

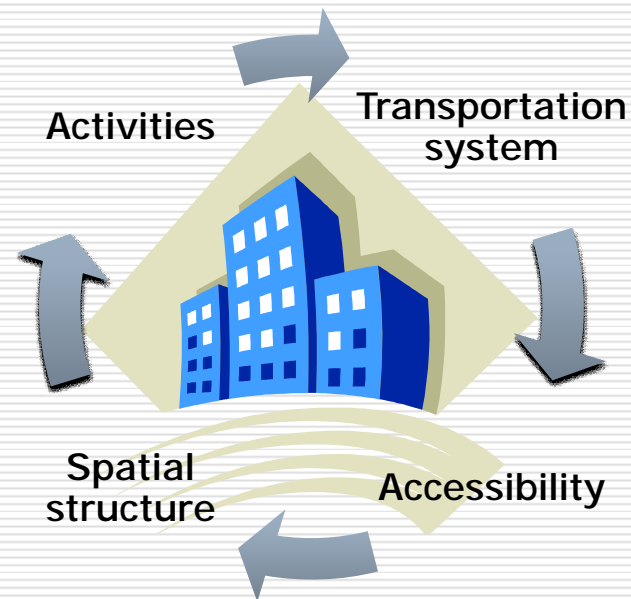


Introduction Session A4

Intelligent Transport for Metropolises: Interlinking transportation, settlement planning and user

Megacities Conference
11.10.-13.11.2010 Essen

Dr.-Ing. Wulf-Holger Arndt



Technical University of Berlin
Center for Technology and Society
Area Mobility and Space



Session Schedule

- **Dr.-Ing. Wulf-Holger Arndt**, Innovation Center Habitat Design, Technische Universität Berlin, Germany
Introduction and moderation
- n **Prof. Dr. Fabio Duarte**, Director, Graduate Programme on Urban Management, Pontifical Catholic University of Paraná, Brasil
Urban and Regional Planning and Urban Mobility for Climate Protection, the Curitiba Case
- n **Ms Tanja Schäfer**, Project Manager, PTV - Planung Transport Verkehr AG, Germany
Adaptation of Transport Infrastructure in Hyderabad to Climate Change
- n **Ms Carolin Höhnke**, Department of Urban and Environmental Sociology, Helmholtz Centre for Environmental Research (UFZ), Germany
With or Without the City – Planning and Implementation of Public Transport Reforms in Santiago de Chile and Bogotá
- **Prof. Dr. Günter Emberger**, Center for Transport Planning and Traffic Engineering, University of Technology Vienna, Austria
Instigator





Topic

What are future-proof solutions?

How can influenced traffic behaviour respectively mobility routines and redesigned settlement structures help to develop more sustainable urban transportation systems?

Under which circumstances can measures and solutions be transferred to other cities?

Under this key questions the following contributions will be presented:

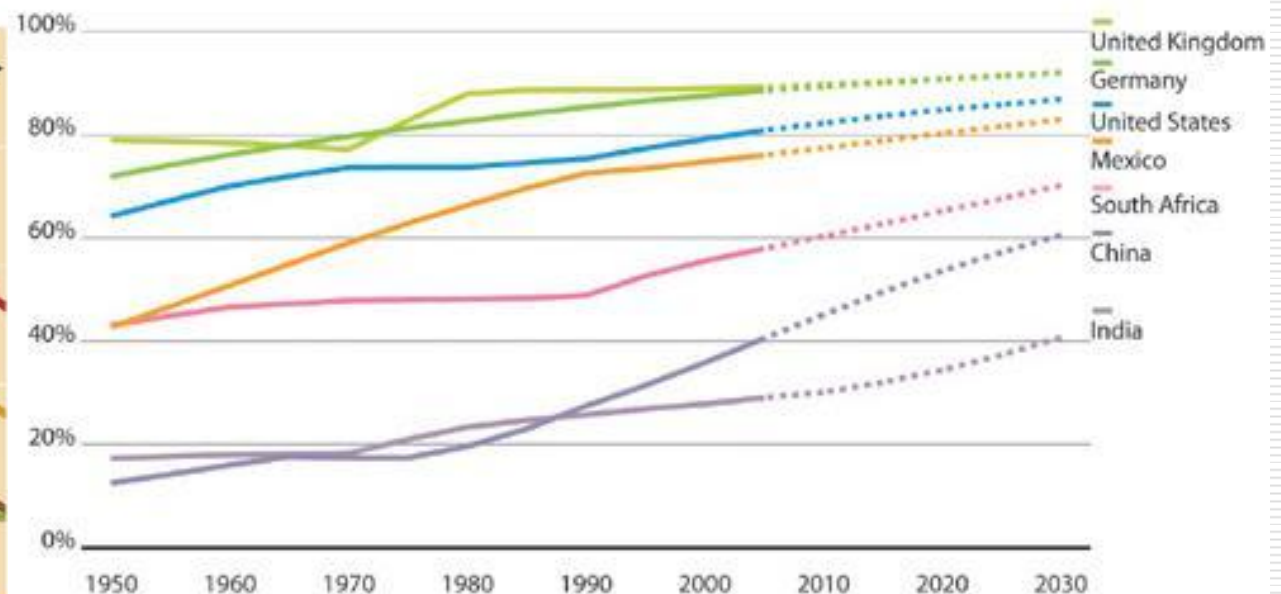
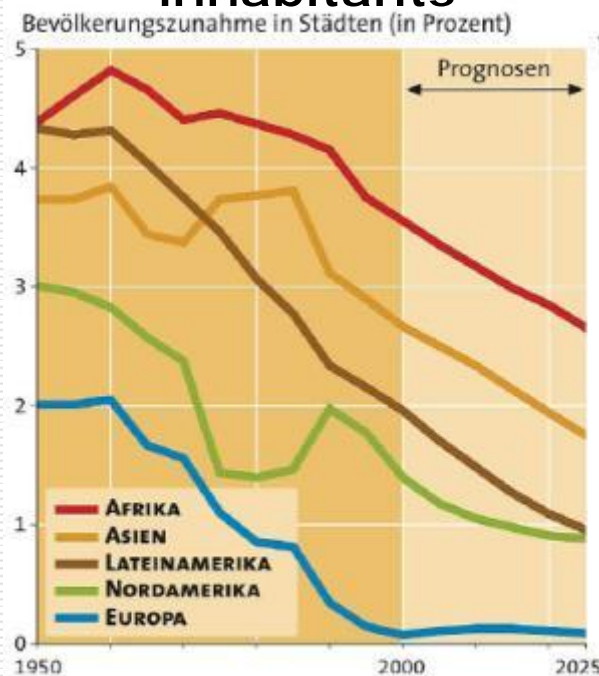
- Early integration of climate change aspect in the conjoint settlement and transportation planning
- Integrated transport concepts for a climate adapted transportation system: The mixture of soft and hard policies, push and pull measures
- Participation and social inclusion for climate adapted transportation systems
- Planning measures to reduce traffic and support eco-mobility
- Traffic model as a support for public transport





Urbanisation

- Over 50% of world civilisation is living in cities
- Increasing in all countries
- Even in countries with stagnation and decreasing number of inhabitants

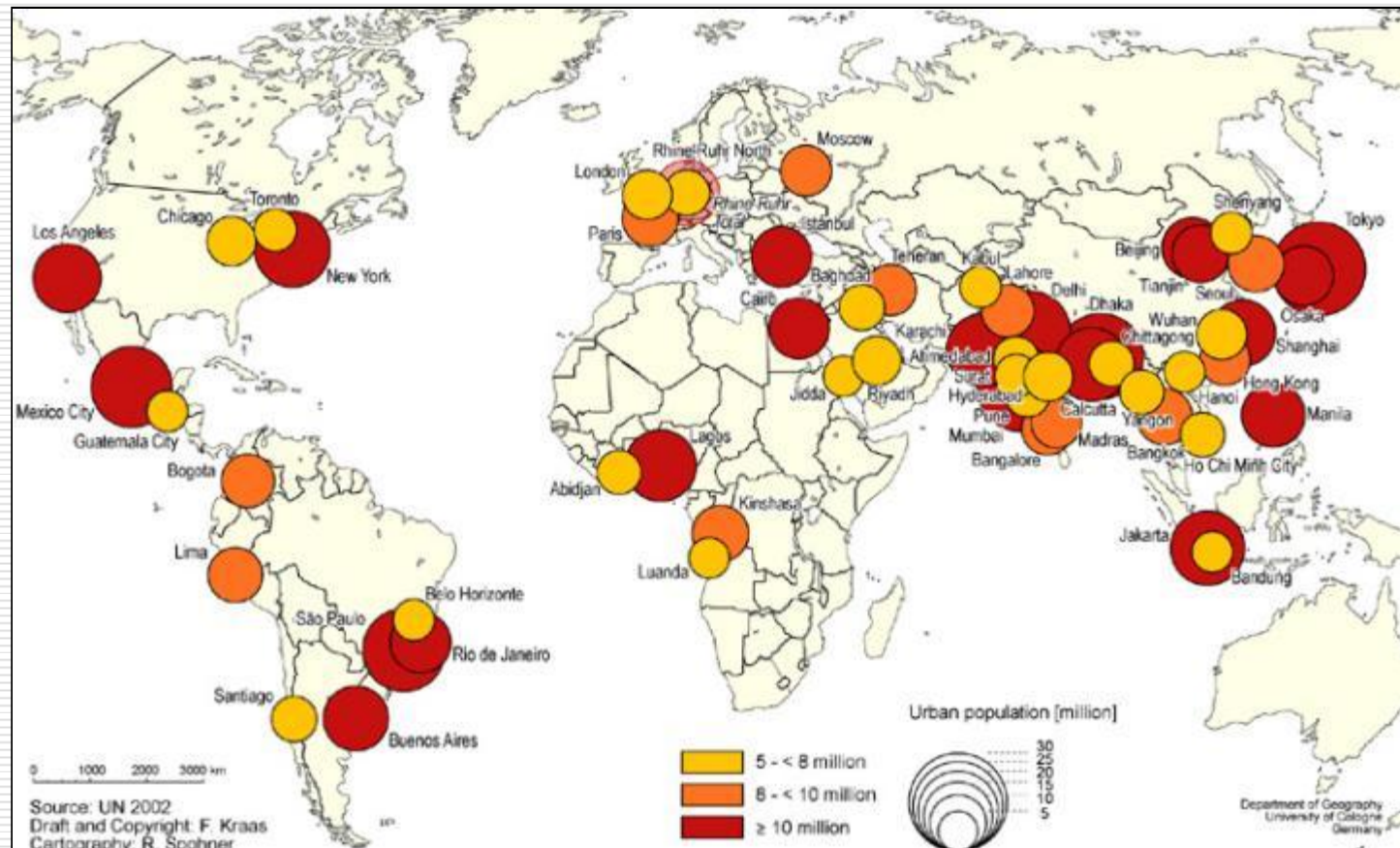


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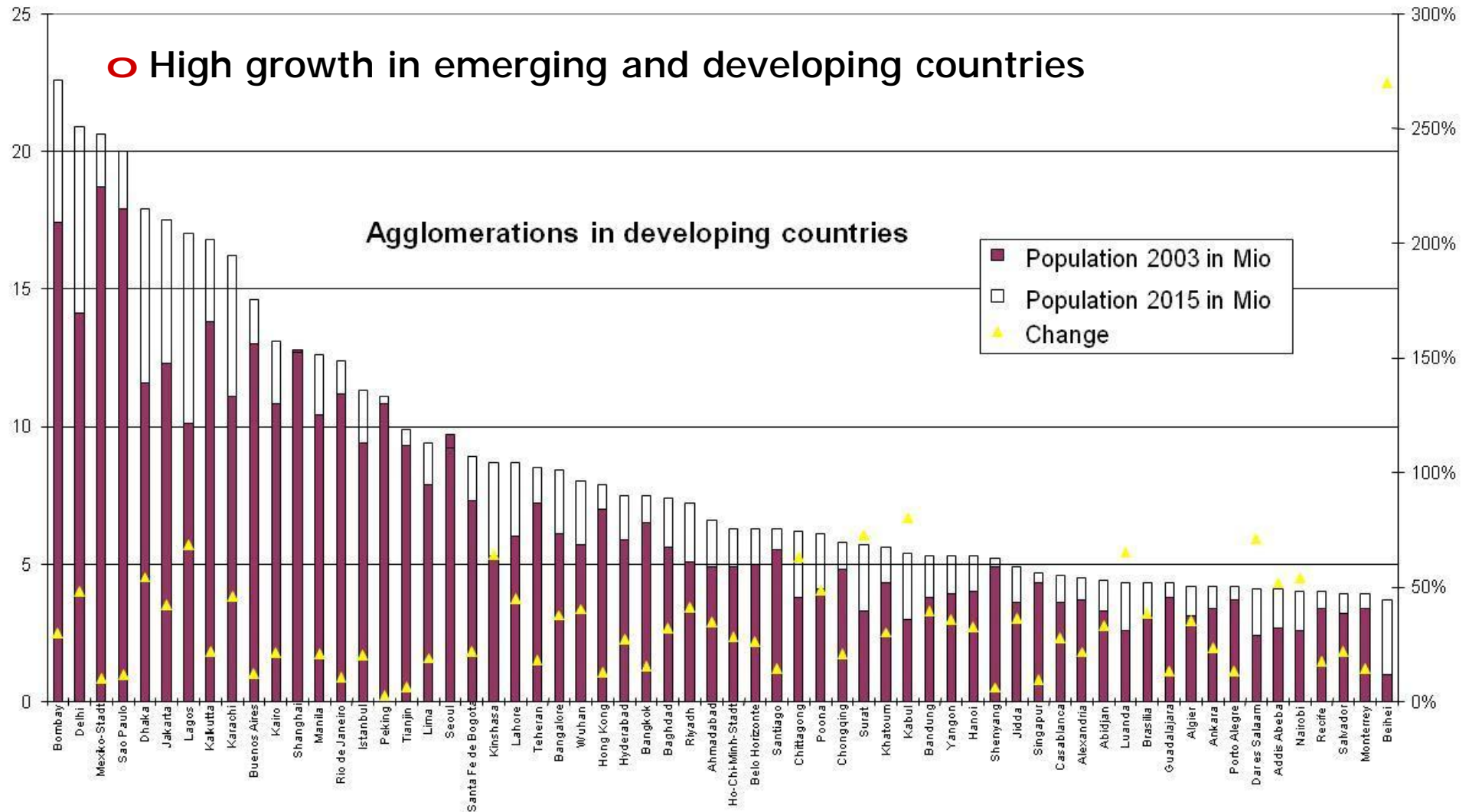
Megacities 2000 - 2015

- 2000
- 2015





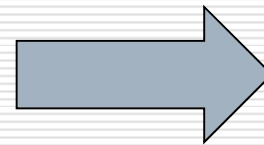
Metropolises growth



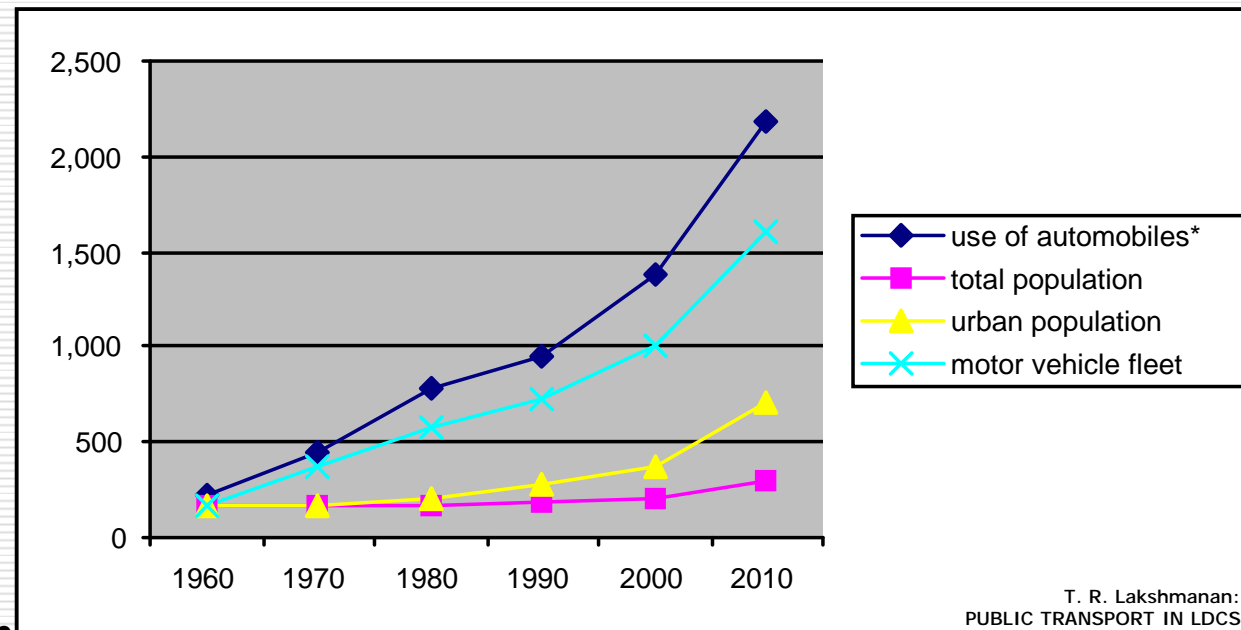


Growth of population and traffic

- Growth of population
- Population density
- Growth of income
- Production methods/Trade relations
- ...

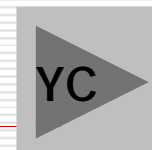
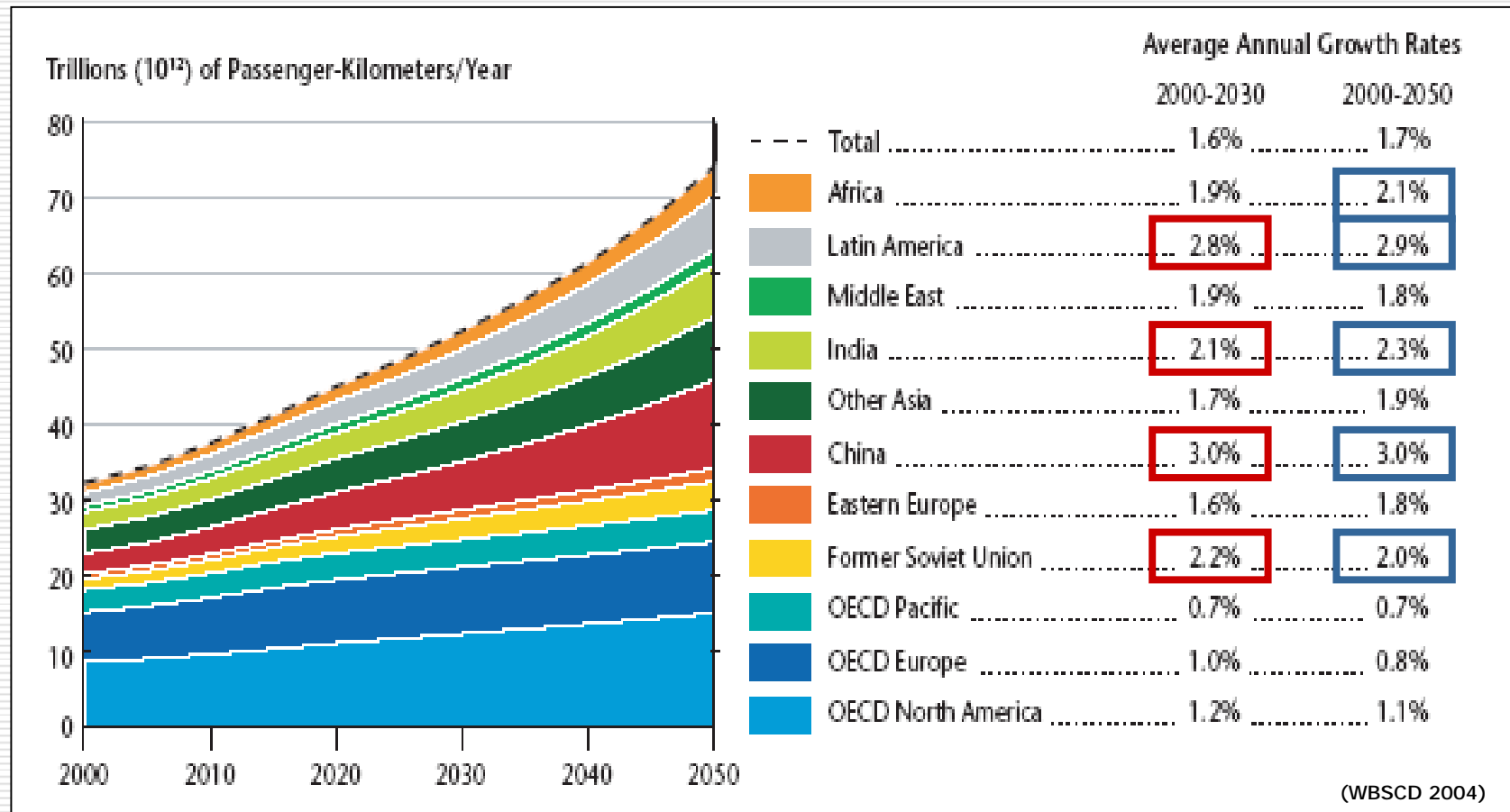


Traffic growth





Traffic growth world wide





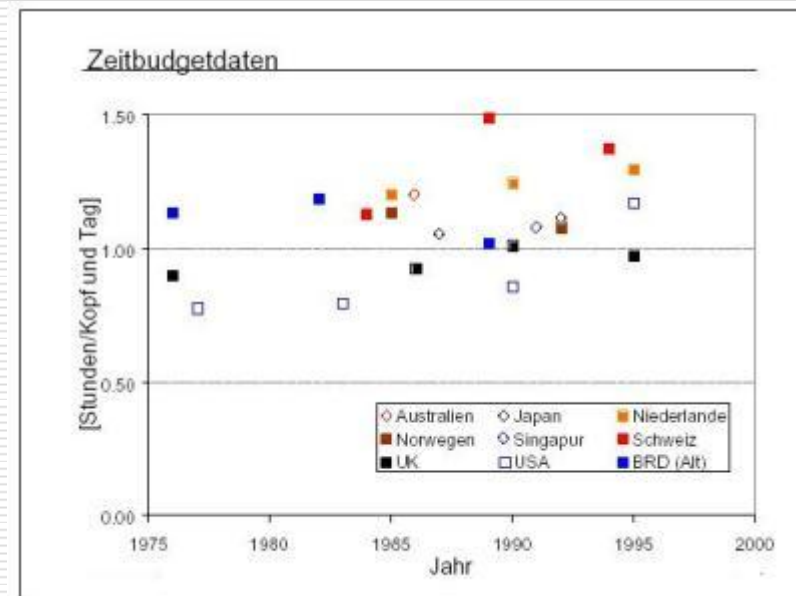
Land use and transport

- strong correlation between increasing land use and traffic behaviour
- Klaus Töpfer, United Nations Environment Programme (UNEP), said: "Tell me your spatial structure and I will say how high the gas price was in the past."
- assumption that distance (s) is constant was incorrect
- constant at long term: time (t)
- relative constantly travel budget,
Germany: ~ 85 min/day

Wrong interpretation of the relation:

$$\hat{a} \quad v = \frac{s}{t} \quad \hat{a} \neq \text{const.}$$

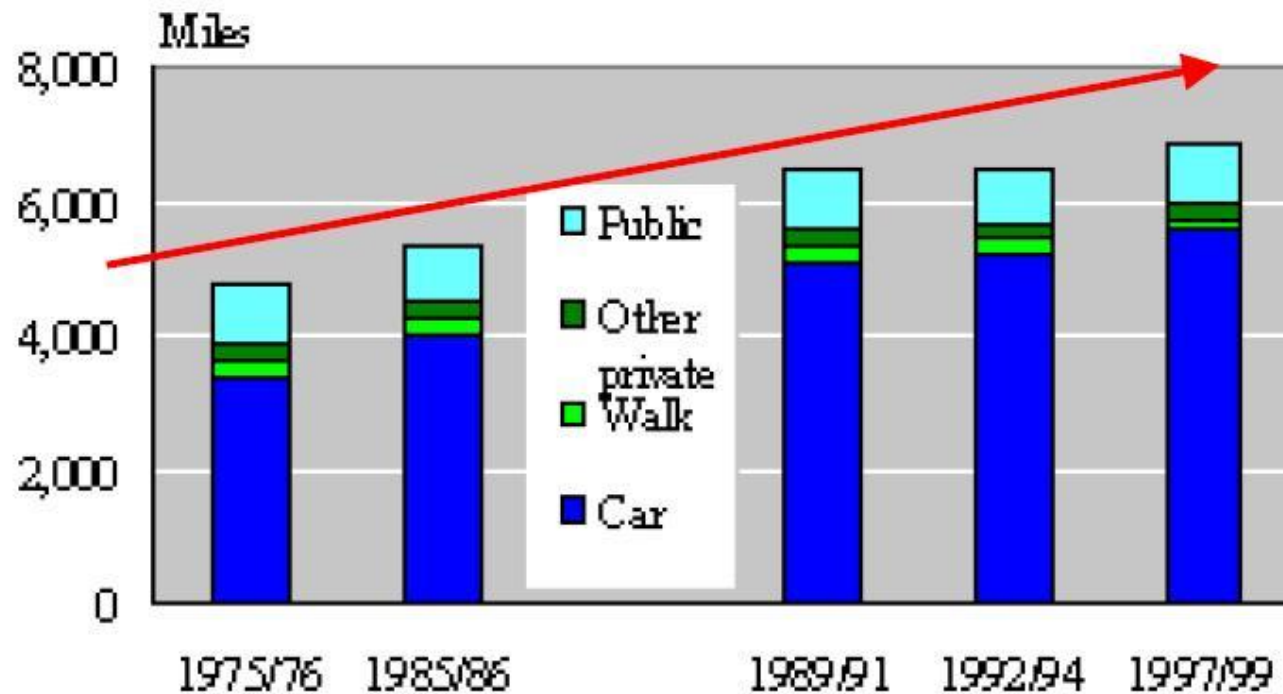
$$\hat{a} \sim \text{const.}$$





Transport Performance increasing

What increases is the distance travelled per person per year by main mode!

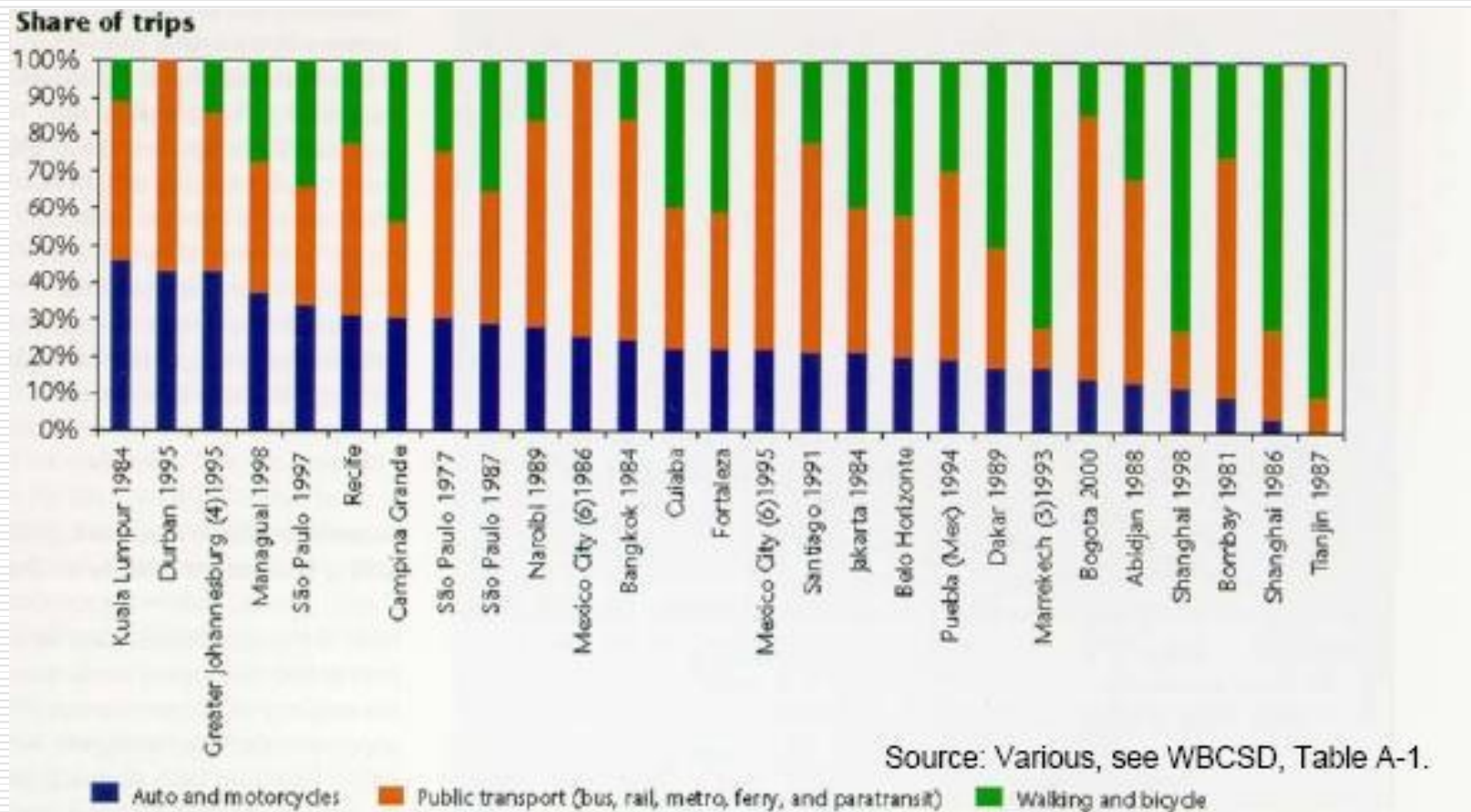


source: <http://www.transtat.dft.gov.uk/>

Source: Prof. EMBERGER, TU Wien, 2010



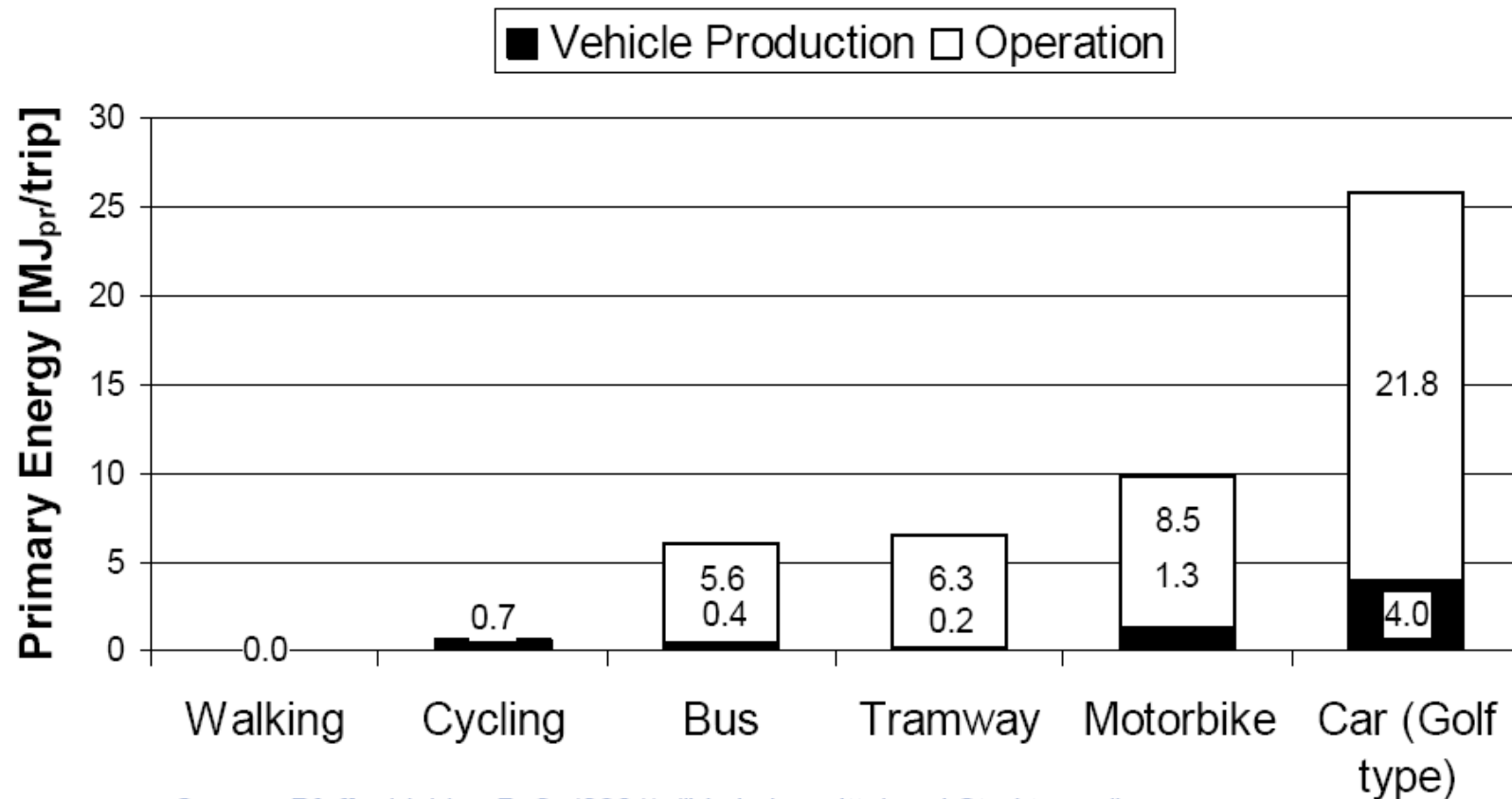
Still, non-car travel dominates the developing world. How long?





Energy consumption in traffic

Comparison energy consumptions per trip



Source: Pfaffenbichler, P. C. (2001). "Verkehrsmittel und Strukturen."
Wissenschaft & Umwelt INTERDISZIPLINÄR(3): 35-41.



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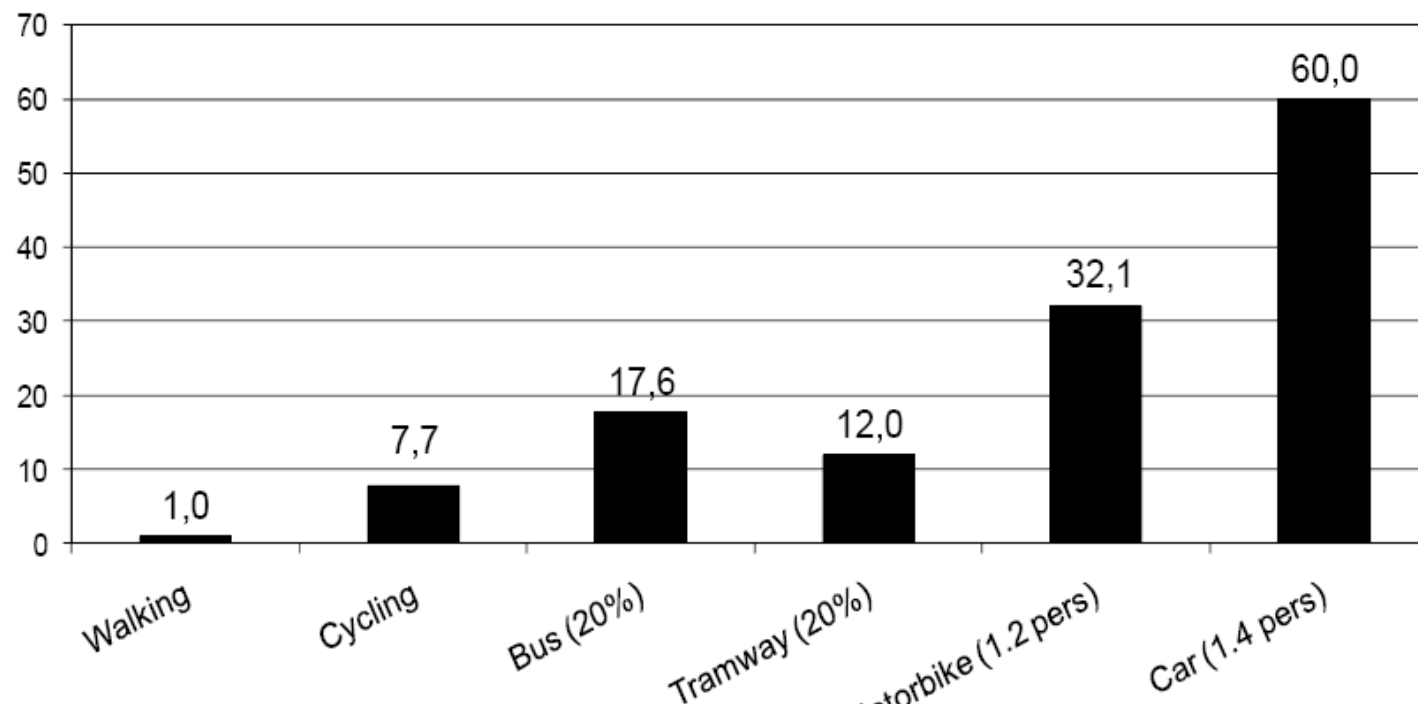
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Space consumption in traffic

Comparison space consumptions Area consumption [m²/person]



Source: Pfaffenbichler, P. (2001). "Verkehrsmittel und Strukturen." *Wissenschaft & Umwelt Interdisziplinär*(3), 35-42., own additional calculations

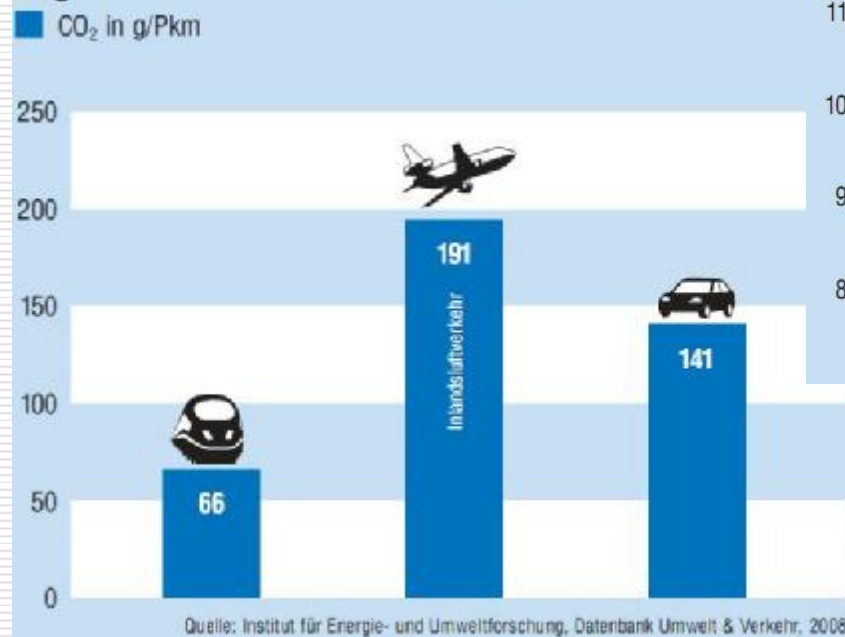




CO2 pollution

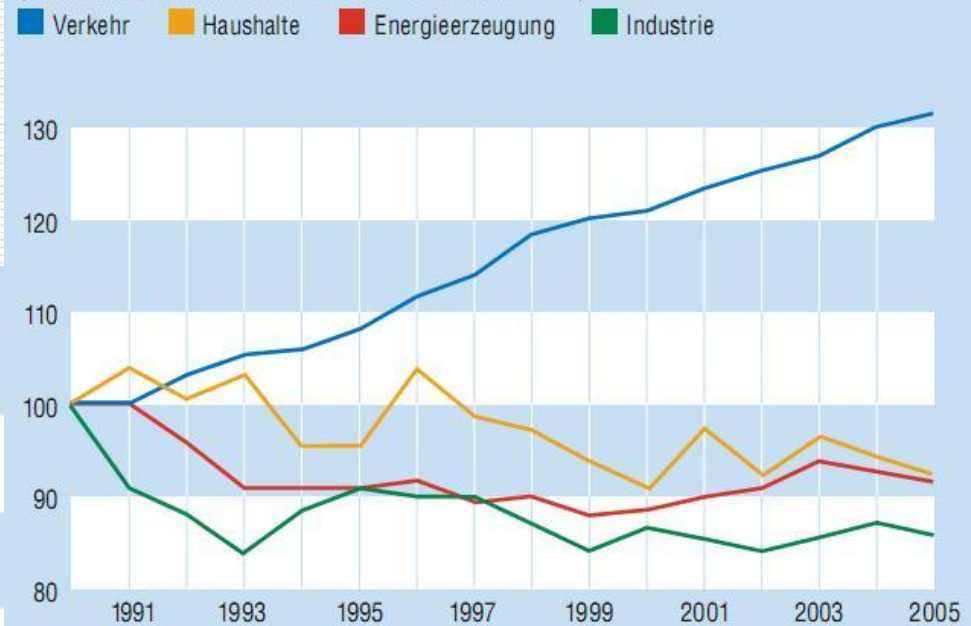
- Increasing generally
- particularly in goods traffic and for lorries/trucks

CO₂-Emissionen im Personenverkehr 2006

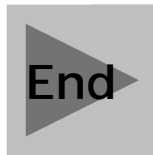
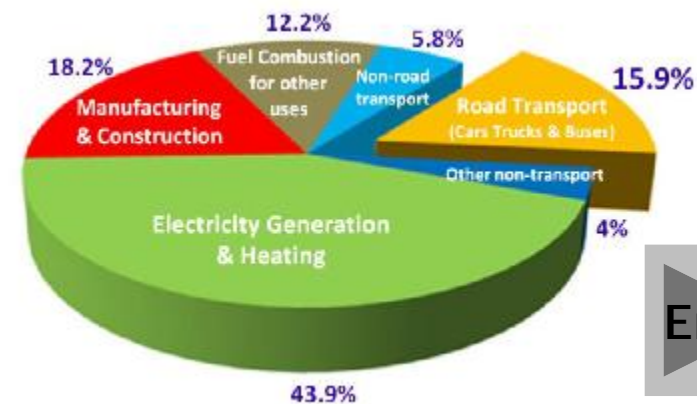


CO₂-Emissionen nach Sektoren in der EU

(Entwicklung von 1990 bis 2005 in Prozent, 1990 = 100)

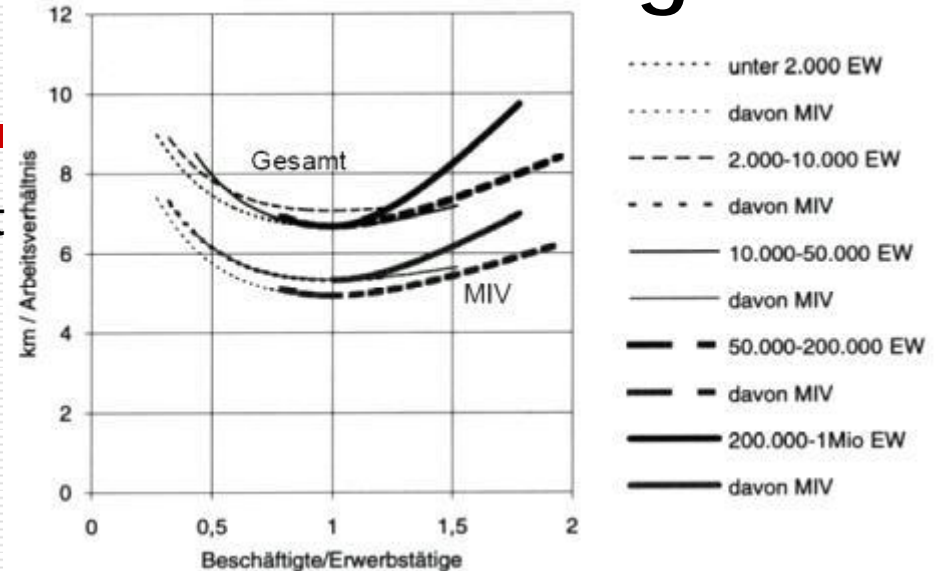


Quelle: EU-Kommission: EU Enerov in Figures Pocket Book 2007, eigene Berechnungen



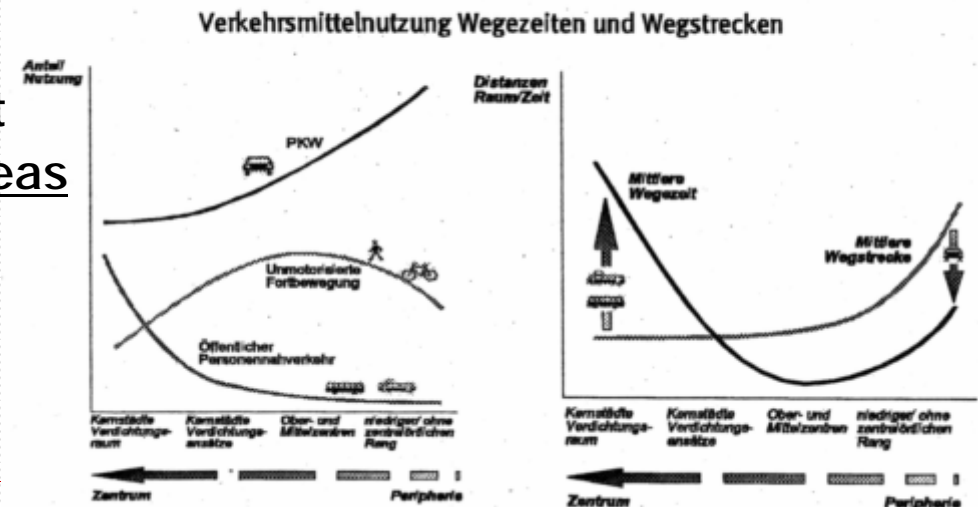
Integrated Transportation Planning and land use

- short distances between different places of activity such as living, shopping, labour, leisure important for reducing traffic demand
- ITP aims at a balanced mixture of all these opportunities in high density settlements
- in particular a harmonic balance between the number of employees and employment opportunities is very important
- è Improvement of mixed-use areas
- è Promotion of jobs in short distance to the living areas



(Holz-Rau/Kutter et al 1995)

Abbildung 8 Regionale Disparitäten der Verkehrsmittelnutzung und der mittleren Wegezeiten und Wegstrecken (schematische Darstellung) – Situation 2001/02



Quelle: eigener Entwurf



Megacities project YoungCities New Towns as a Concept for the Sustainable Development of Megacities of Tomorrow



Tehran-Karaj Urban Growth Center



Hashtgerd New Town

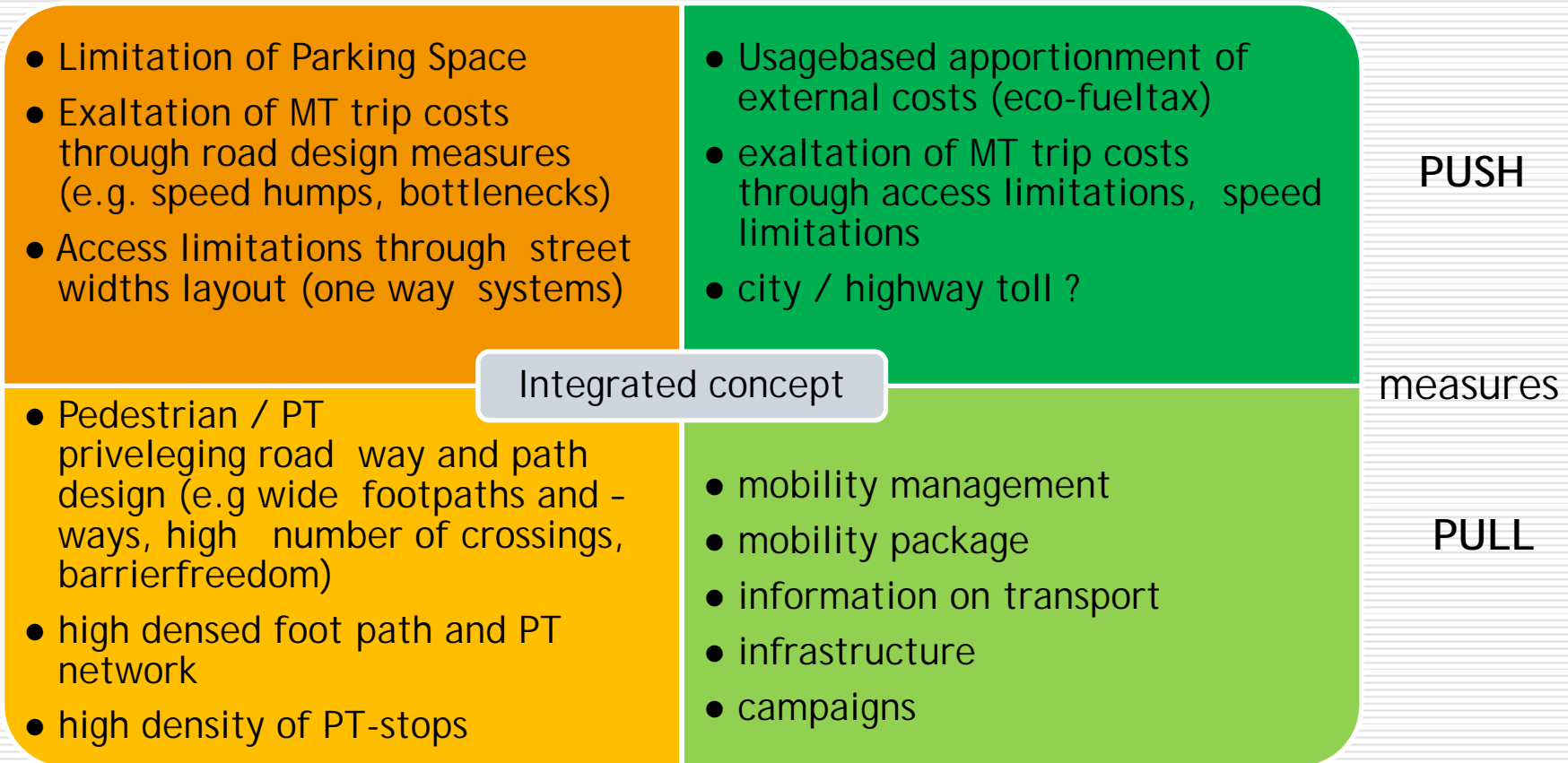
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Transport Approach

à Possible instruments for implementing the chosen leitmotif



measures

HARD POLICIES

SOFT POLICIES





Mobility management

Support sustainable traffic use routines (public awareness á)

Change of residence à Hashtgerd as a “sustainable city”

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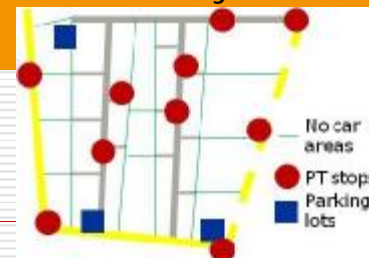
Choice of traffic mode set à Mobility package to promote “eco-mobility”

ê

Concrete traffic use à restriction for use of cars â promote environmentally traffic á

Measurement: mix of “hard- and soft-policies”

- Traffic save spatial structure à mixed-use
- Enhance attractiveness of public transport and slow modes à high service quality, good network, mobility package
- Restriction to car traffic à e.g. Filtered permeability and reduced parking



Thank you for your attention!



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