Parking

Comprehensive Parking Management

Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

- Effectively manage available space in urban areas
- Especially in city centres parking should never be for free!
- Clear rules and communication of parking scheme and alternative travel options as part of urban mobility management



City of Amsterdam earns

**150 Mill. € annually through parking fees
used for public transport, walking, cycling**



Road Pricing/Congestion Charging

Direct charging for using public road space

Types:

- Cordon pricing
- Time-independent tolling
- Electronic road pricing

Characteristics:

- Directly charges use of scarce public space
- Flexibility
- Leads to reduction of congestion, pollution, noise, traffic accidents
- political acceptability often difficult



Photo by Carlos F. Pardo

Considerations:

- Revenues should be used for public transport improvements to foster a modal shift and increase of public and political acceptability



Income from Congestion Charge

c) Congestion charging

	Group and Corporation 2017 £m	Group and Corporation 2016 £m
Income	249.6	258.4
Toll facilities and traffic management	(74.8)	(84.4)
	174.8	174.0
Administration, support services and depreciation	(10.9)	(5.7)
Net income from Congestion Charging	163.9	168.3

The net revenues from the Congestion Charge are spent on improving transport in line with the Mayor's Transport Strategy.

Case Study: Particulate matter emission - Emission zones in Germany

- An emission zone:
 - is an area from which highly polluting motor vehicles are banned
 - these will be excluded from the city centre in three stages
 - to enter the Zone, vehicles must display a permit disc ('Vignette')

<http://www.zeit.de/online/2009/22/auto-avus-15>

<http://www.flickr.com/photos/vitaminf/3558748791/>



Emission Free Zones – Milan's EcoPass



- It is a scheme of emissions-based charges for the entry into Milan's Limited Traffic Zone (ZTL), which is controlled by 43 gates
- Cameras record vehicle licence plate numbers and pollution class, and debit the card holder's account
- Operating Hours: Monday – Friday 7.30 a.m. to 7.30 p.m.
- **Tollage up to EUR 10 (US\$12.52) per day**, charges are based on the Euro emissions class of the vehicle, the fuel type, the availability of particulate filters, and the type of transport (personal or goods)
- There is an additional offer of a multiple access card (50 days of access, not consecutive, with a reduced price) and a subscription card for residents of the ZTL



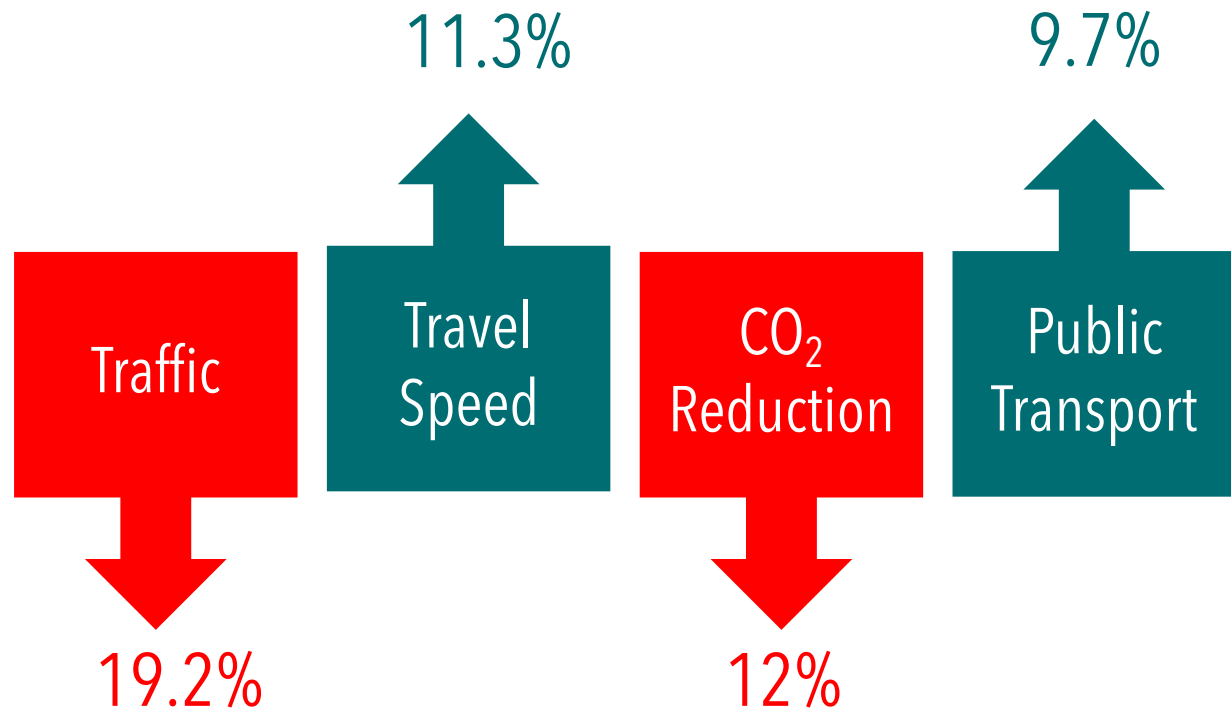
Milan EcoPass Costs



EcoPass Class	Criteria	Charges			
		Daily	Multiple, first 50 days	Multiple, successive 50 days	Annual resident
Class I	Alternative fuel (e.g. LPG, CNG, electric)	Free	Free	Free	Free
Class II	Gasoline cars and trucks, Euro 3 and later; Diesel cars and trucks, Euro 4 and later	Free	Free	Free	Free
Class III	Gasoline cars and trucks, Euro 1,2	€2 (\$2.50)	€50 (\$62.60)	€60 (\$75.12)	€50 (\$62.60)
Class IV	Gasoline cars and trucks, Euro 0; Diesel cars, Euro 1, 2, 3; Diesel trucks, Euro 3; Diesel Bus Euro 4, 5	€5 (\$6.26)	€125 (\$156.50)	€150 (\$187.80)	€125 (\$156.50)
Class V	Diesel cars, Euro 0; Diesel trucks, Euro 0, 1, 2; Diesel Bus, Euro 0, 1, 2, 3	€10 (\$12.52)	€250 (\$313)	€300 (\$375.60)	€250 (\$313)



EcoPass impacts



Employer Contributions

Financial Support of local
public transport by employer's
and by businesses

Case Study: Brazilian Vale-Transporte

- In cities employers are required by law to buy and provide public transport tickets
- Thereby the employers can withhold 6% of salaries to cover these costs



Study: Versement

The **French Versement Transport** (VT) is a tax levied on employees' salaries to pay for improvements in public transport in the local area. In return, employees receive subsidies or free travel on public transport

Organisations with more than 9 employees in a district with more than 10,000 inhabitants are legally required to pay the VT

The rate currently ranges from 0.55% to 1.72% of the total wages of each eligible company

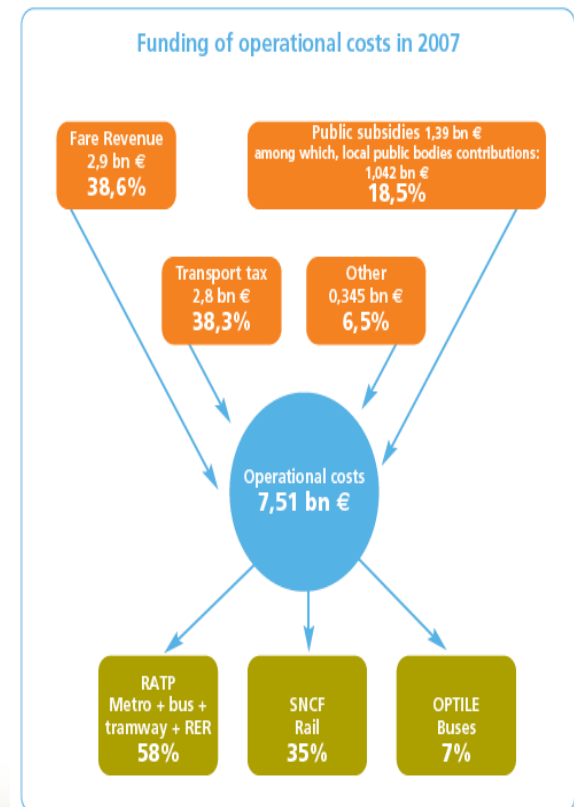
Revenues have been used to fund small- and large-scale infrastructure projects across France

The VT has played a major part in funding the upgrading and expansion of the Paris Metro

Sources: <http://www.stif.info/information-communication/documents-langues-etrangeres/english/documents-anglais-1241.html>
<http://www.indigoguide.com/france/paris-metro.htm>



Public Transport in Ile-de-France





Land Development and Land Value Taxation

- Financing mechanism where land owners, directly benefiting from new public infrastructure, have to
- Tax payers are not penalised
- Businesses located near the new infrastructure can increase their trades and profits





Successful land value capture projects

1. The best-known project that used land value capture mechanisms to pay for itself is the **Hong Kong Mass Transit Railway**. The railway is now one of the major players in the property market in Hong Kong
2. China, uses the profits from new housing projects along its urban railway lines to pay for the construction costs of new lines
3. Further rail developments in London, transport infrastructure in Danmark, decade long experiences in Japan around PT hubs and stations, same in Singapore. This trend is gaining speed worldwide.

Advertising



Photo by Geraldine Holland

- Efficient and highly accepted instrument
- Can be used to bridge shortfalls in financing
- Little benefit towards sustainable transport

Case Study:
Advertising on bus
stops in London



National Instruments

- **Fuel** taxes and **surcharges**
- Vehicle related taxes and charges, including auctioning quotas



Contraproductive counter measures, such as funding for private transport through cheap loans for buying vehicles, too low fuel taxes or even fuel subsidies, need to be avoided!



Fuel Taxes and Surcharges

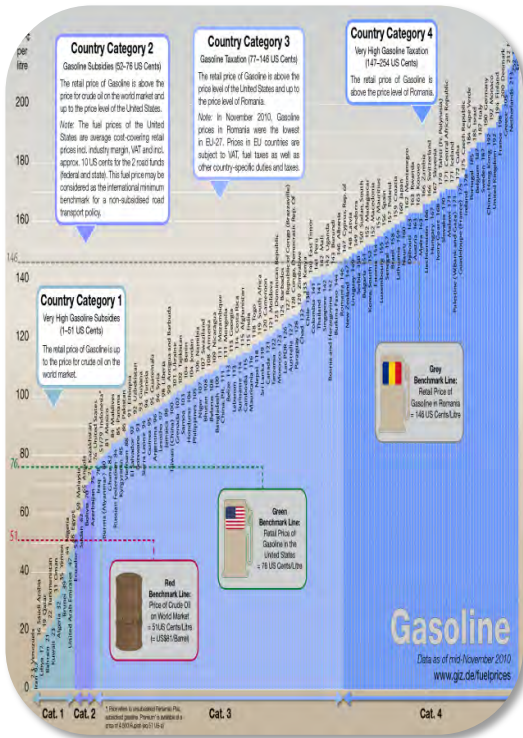
Characteristics:

- Simple, cost-efficient and reliable way of charging
- Most appropriate way to focus on the user-pay-principle
- Political acceptability sometimes problematic

On a global level between 80 to 90% of all revenues derived from the transport sector are being raised from fuel taxes



Photo by Varano

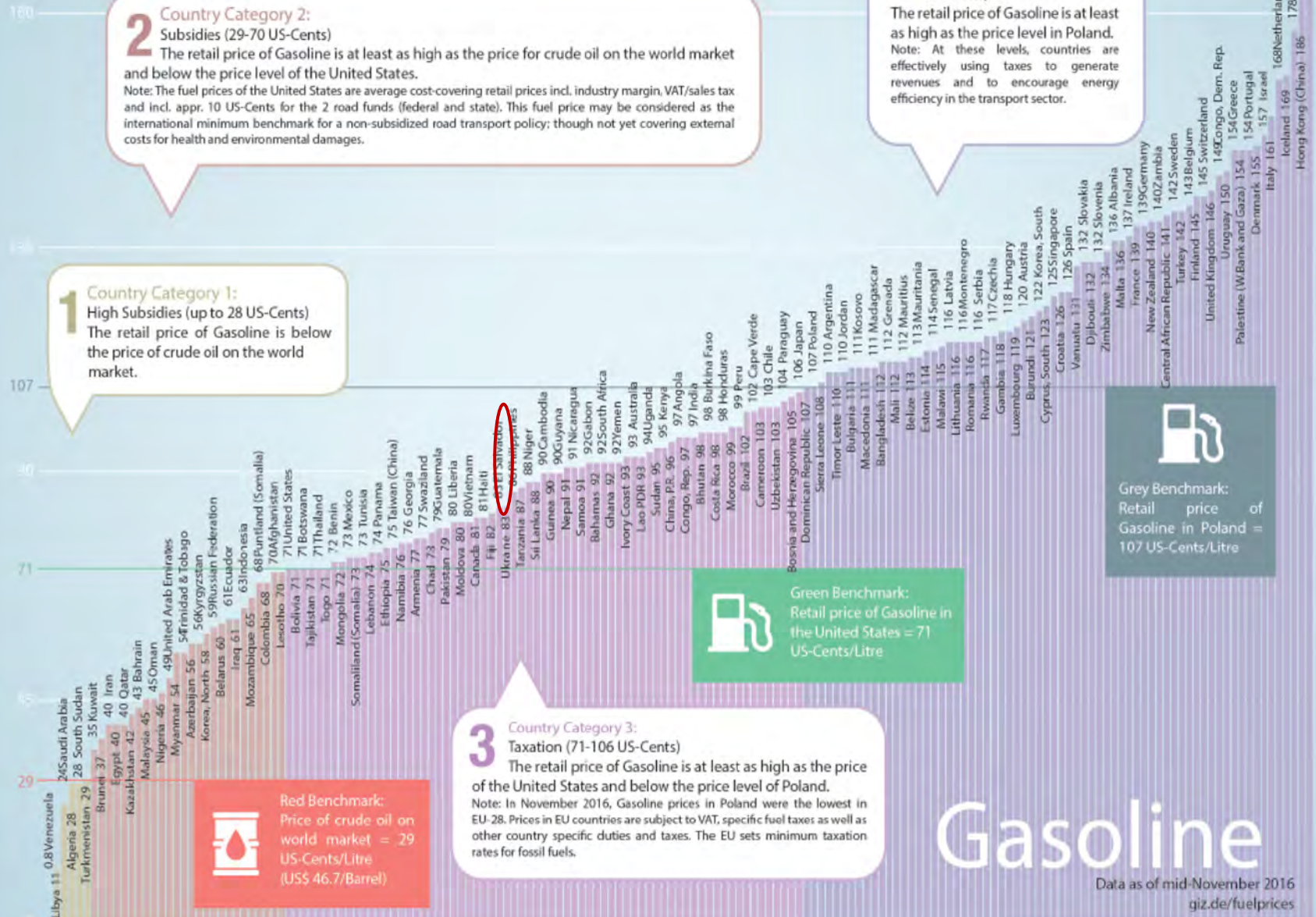


International Fuel Prices (November 2016)

On behalf of

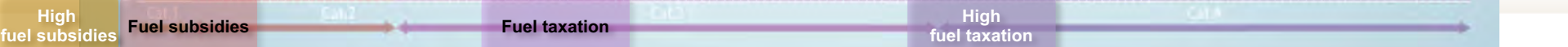


Federal Ministry
for Economic Cooperation
and Development

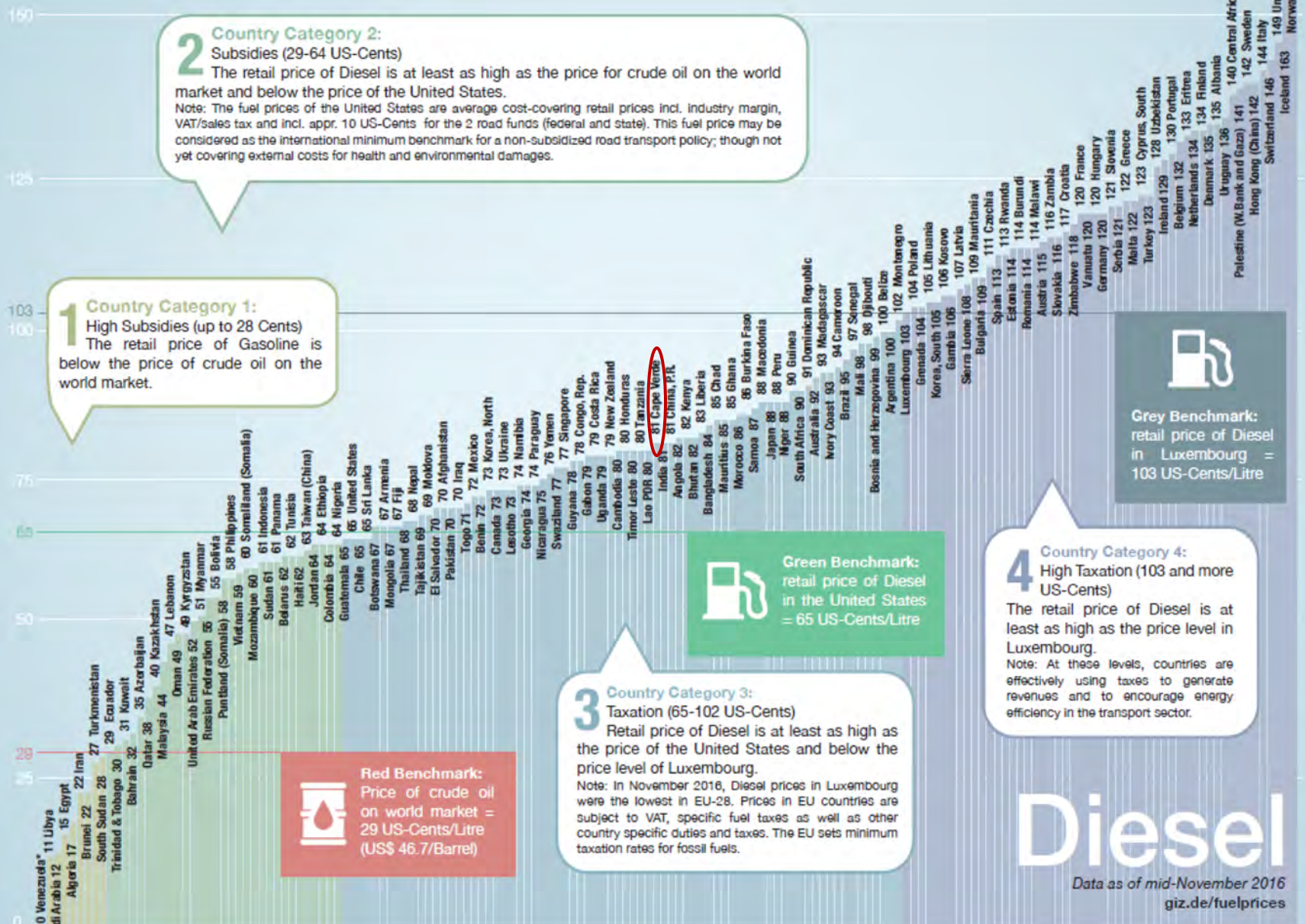


Gasoline

Data as of mid-November 2016
giz.de/fuelprices



US-€
per litre



2 Country Category 2:
Subsidies (29-64 US-Cents)
The retail price of Diesel is at least as high as the price for crude oil on the world market and below the price of the United States.
Note: The fuel prices of the United States are average cost-covering retail prices incl. industry margin, VAT/sales tax and incl. appr. 10 US-Cents for the 2 road funds (federal and state). This fuel price may be considered as the international minimum benchmark for a non-subsidized road transport policy; though not yet covering external costs for health and environmental damages.

1 Country Category 1:
High Subsidies (up to 28 Cents)
The retail price of Gasoline is below the price of crude oil on the world market.

Red Benchmark:
Price of crude oil on world market = 29 US-Cents/Litre (US\$ 46.7/Barrel)

Green Benchmark:
retail price of Diesel in the United States = 65 US-Cents/Litre

Grey Benchmark:
retail price of Diesel in Luxembourg = 103 US-Cents/Litre

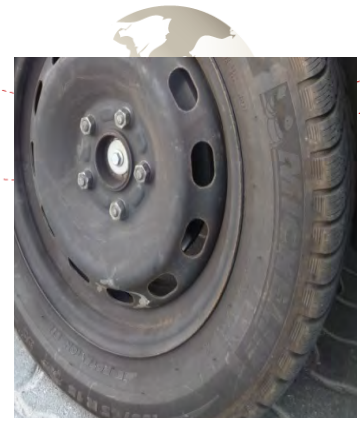
3 Country Category 3:
Taxation (65-102 US-Cents)
Retail price of Diesel is at least as high as the price of the United States and below the price level of Luxembourg.
Note: In November 2016, Diesel prices in Luxembourg were the lowest in EU-28. Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes. The EU sets minimum taxation rates for fossil fuels.

4 Country Category 4:
High Taxation (103 and more US-Cents)
The retail price of Diesel is at least as high as the price level in Luxembourg.
Note: At these levels, countries are effectively using taxes to generate revenues and to encourage energy efficiency in the transport sector.

Diesel
Data as of mid-November 2016
giz.de/fuelprices



...Urban Sprawl with high travel distances



...Lack of innovation in car industry



...Low quality fuels



Low or even subsidized fuel prices encourage...



...Inefficient vehicles



...under-recovering of refineries with fuel shortages



...Excessive car use



...Efficient operation of traffic



...Walking and use of busses, trams, bicycles



...Dense and transit oriented development



High fuel prices encourage...



...Investment in high quality fuels



...Innovation in car industry



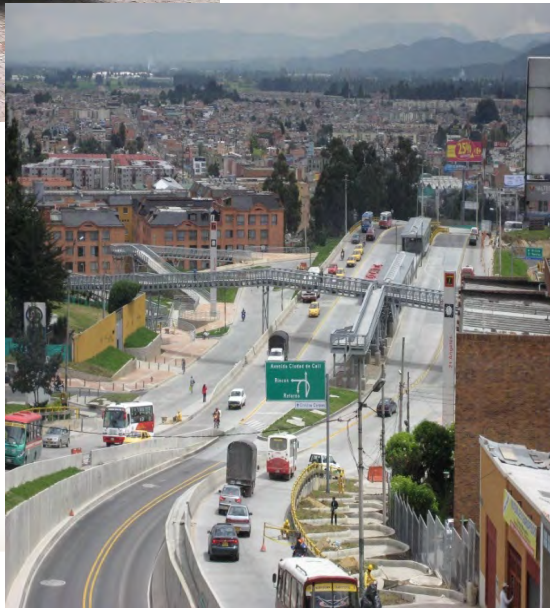
Some fuel taxes and surcharges are local!

Case Study: Colombia URBAN fuel surcharge

- Colombian cities have a 25% surcharge on gasoline sales
- Half of Bogotá's surcharge revenues are for Bogotá's TransMilenio System
- Private vehicle owners finance one third of mass transport system

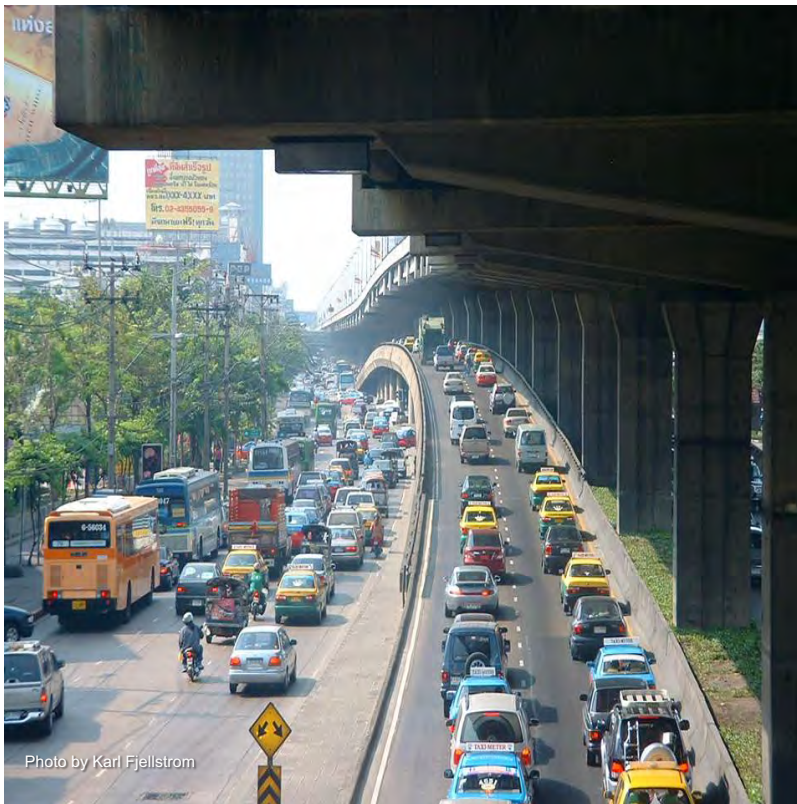


Photos by TransMilenio and Varano





Tax or charge on car purchase and/or ownership (Vehicle taxes)



Characteristics:

- Taxes are flexible, can be varied depending on engine size, **carbon emissions, environmental standards**, weight or number of axles
- Taxes are able to reflect externalities
 - Generally surprisingly high political acceptability (up to a point)
 - Usually set nationally



Vehicle-Related Taxes and Charges -EU Countries

- 20 out of the EU's 27 member states apply CO₂ – based car taxation
- 15 countries also offer cash incentives for buying electric vehicles

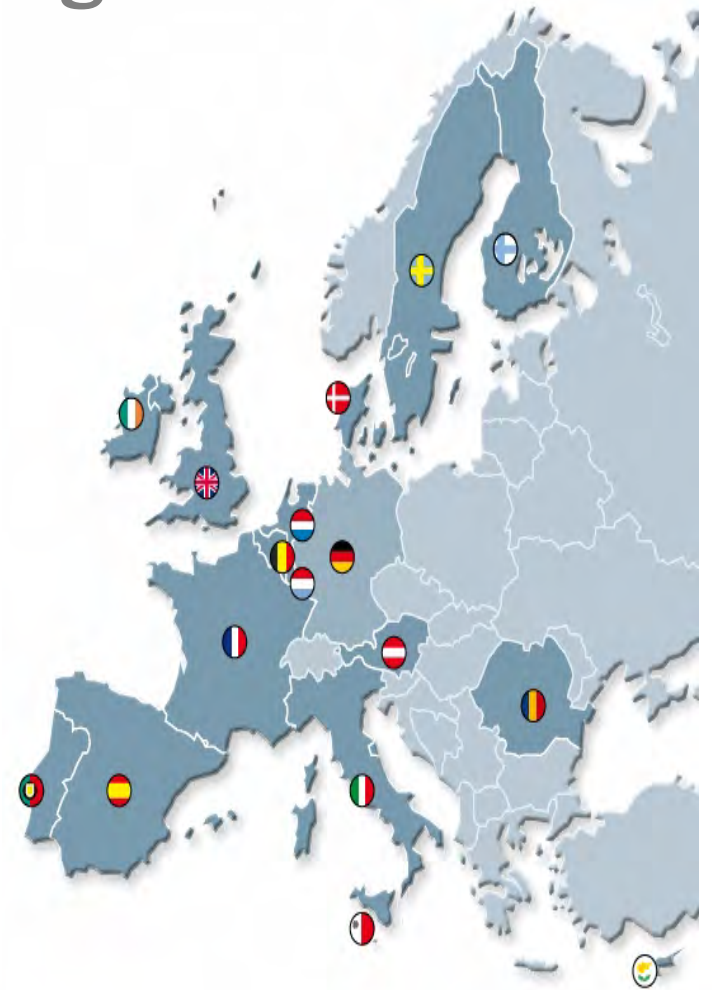





Photo by Manfred Breithaupt

Case Study France 
 Environmentally-oriented bonus-malus system for new cars

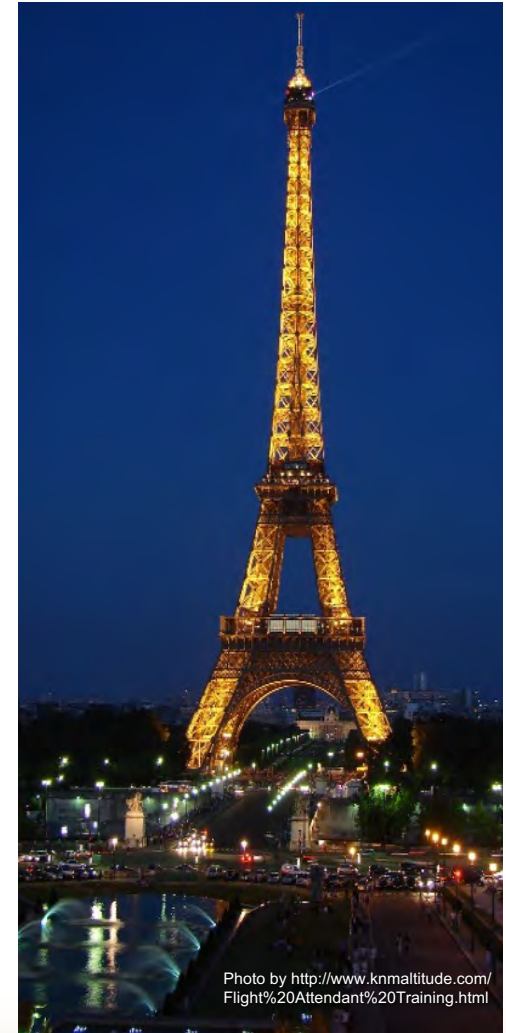


Photo by <http://www.knmaltitude.com/Flight%20Attendant%20Training.html>

Vehicle Emission	< 20g CO ₂ /km	21-60g CO ₂ /km	61-126g CO ₂ /km	127-190g CO ₂ /km	> 191g CO ₂ /km
Bonus	Max. €6.300	Max. €4.000	-	-	-
Malus	-	-	-	€50 - ca. €10.000	€10.000

Data from 2017: <https://www.ecartegrise.fr/prix-carte-grise/taxes/ecotaxe-bonus-malus-ecologique.html>



From theory to practice: Examples of TDM measures applied



Promoting cycling: Paris



Improving Public Transport System



Integration

Need

- connect easily between different public transport vehicles and between modes

Benefits:

- short waiting times
- reduced travel time
- greater flexibility and accessibility
- easier trip planning for passengers
- expands freedom and range of destinations offered by public transport





Promoting Public Space





Main Components of Sustainable Transport

- Public Transport with priority over all other modes on the road
- Non-motorised transport
- Creating/conserving public space
- PT Integration
- TDM measures



Do you see these factors here?



International Experiences: Summary

Benefits of TDM approaches

- Often achievable at low cost
- High impact: reduction of pollution and travel times, accidents; less environmental costs
- More compact cities, socially integrated
- Development of local commerce and industry



Vienna



Zurich



Amsterdam



Conclusion

- ✓ Extensive **toolbox available**
- ✓ TDM with **high impact...**
 - ✓ reduction of pollution,
travel times and
accidents
- ✓ ...often achievable at **low
cost**



Source: Carlos Pardo



**"A developed country is not a place where the poor have cars.
It's where the rich use public transportation." - Enrique
Peñalosa**



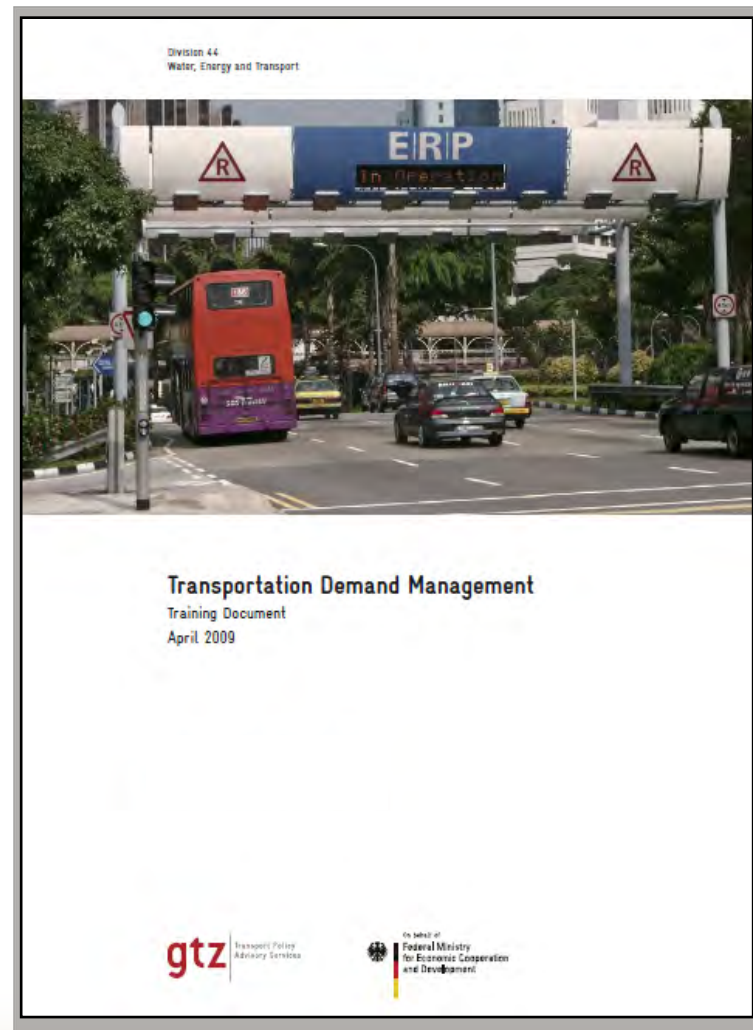


Further reading

„Transportation Demand Management“

118 pages, full colour
document, in many
languages

Free download on
www.sutp.org





Financing Sustainable Urban Transport



The Contribution of **GIZ**



You can download
the module from
www.sutp.org





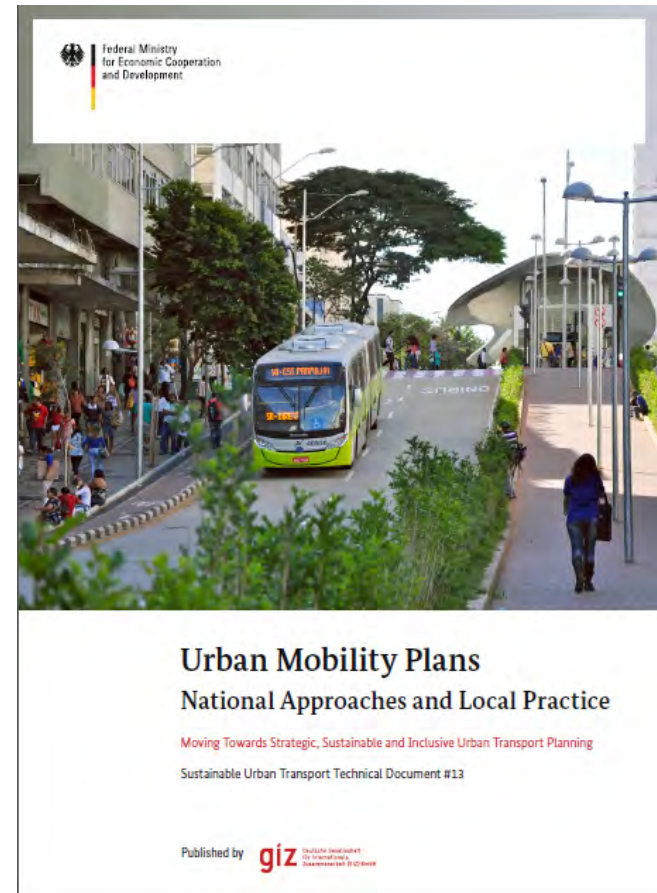
Urban Mobility Plans: National Approaches and Local Practice

Technical Document # 13

- In cooperation with



- Available at www.sutp.org in English, Portuguese, Indonesian and Spanish language





Share of all kilometres travelled by:

WALKING + CYCLING + PUBLIC TRANSPORT

Paris	87 %	Vienna	71 %
Barcelona	83 %	Valencia	67 %
Amsterdam	79 %	Berlin	60 %
Helsinki	75 %	Seville	60 %
Stockholm	75 %	Turin	59 %
Madrid	74 %	Stuttgart	49 %
Copenhagen	72 %		

people first.....



aiz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



564

ENTRADA

carris 

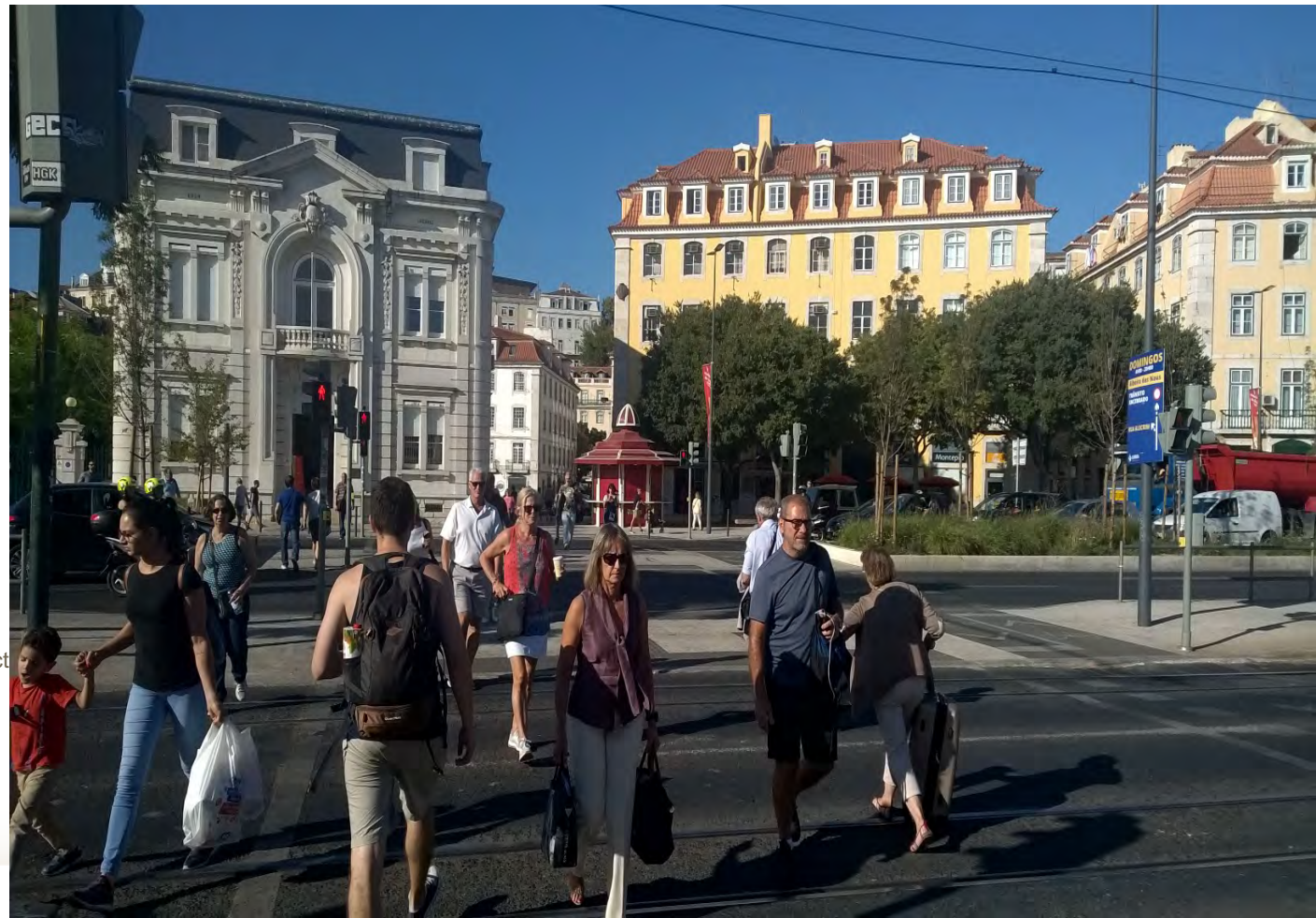
 **Teleperformance**
each interaction matters






Manfred Breithaupt
manfred.breithaupt@gmail.com

www.sutp.org



 www.sutp.org; www.capsut.org

 sustainableurbantransportproject

 _SUTP

Let's see how PT is subsidized in other Cities

- Hongkong: cost covering PT system as a whole
- Singapore: at least all the operational costs are covered
- Frankfurt: covers operations costs of bus services (overall cost covering around 65-70%), after they were completely tendered out (as I see from the figures of AML bus services here also cover their operational costs, not rail operations, not ferry and not Metro Lisboa)
- BRT systems, with high occupancy rates can and do cover costs since they achieve higher average speeds, higher daily mileage and hence much greater passenger loads and revenues
- Tendering out of PT services also leads in general to lower requirements for subsidies



Farebox recovery ratio of some cities

• Hong Kong	124%	2016
• Tokyo Metro	119%	2016
• Taipei Metro	100%	2015
• Singapore SMRT	101%	2017
• Amsterdam	88%	2018
• Berlin	65%	2010
• London Underground	107%	2016
• Paris STIF	30%	2014
• Madrid	41%	2007
• Rome	36%	2007
• Munich	70%	2010
• Zurich	60%	2014
• Boston	30%	2016
• Dallas	14%	2016
• New York City MTA	47%	2016
• Toronto	70%	2016
• Auckland	44%	2013
• Sydney	27%	2014

