Resizing / Re-seizing the City – Requirements for Diversity

Harald Frey, PhD.
Institute of Transportation, Research Center of Transport Planning and Traffic Engineering
Iva Kovacic, PhD.
Institute of Interdisciplinary Construction Process Management, Industrial Building and Interdisciplinary Planning
Maja Lorbek, Mas.
Institute of Architecture and Design, Department Housing & Design
Vienna University of Technology

REAL CORP 2012

Points of origin of settlements

- Coasts and estuaries
- Crossing points of trade routes
- Topographic barriers - constraint points!
- Where the speed was "0“

- Distance of settlement patterns as a function of travel speed
- Based on pedestrian speed (and distances): 3-4 km / h, 200-300m
- More than 60,000 years of experience (settlements, 7,000 yrs cities)

Approved structures

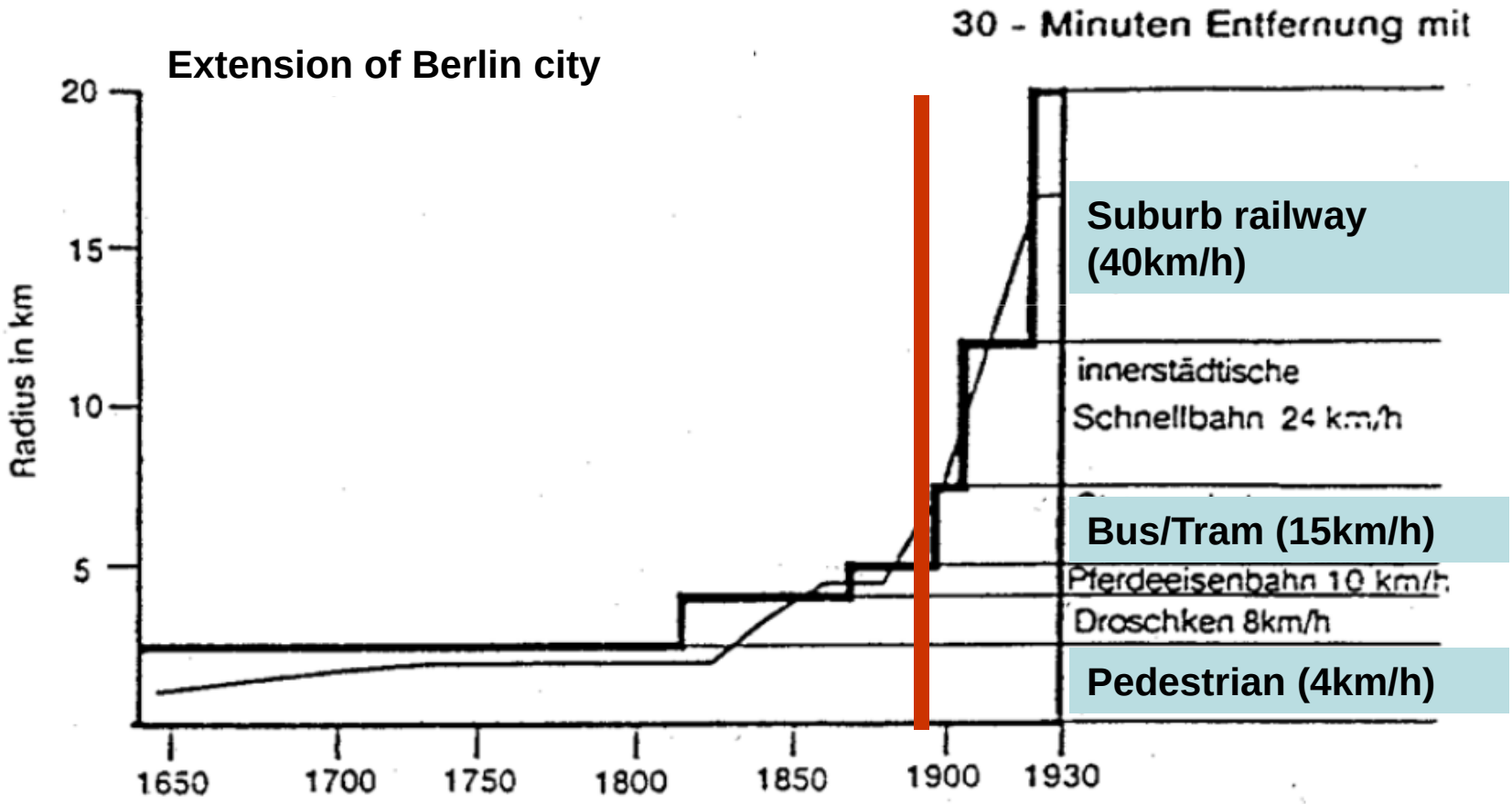
Not a question of (fast) accessibility, but of independence.
But depended on diversity of nature & local resources!

High rate of local mobility – micro-mobility

Structures connected to the fossil drip

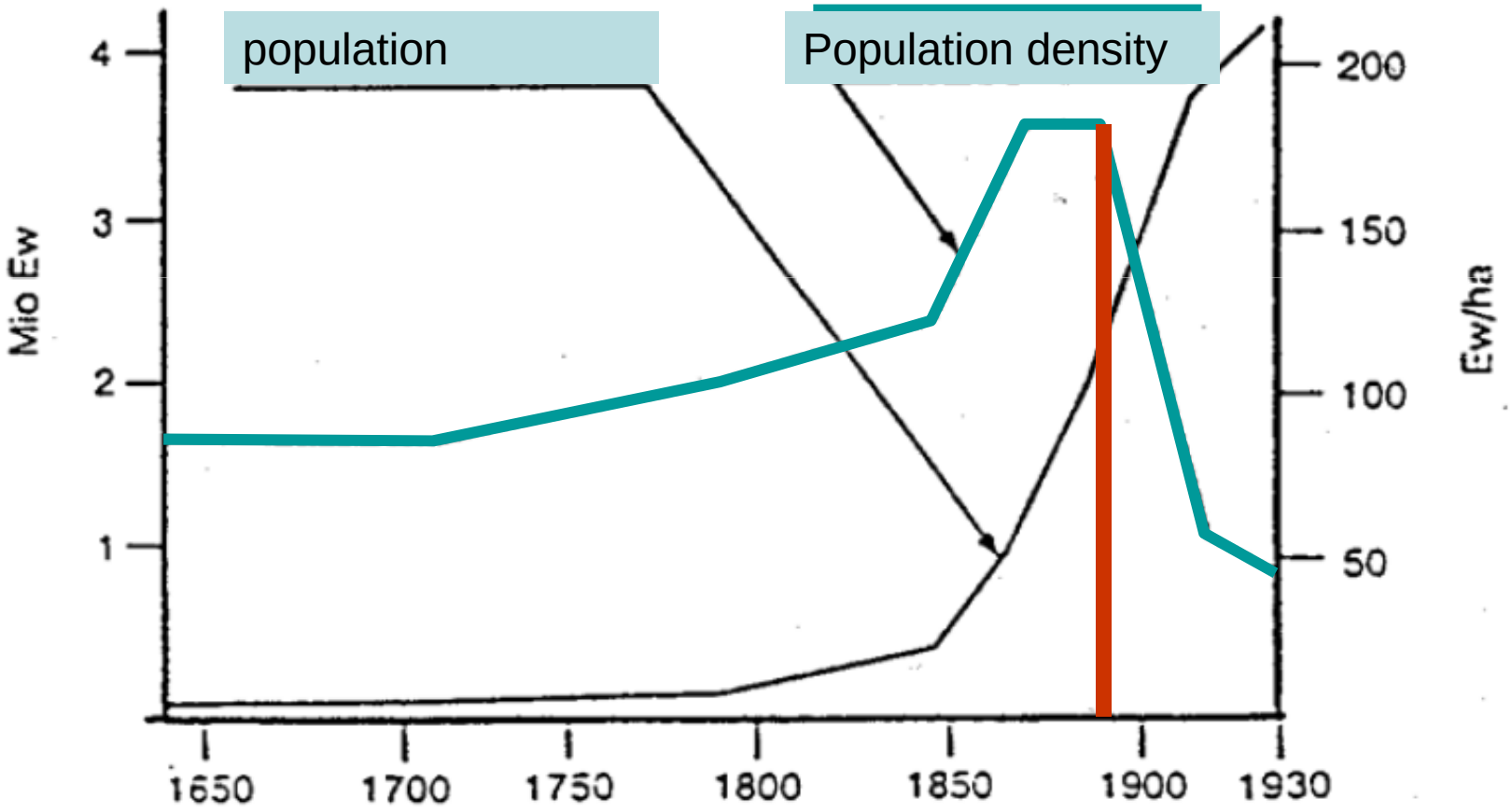
Not enough resources for this kind of transport system and settlement structures (ecological footprint)
Social problems:
- No nearness
-No diversity of functions, etc.
-High (transport-) speed to compensate local deficits

speed – means of transportation (Berlin)



Source: Leibbrand 1964

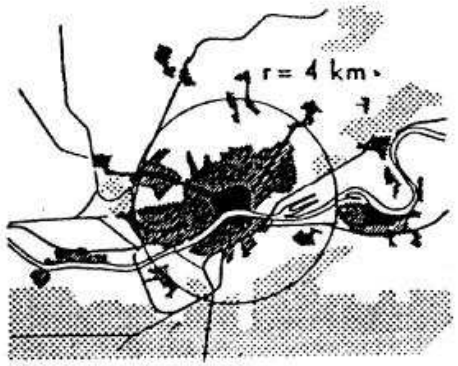
Speed – consequences on population & density (Berlin)



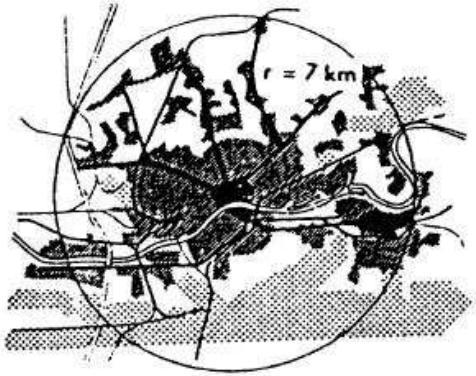
Source: Lehner 1982

The city at 1900, 1950 and today ("car city")

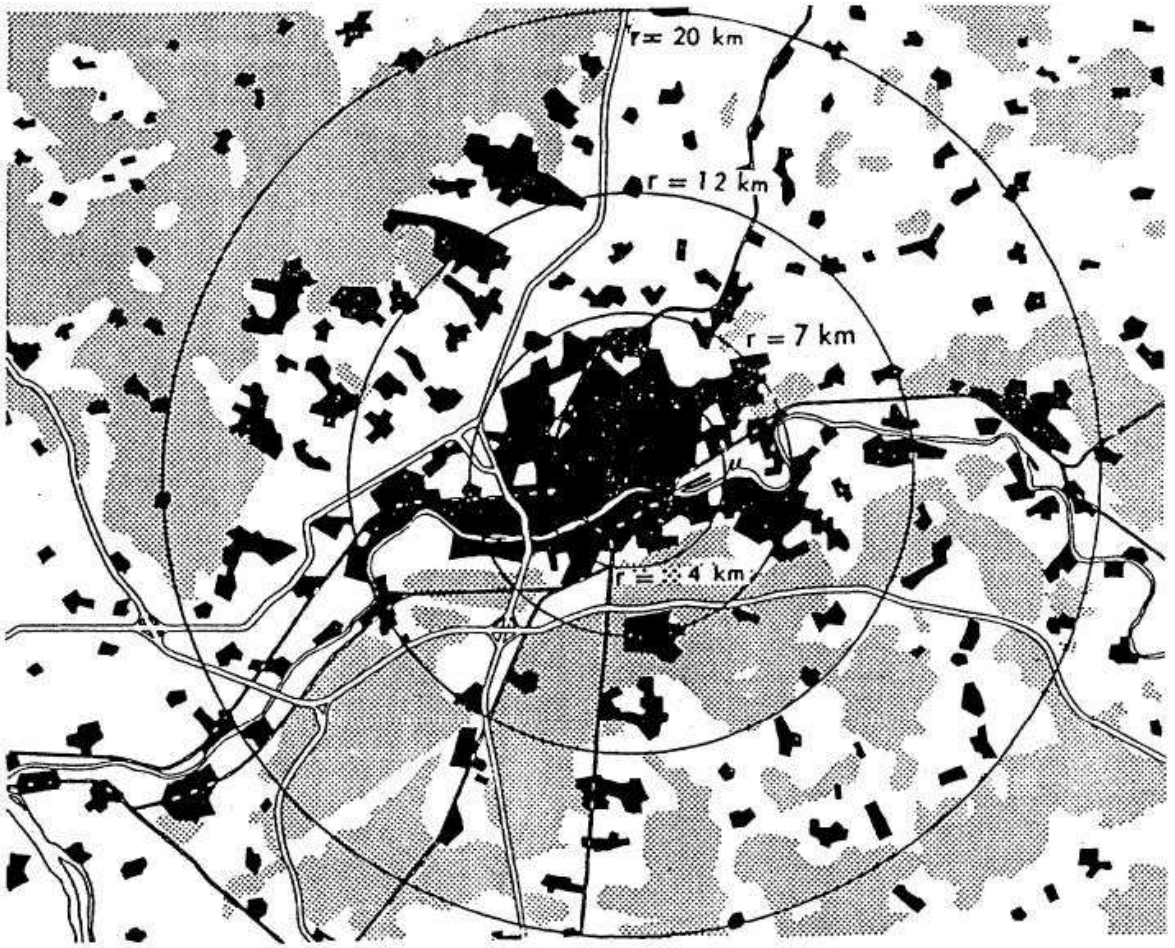
(urban-) sprawl as a result of constant travel time budget



Die Stadt um 1900 (»Pferdebahnstadt«)



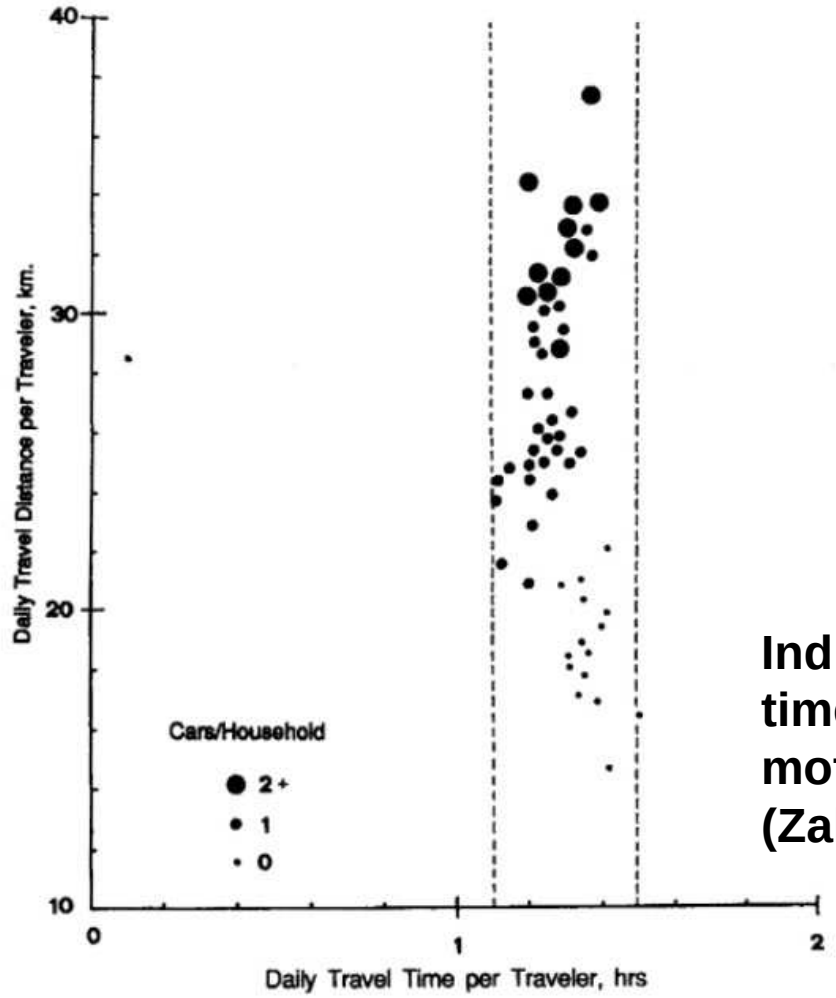
Die Stadt um 1950 (»Straßenbahnstadt«)



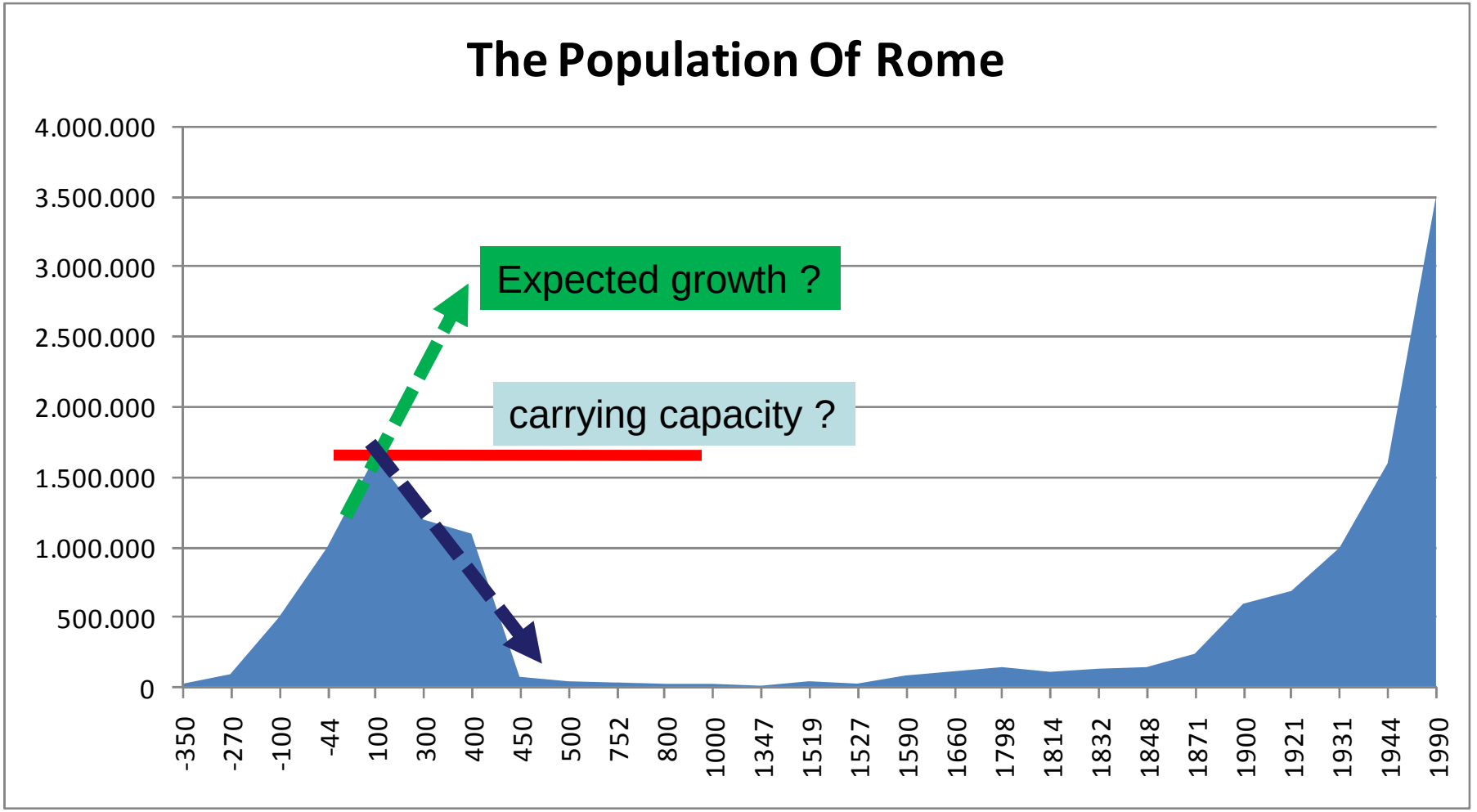
Die Stadt heute (»Autostadt«)

Source: Wortmann W., 1985, Wandel und Kontinuität der Leitvorstellungen in der Stadt und Regionalplanung; in: *Berichte zur Raumforschung und Raumplanung*, Heft 3-4/1985.

Nowhere on the globe a saving of travel time has been observed so far

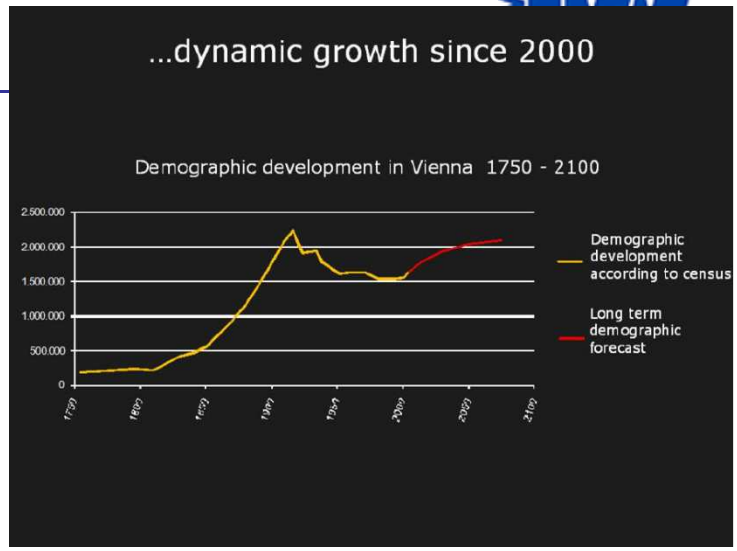


Individual daily trip length with travel time budget under consideration motorization per household. Source: (Zahavi, 1981).



Source: De Kleijn, Gerda (2011 [last update]). "Goldfishy: The Population Of Rome". goldfishforthought.blogspot.com. Retrieved 8 July 2011; http://en.wikipedia.org/wiki/History_of_Rome#cite_note-Poulation_of_Rome-81

Why Resizing? Ideas



future challenges

- Vienna is a growing city (fact & policy)
- lack of building sites, high density in certain inner city districts

socio-economic trends in European cities with impact on housing (Häußermann, Läpple, Siebel, 2008)

- aging society
- lifestyles
- segregation / gentrification
- migration / growing inequality
- difficulties of funding

Problems

- **PMT – car traffic**. Usage of public space (>300-500 times higher than for children in dense urban areas
- **Increase in general consumption of the floor area** average floor space of dwellings has increased from 88.8 m² in year 1997 to 98.2m² in year 2007
- **Lifestyle of homeowners**: refurbishment causes shift from the **energy conserving** attitude (e.g. through lack of central heating only the living-room is heated) towards **energy consuming** attitude (heating of entire apartment)

Challenges in planning:

a gap between:

- strategic planning at the scale of the city
- and implementation (urban renewal / refurbishment)

Proposed strategies in planning:

- integrated, interdisciplinary approach
- long term perspective
- room for contingency, unknown development
- use of scenario-based planning
- carefully chosen system boundaries
- Combination of measures (building, neighbourhood, transport, etc.)
- Reduction of rebound effects

Subjects of Inquiry

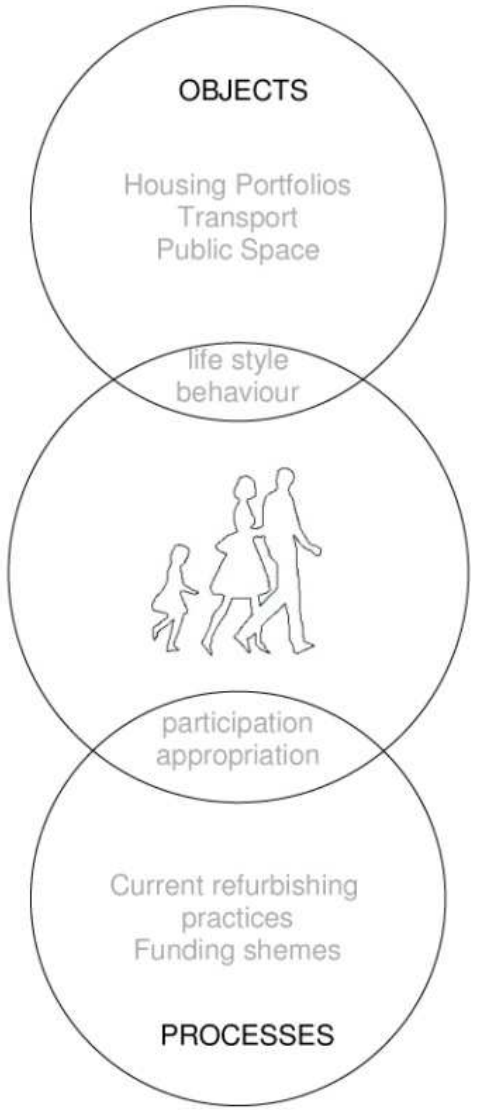
- **OBJECTIVE:**

objective is to develop integral, long term and multi-optional scenarios which enable holistic redesign for dynamical systems such as neighbourhoods, city districts and urban areas.

Resizing will address the dynamic interaction between public space, mobility, user participation and building structures in different city quarters regarding boundary conditions

the habitat as a dynamical system in constant change

3 layers: building – neighbourhood - city



BASIC RESEARCH MODEL

initial hypothesis

inherent limits of development/growth within the build environment

interdependencies of city structures on different levels

Aims

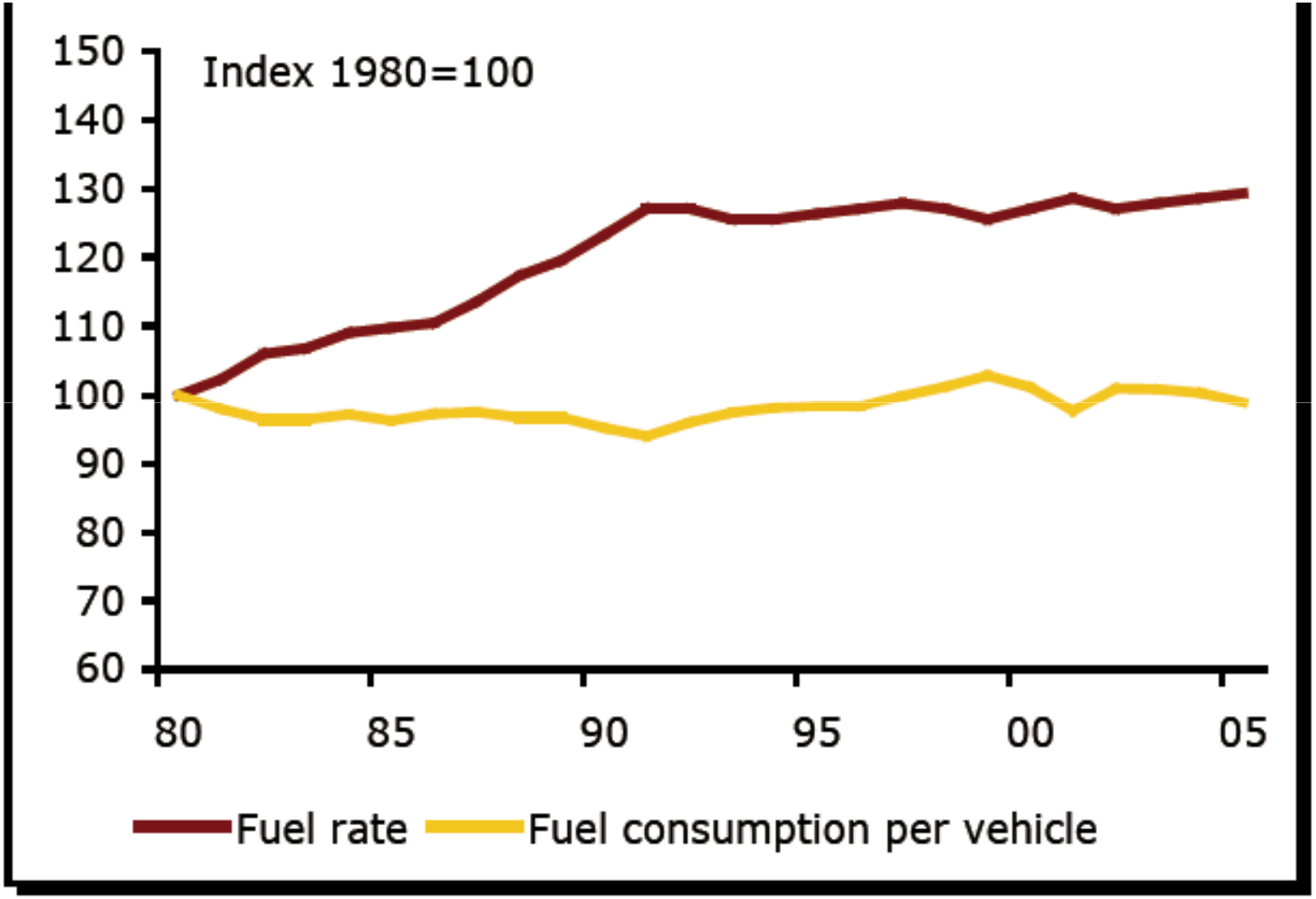
- Reaching sustainability of built environment through increasing of efficiency needs to be questioned
- Focus on: life-style, limits of growth in consumption of resources (land, energy, materials), conserving attitude

Systematic approach

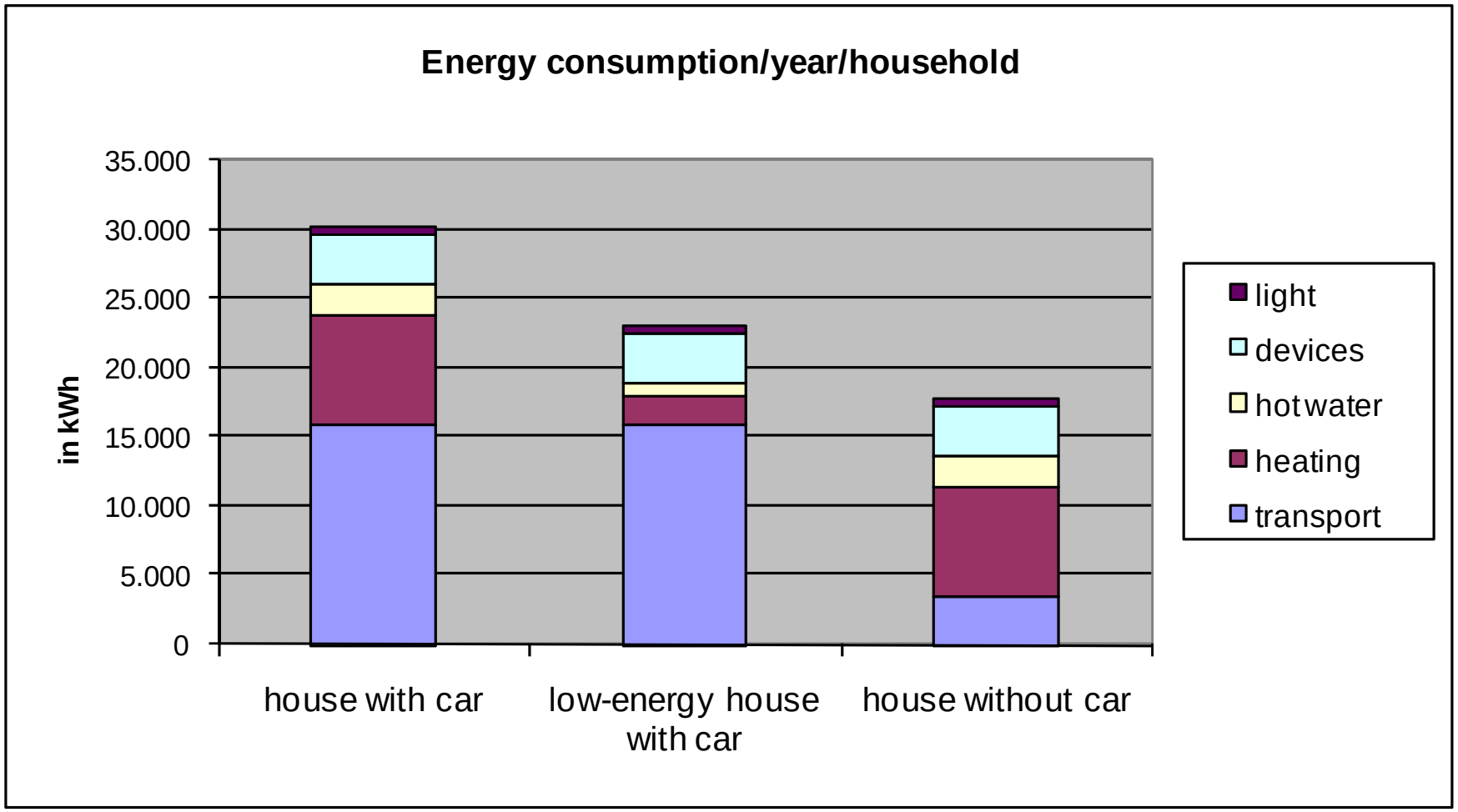
- conditions of sufficiency
- long term resilience
- level of a neighbourhood, city or region
- activate the potentials of existing structures
- building stock and its inhabitants as well as the material, technical and social infrastructures of the habitat are taken into account
- strategic measures for their sustainable redesign
- extension beyond the building into habitat and community
- find specific limits of growth within the existing and potential new structures

Rebound effects

Improved Fuel Rate for a Given Vehicle Type Failed to Lower Fuel Consumption per Vehicle

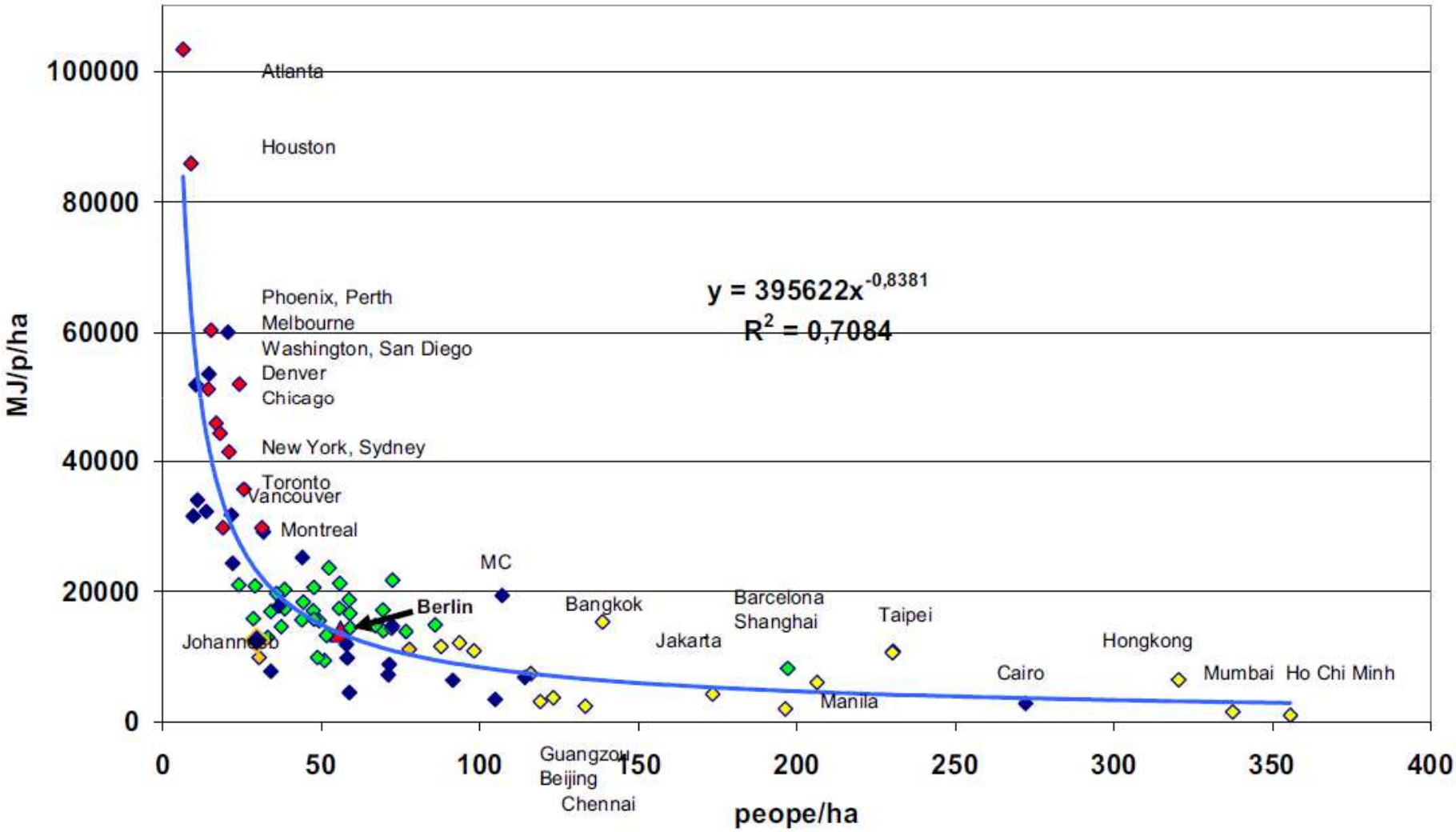


Source: EIA, CIBCWM



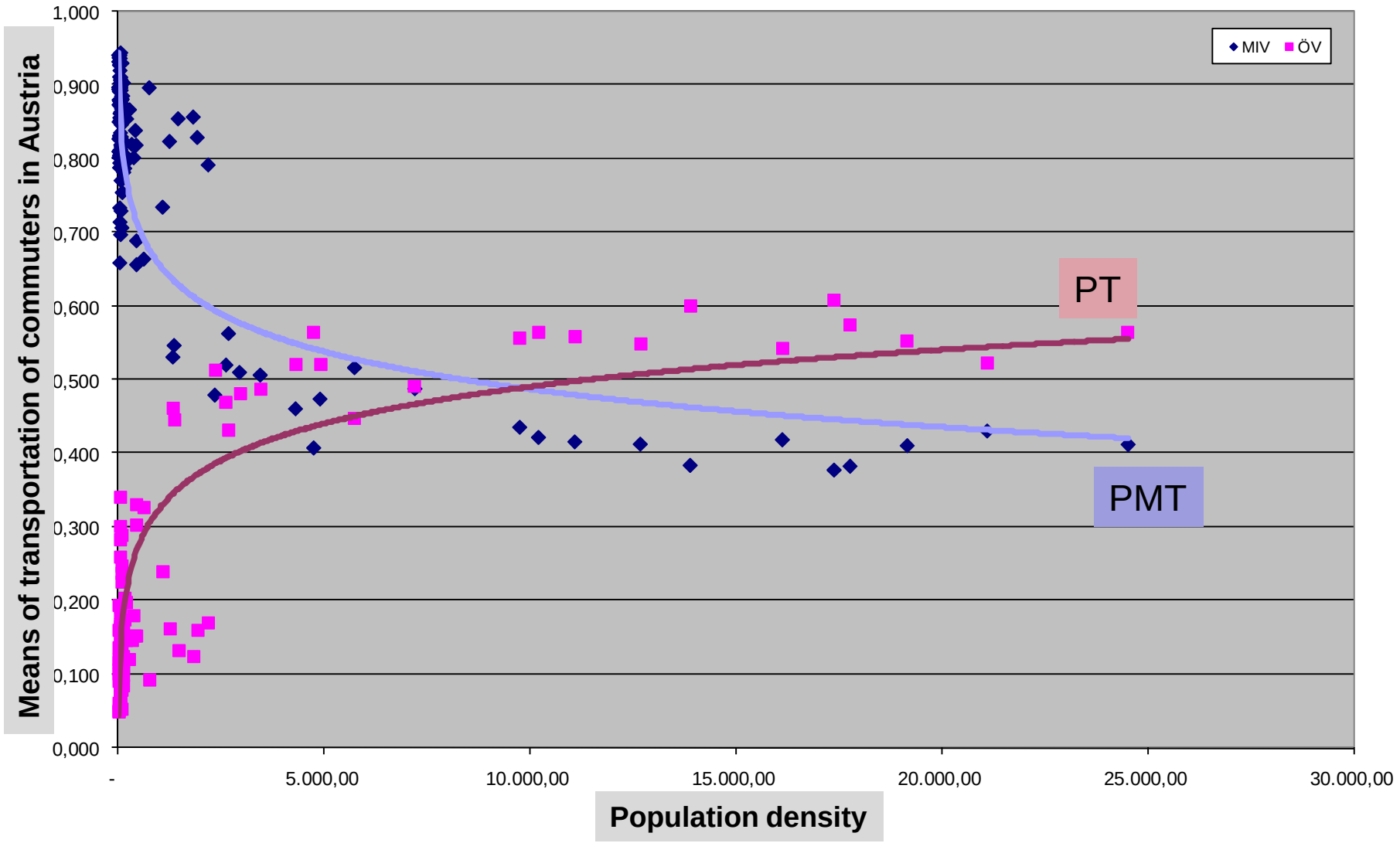
Optimization of a single object instead of system view – problems of indicator (efficiency)

Energy-usage in transportation and density



Source Knoflacher
Source Database UITP

Limits of density – How dense is useful?



Re-seizing the City – Recapturing of public space – the necessary beginning

strategies of “De-urbanization of cities” are imaginable - cultivation and issues like self-growing of food products could be part of a resizing process sealed areas of traffic lanes have to be converted into fertile ground.

Important indicators

Sufficiency instead of efficiency

and

Aspects of resilience

- Properties of a resilient system: redundancy, diversity, efficiency, autonomous components, strength, adaptability, collaboration -> indicators for cities, etc.
- In practice: often reduced to short-term natural disasters

Street space

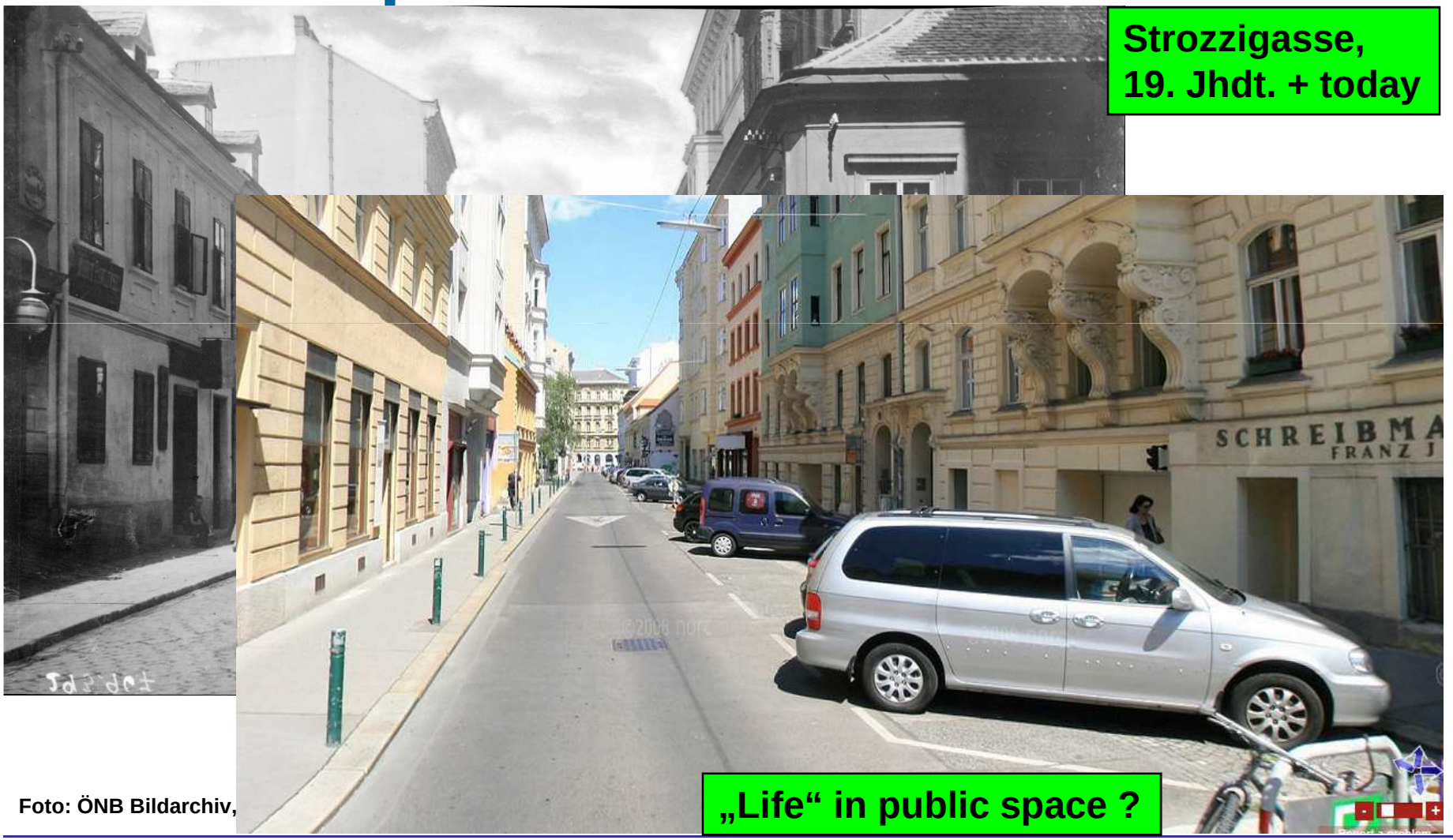
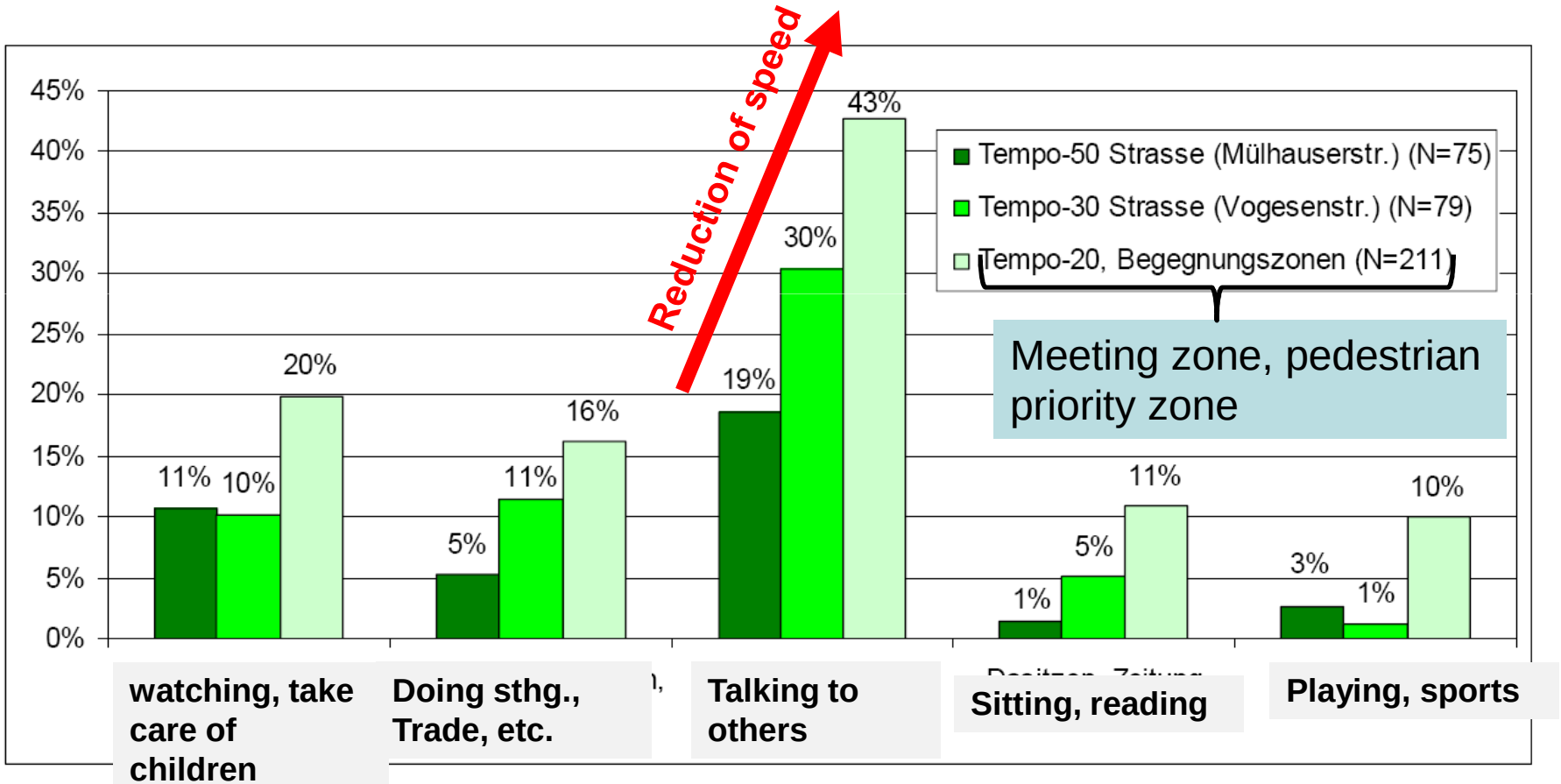


Foto: ÖNB Bildarchiv,

Speed & social environment I



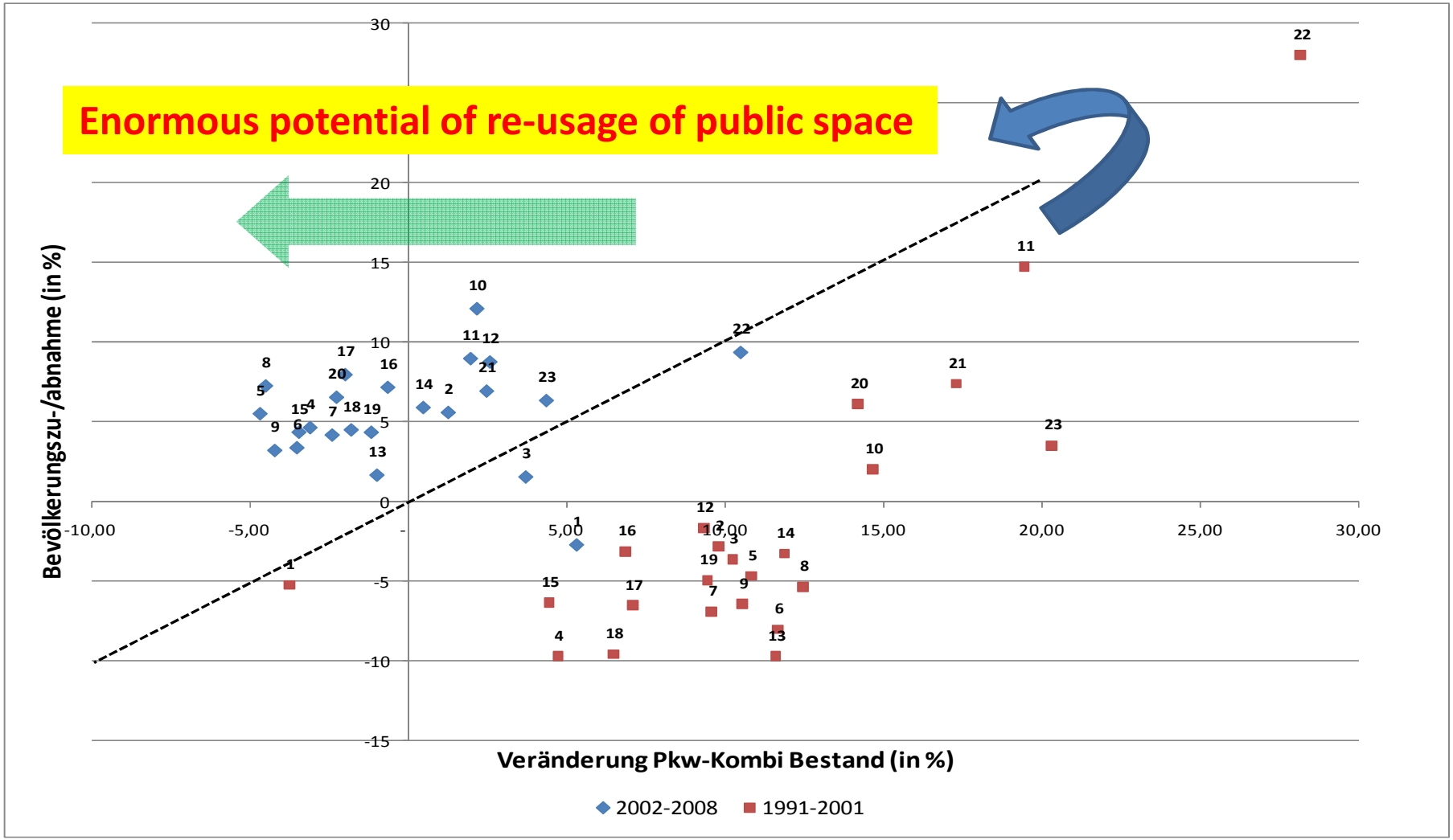
Quellen: Sauter et al. 2006

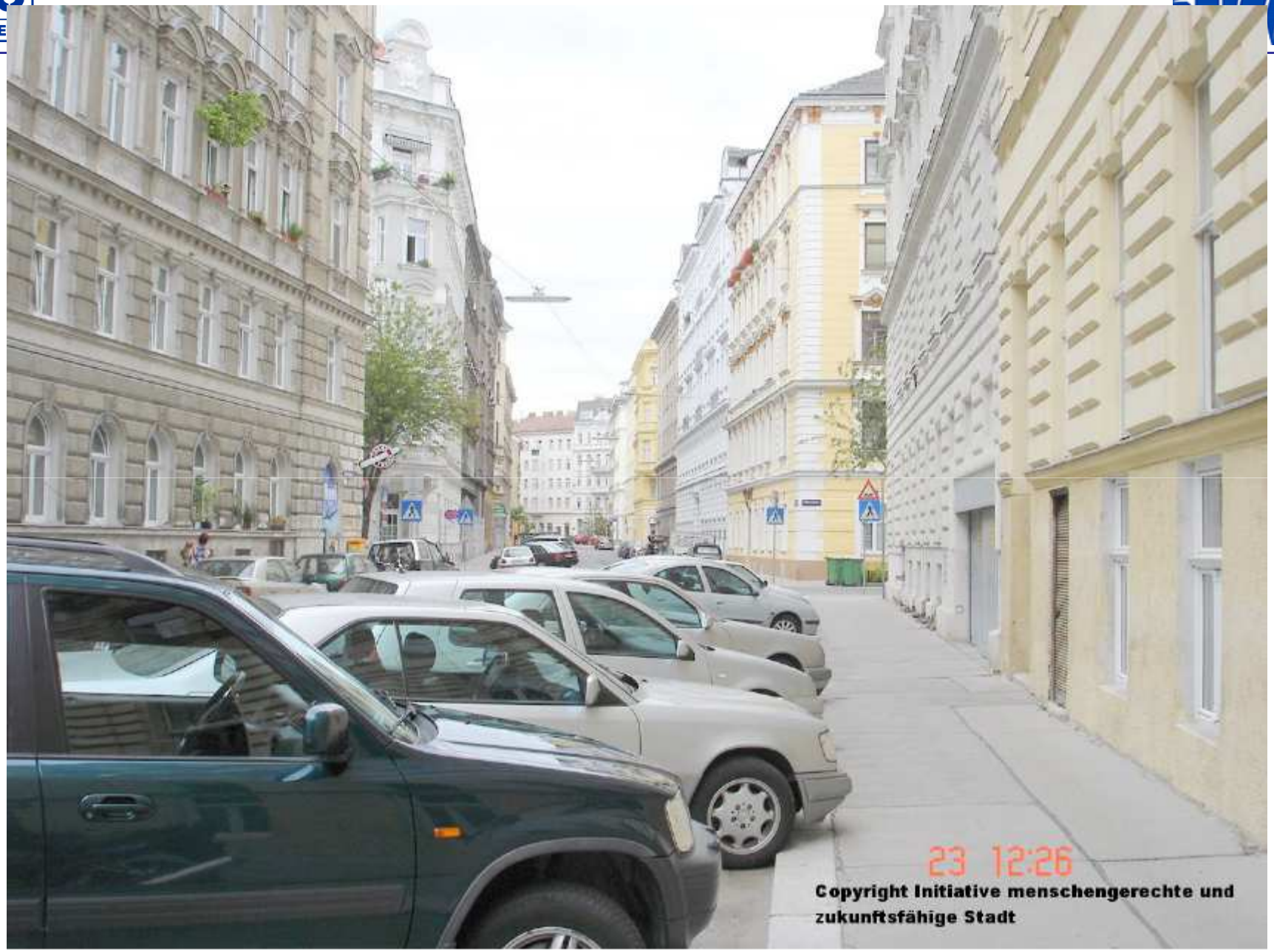
The result of the traditional resizing process… the perception of the children of „their“ environment

Denglergasse-Toßgasse, 1150

Carfree environment as a main indicator in resizing process

Changes of car stock and population in Vienna (1991-2001 & 2002-2008)

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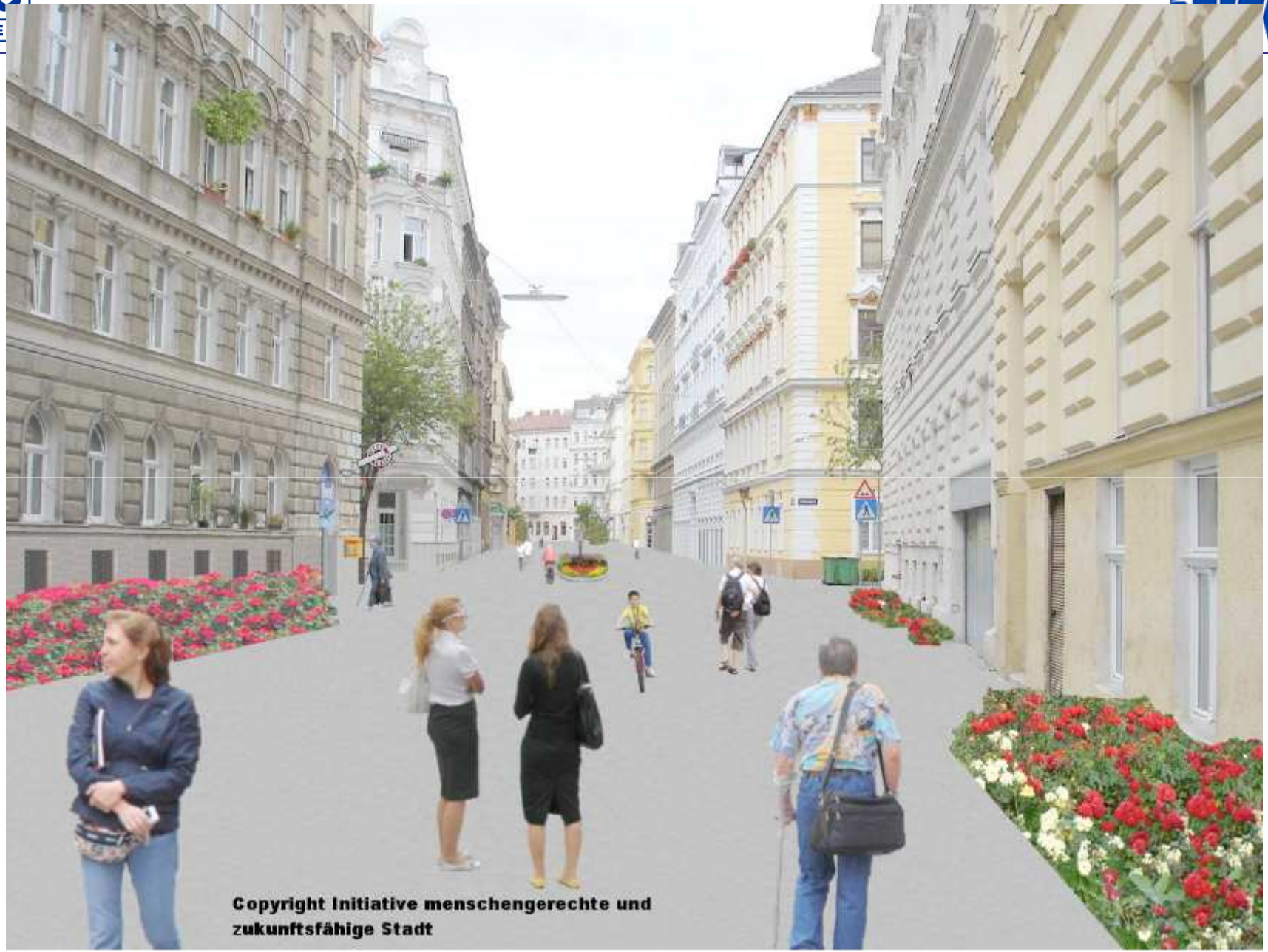
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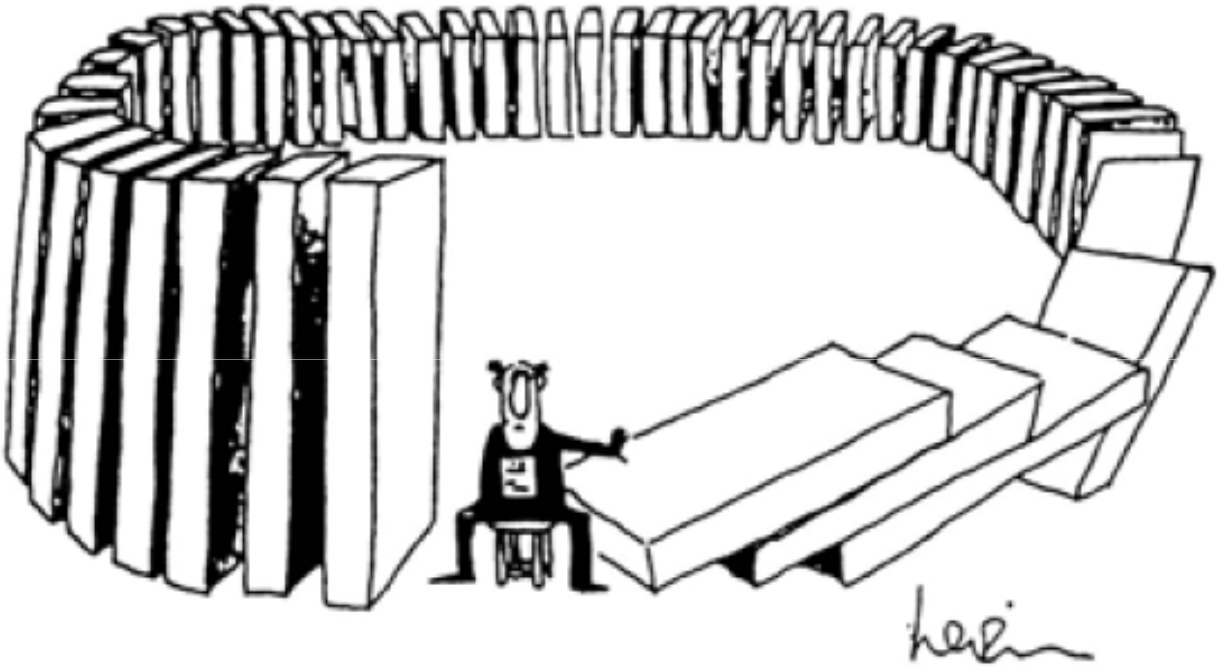
Thank you for your attention!



Contact:

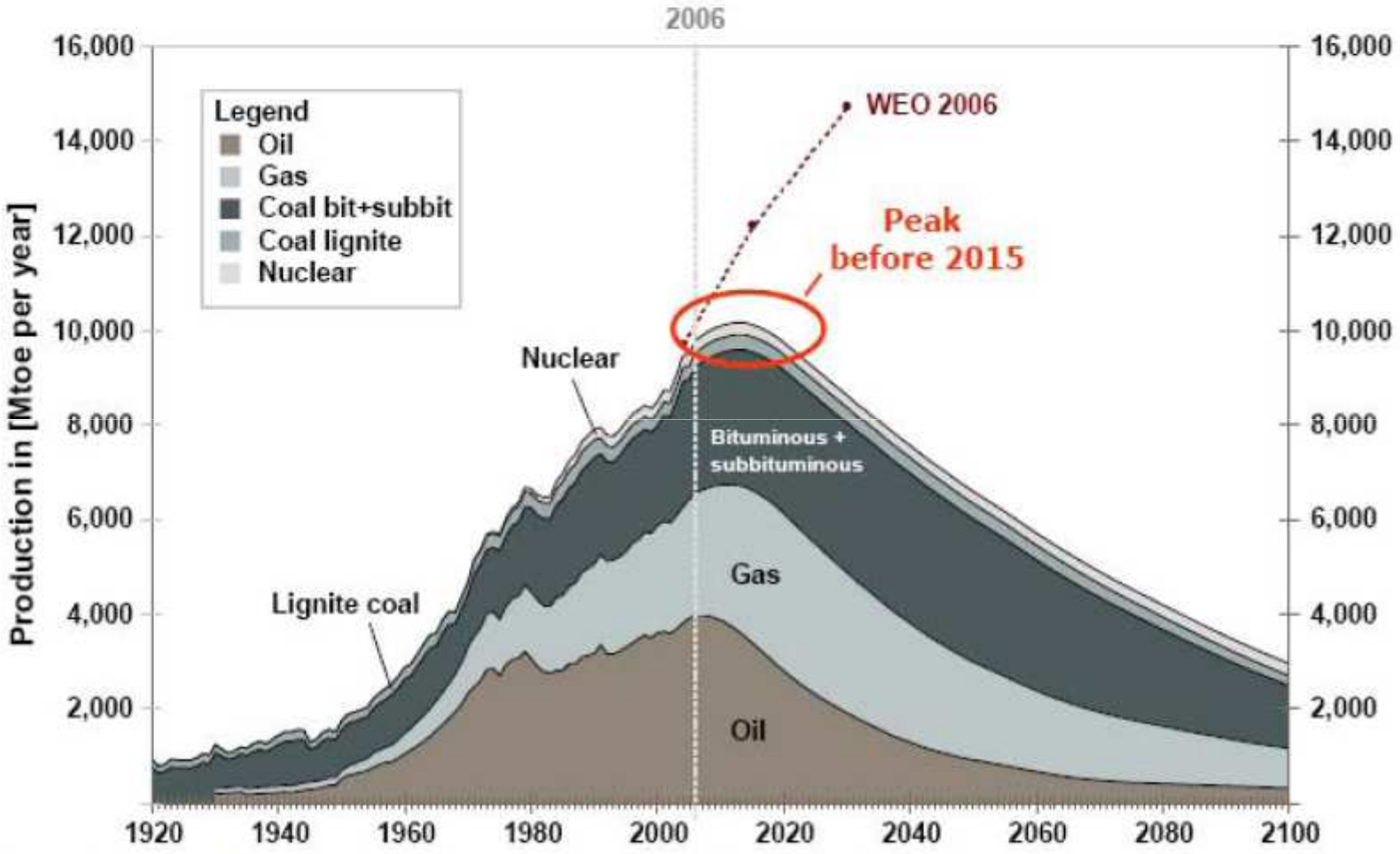
Harald Frey

Phone: +43 (1) 588 01-23117

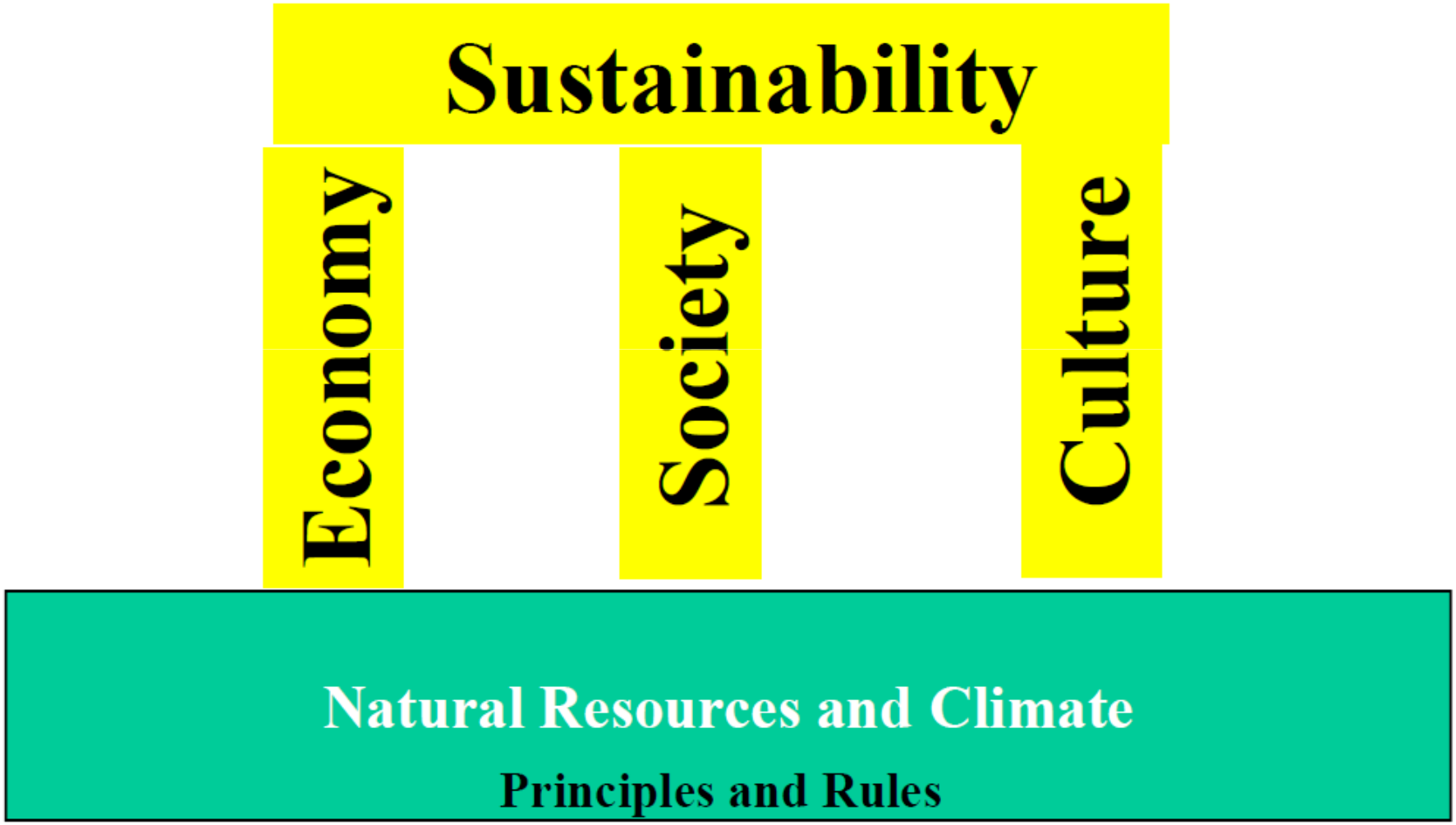
Fax: +43 (1) 588 01-23199

Email: harald.frey@tuwien.ac.at

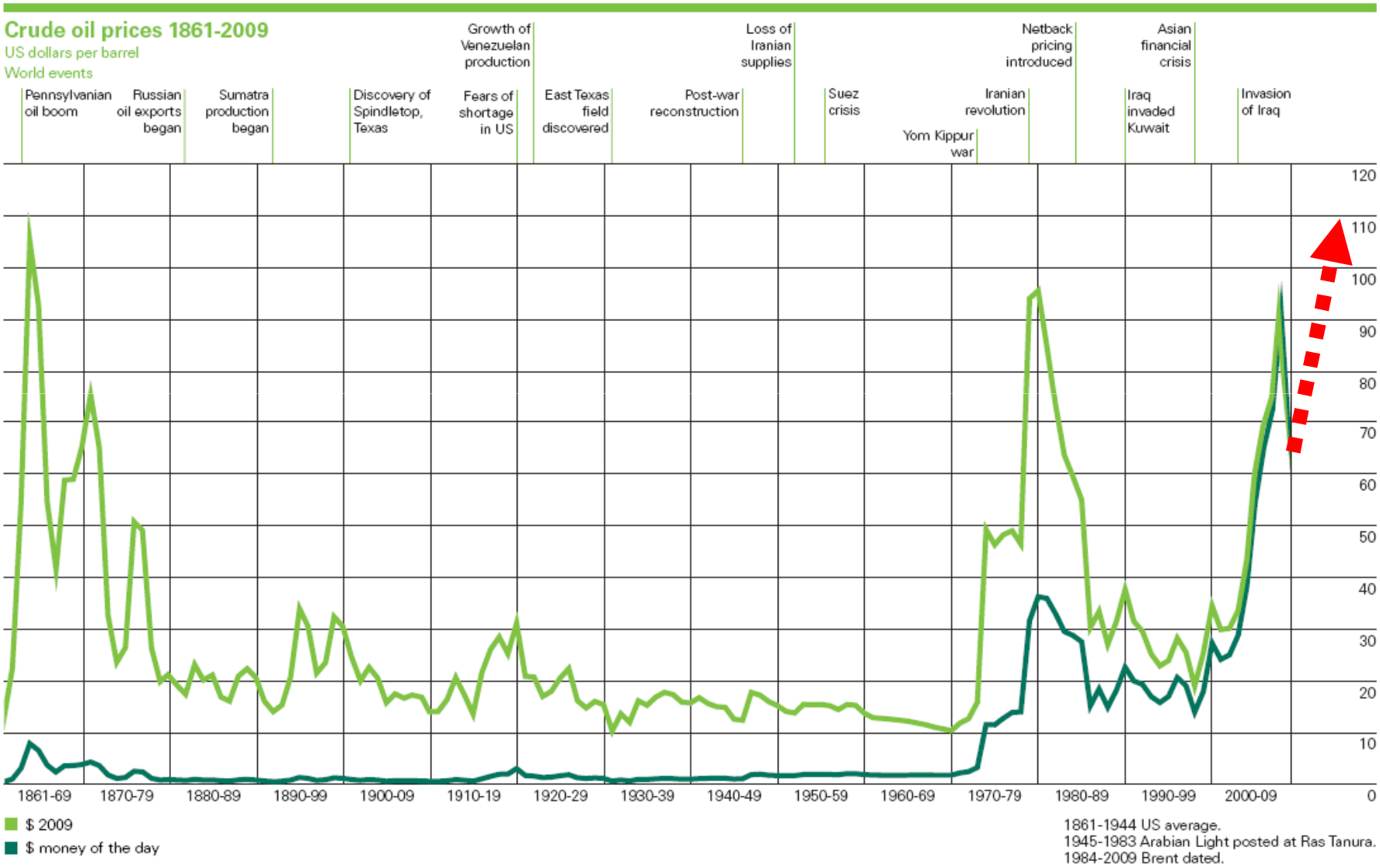
Peak Oil leitet den Peak aller fossilen und nuklearen Energien ein



Schindler, Zittel „Alternative World Energy Outlook 2006: A possible Path towards a Sustainable Future", in D. Yogi Goswami (Hrsg.), Advances in Solar Energy, 2007, Vol. 17, p. 1-44

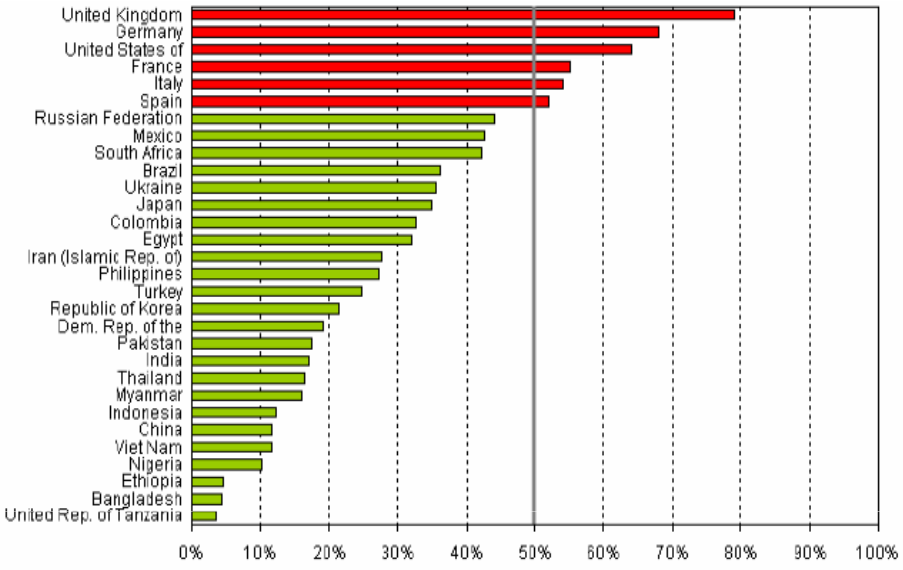

Sustainability
Economy
Society
Culture
Natural Resources and Climate
Principles and Rules

The boundary conditions

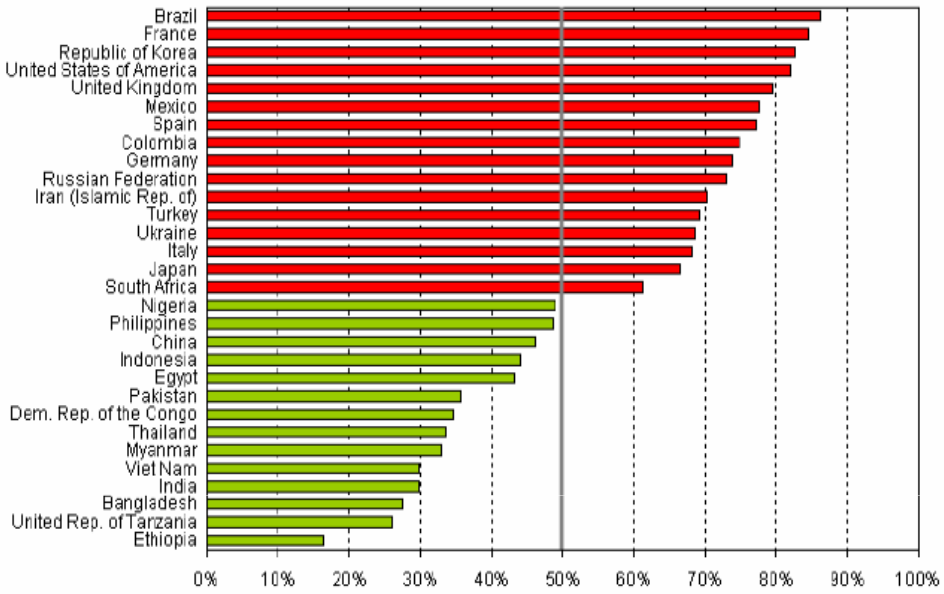


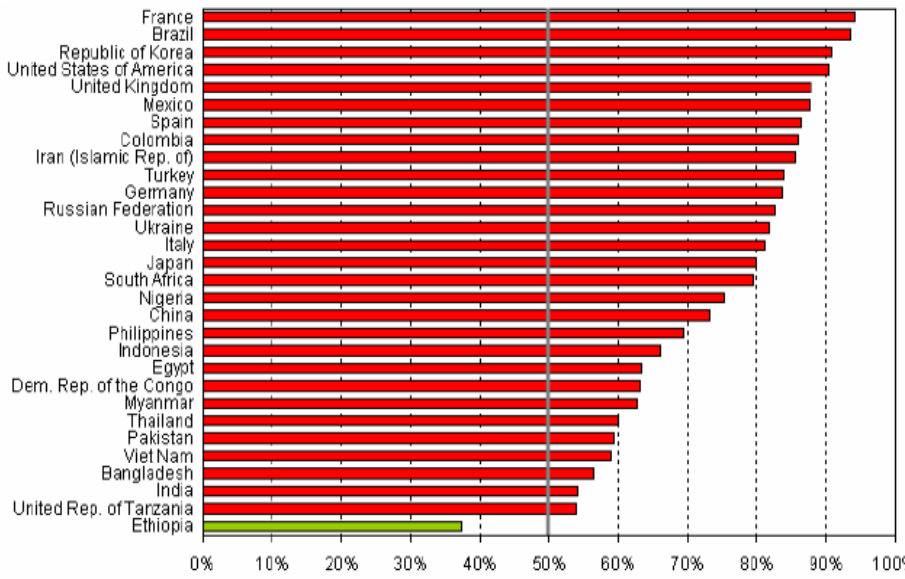
Verstädterung

1950



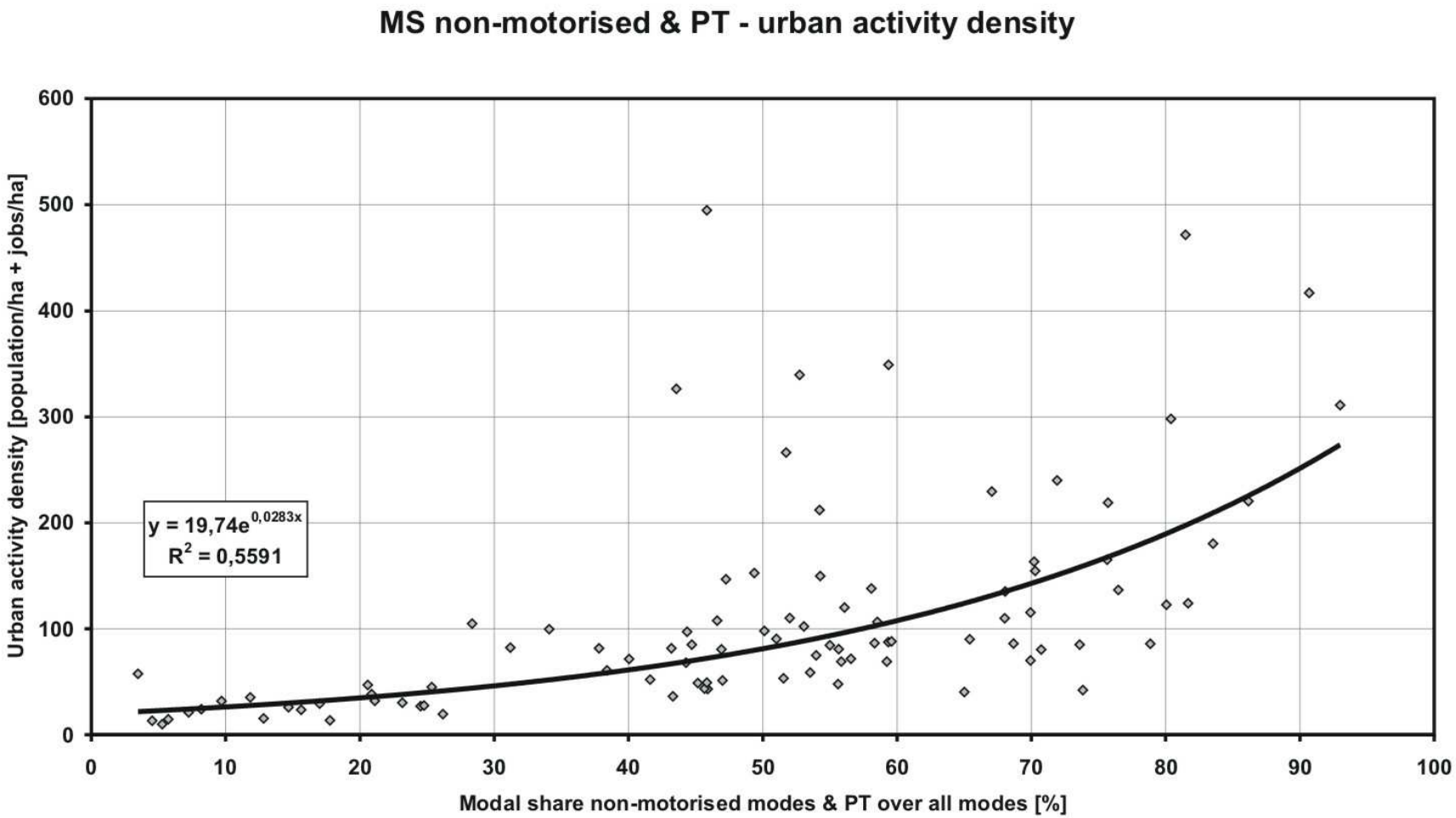
2009





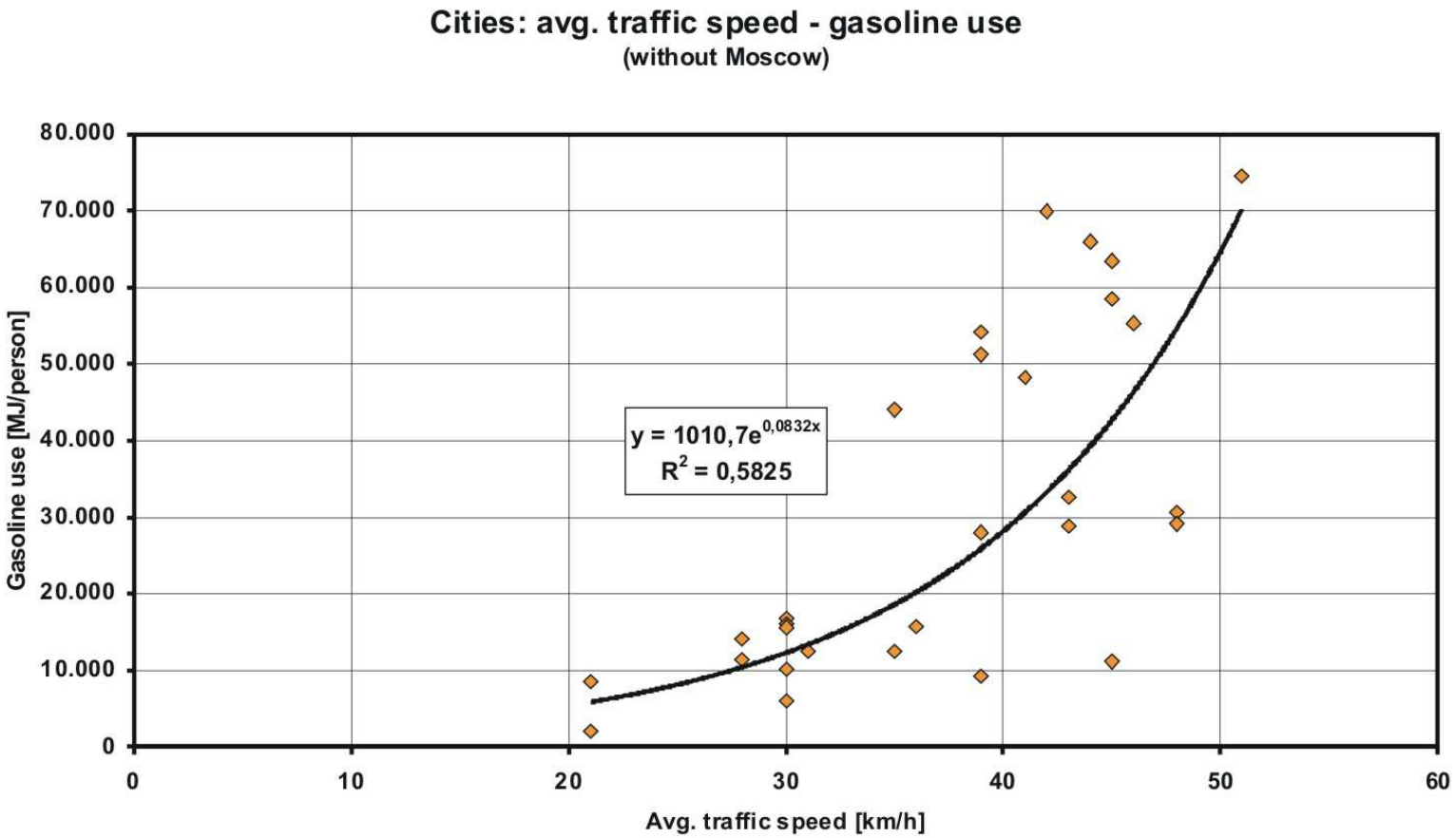
2050

Geschwindigkeit & Dichte I



Daten: Kenworthy et al. 2000

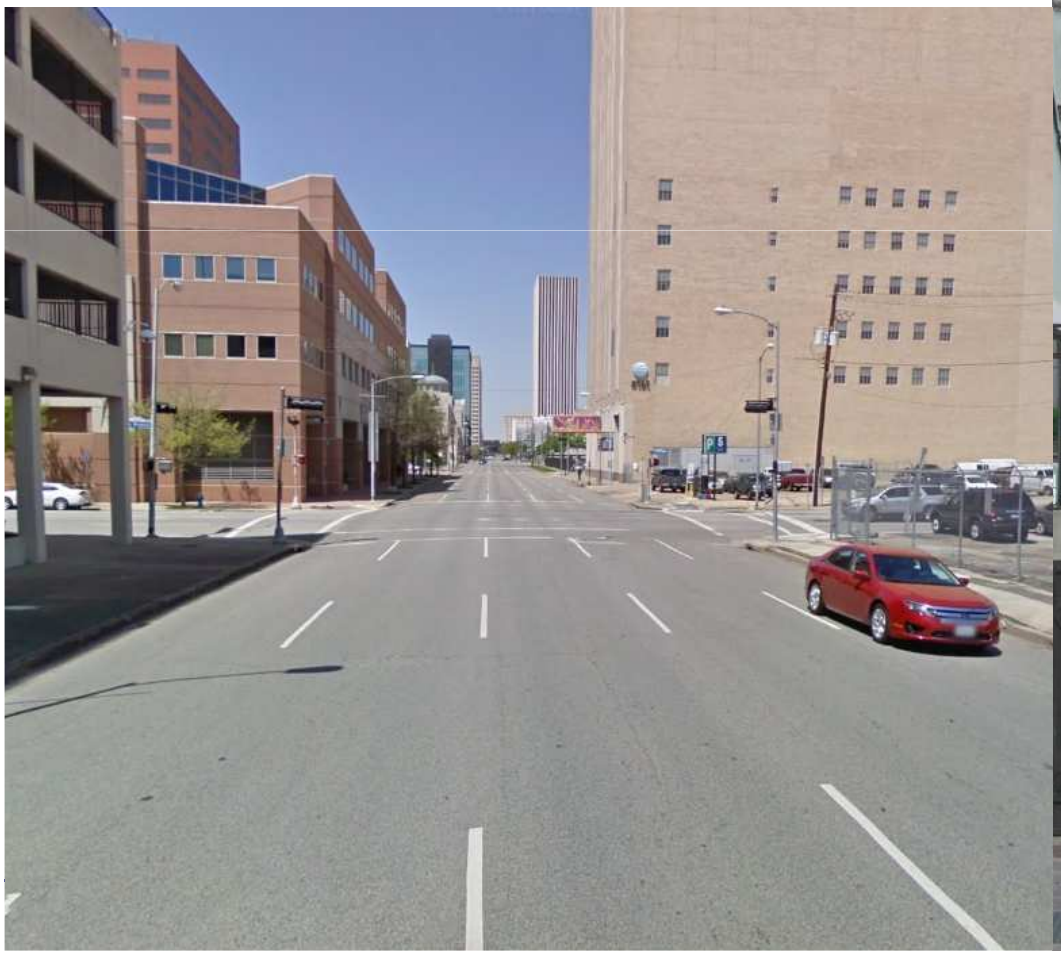
Geschwindigkeit & En-Verbrauch I

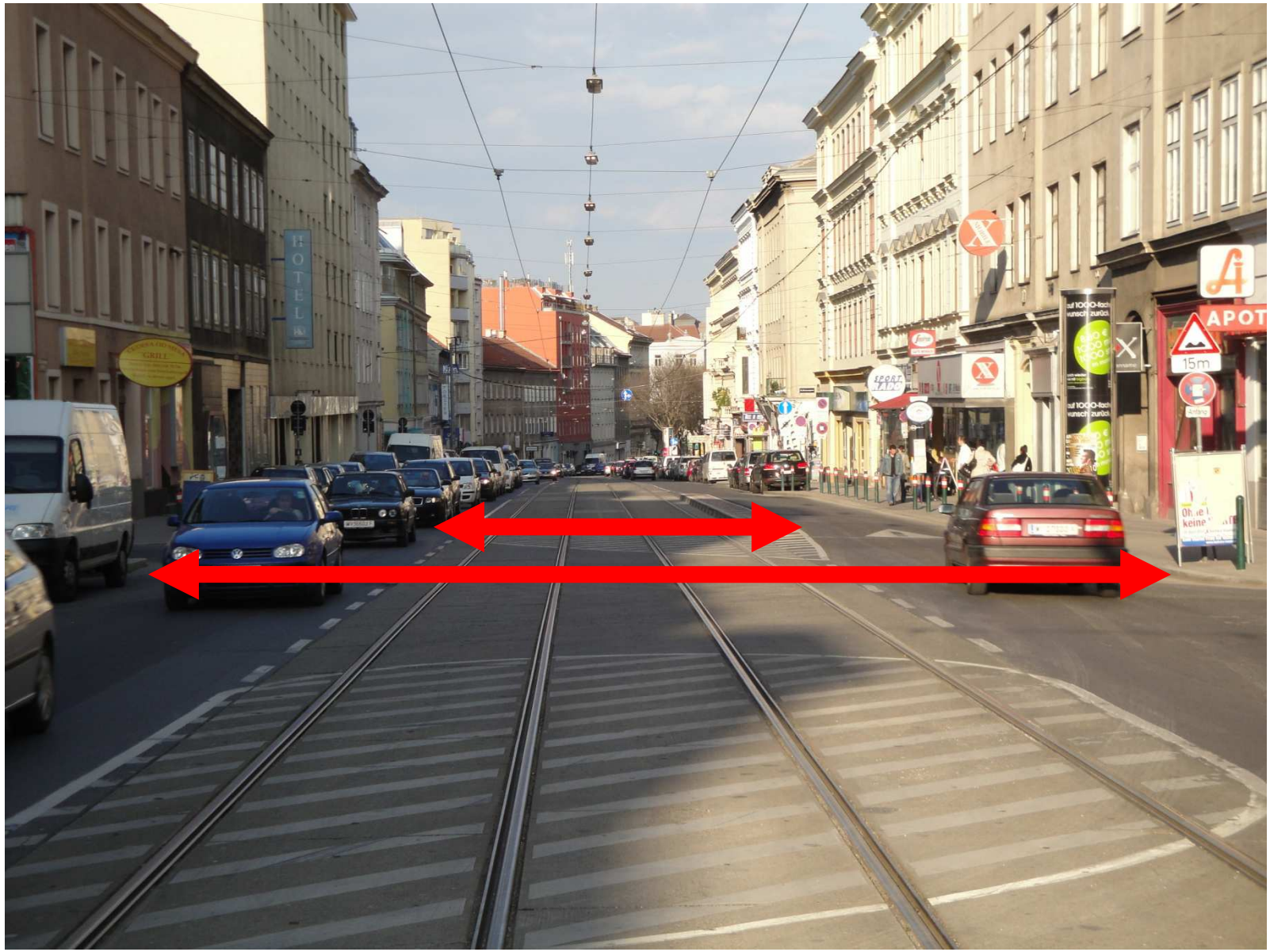


Daten: Newman et al. 1988

Stadt der Fußgehergeschwindigkeit

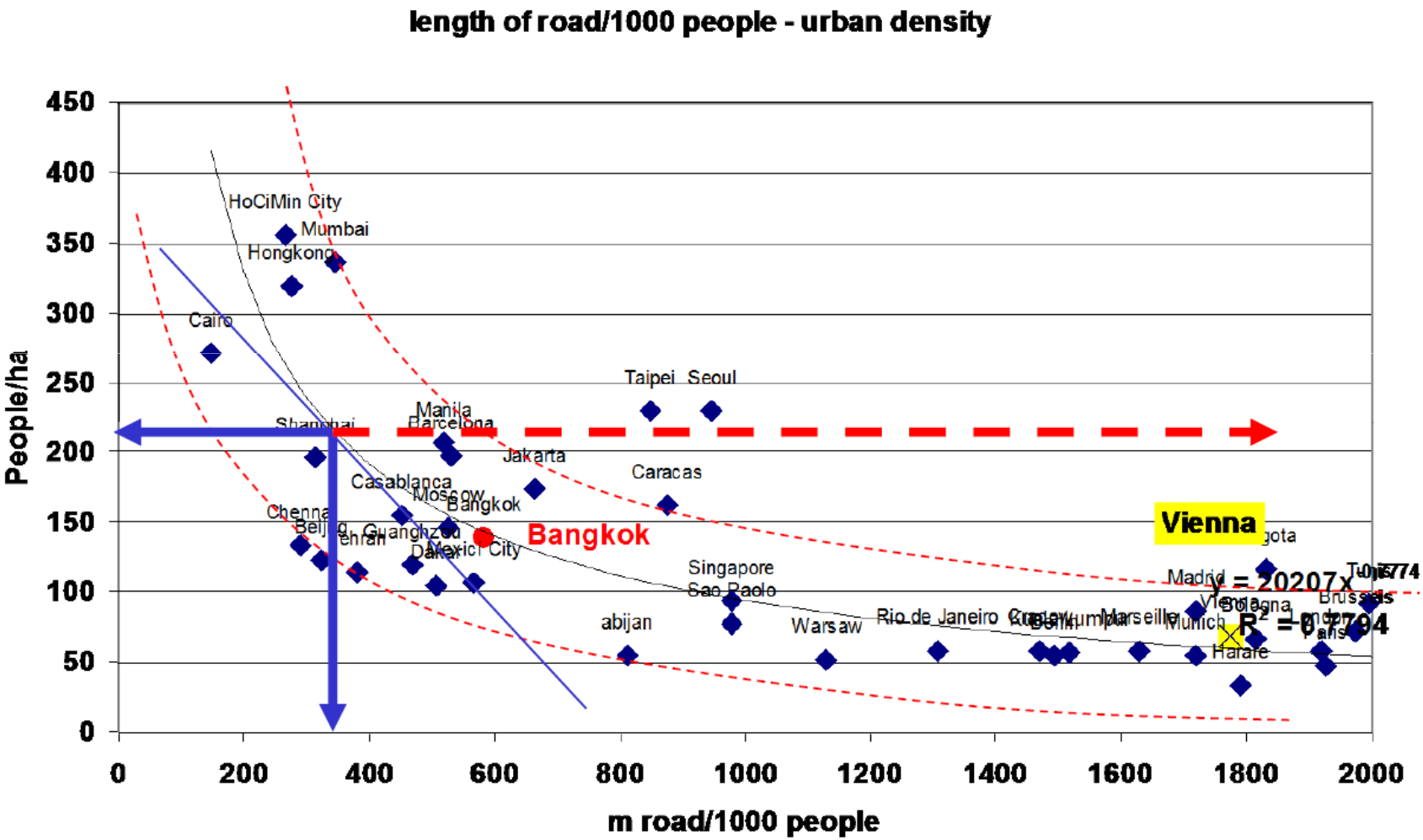
Houston / Bolzano




HOTEL
15m

Franz-Josefs-Kai

Verlust der Kontrolle über die Gestaltung der Städte


length of road/1000 people - urban density
People/ha
m road/1000 people
0
50
100
150
200
250
300
350
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450
0
200
400
600
800
1000
1200
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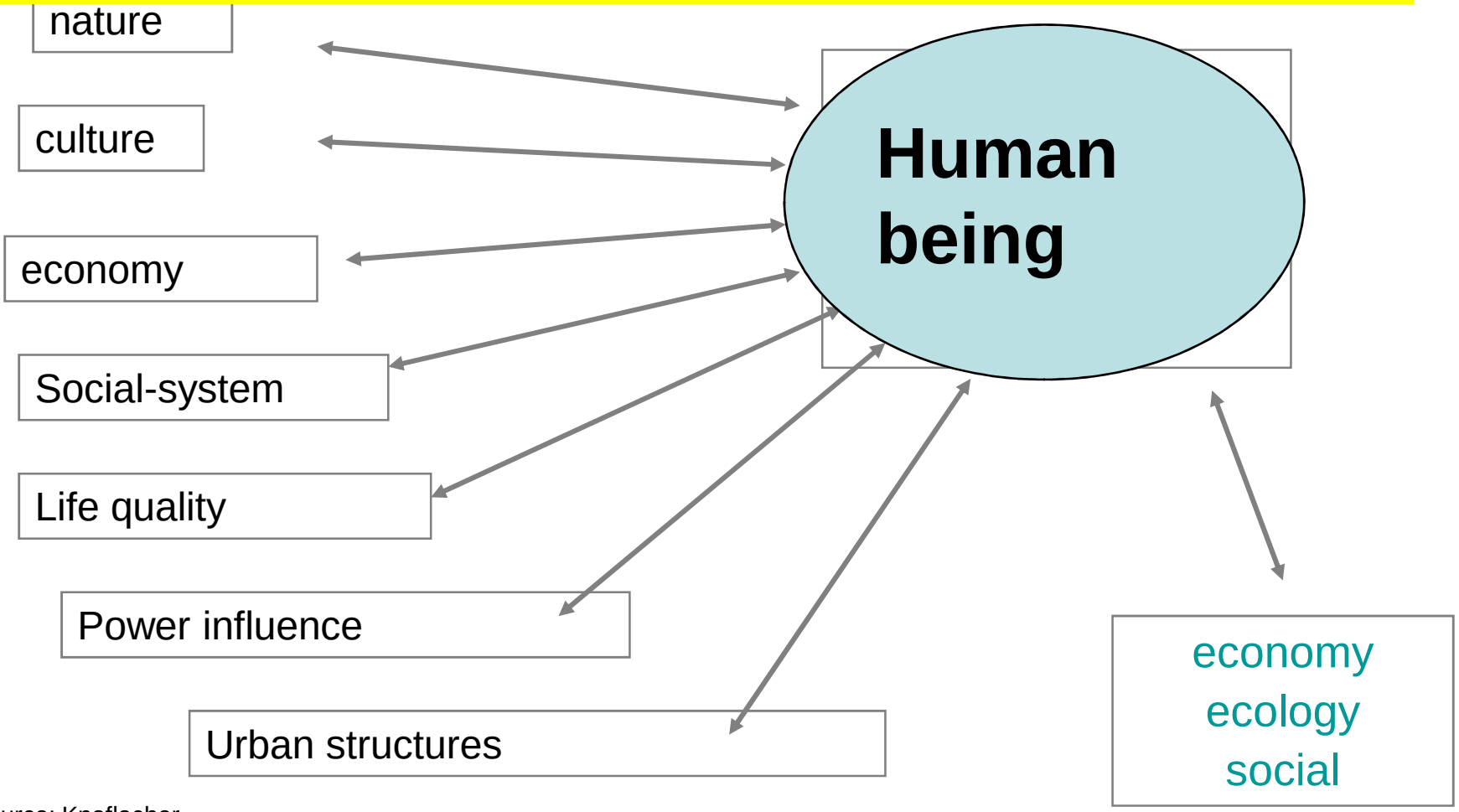
1600
1800
2000
HoCiMin City
Mumbai
Hongkong
Cairo
Taipei
Seoul
Manila
Barcelona
Jakarta
Caracas
Casablanca
Moscow
Bangkok
Chenna
Bangkok
Vienna
Singapore
Sao Paolo
abijan
Warsaw
Rio de Janeiro
Marseille
Munich
Madrid
Brussels
Harare
y = 20207x
R² = 0.2794

Mobility in interaction with other disciplines

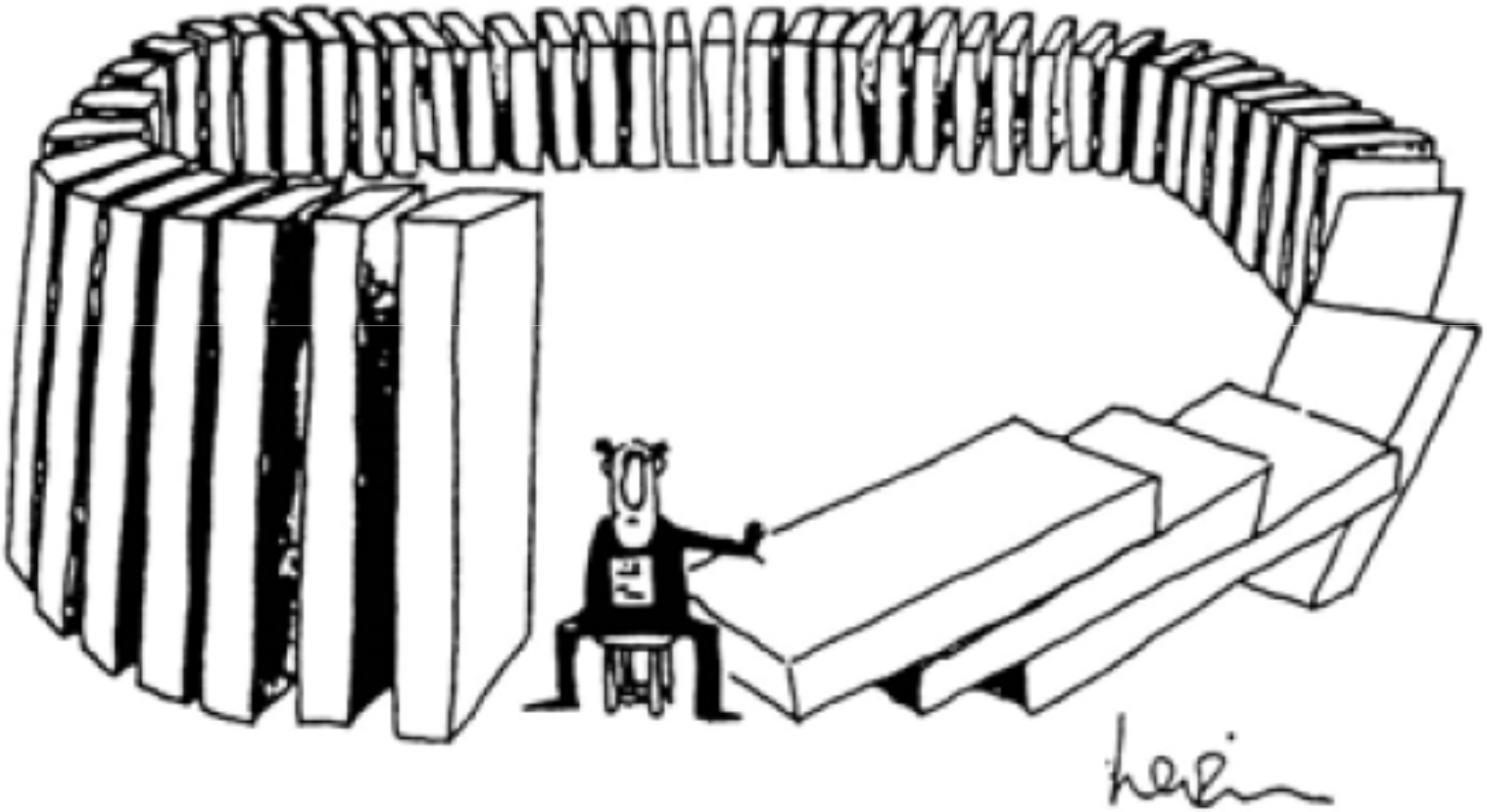
If we change the transport system we change everything!



Source: Knoflacher

The problem of the system…

causal loops, rebound effects, difference between individual and system behaviour



Usage of public space

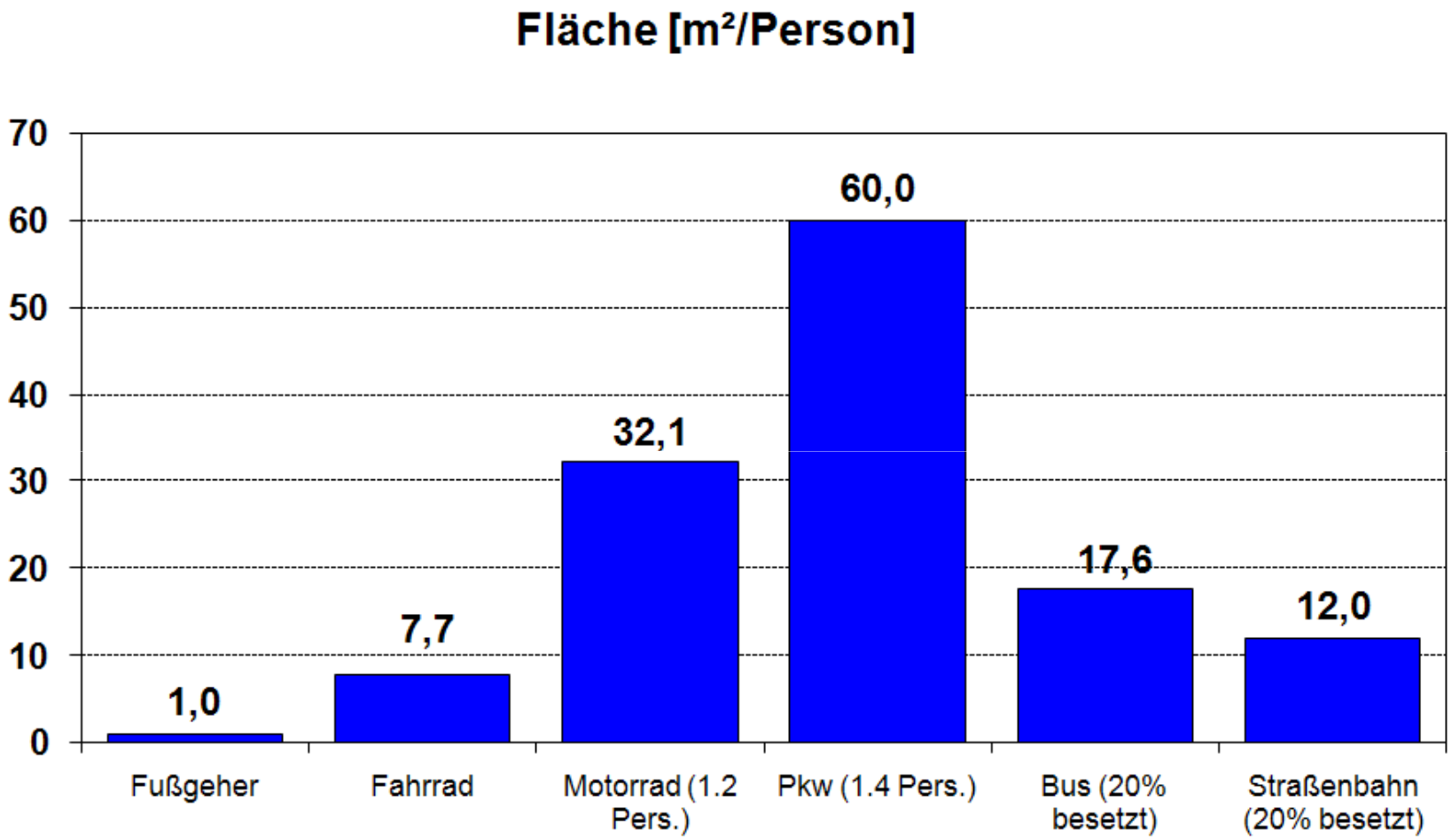
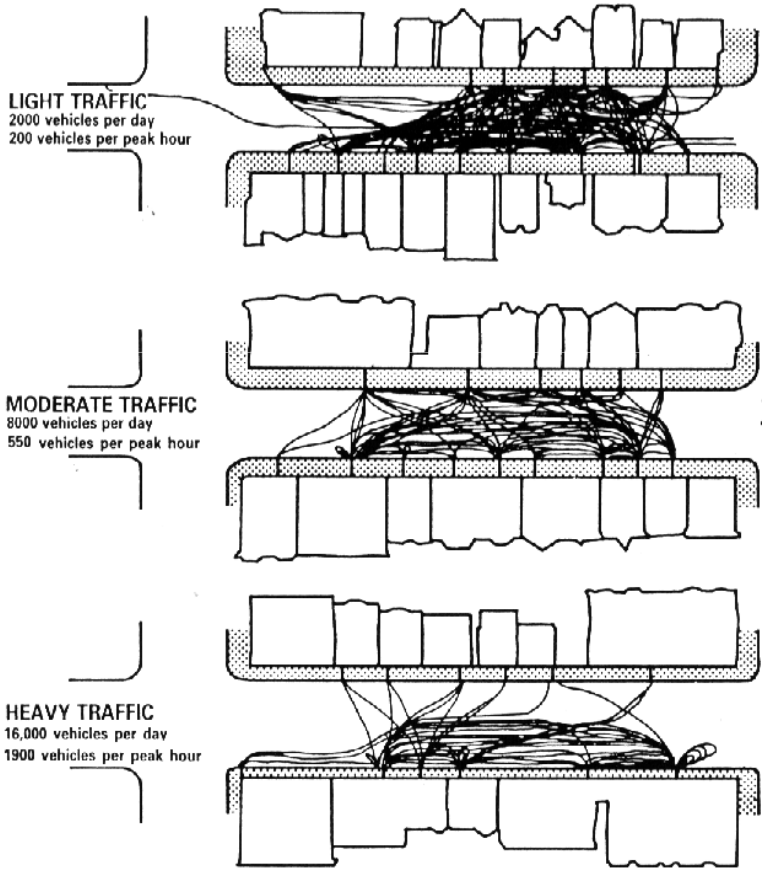
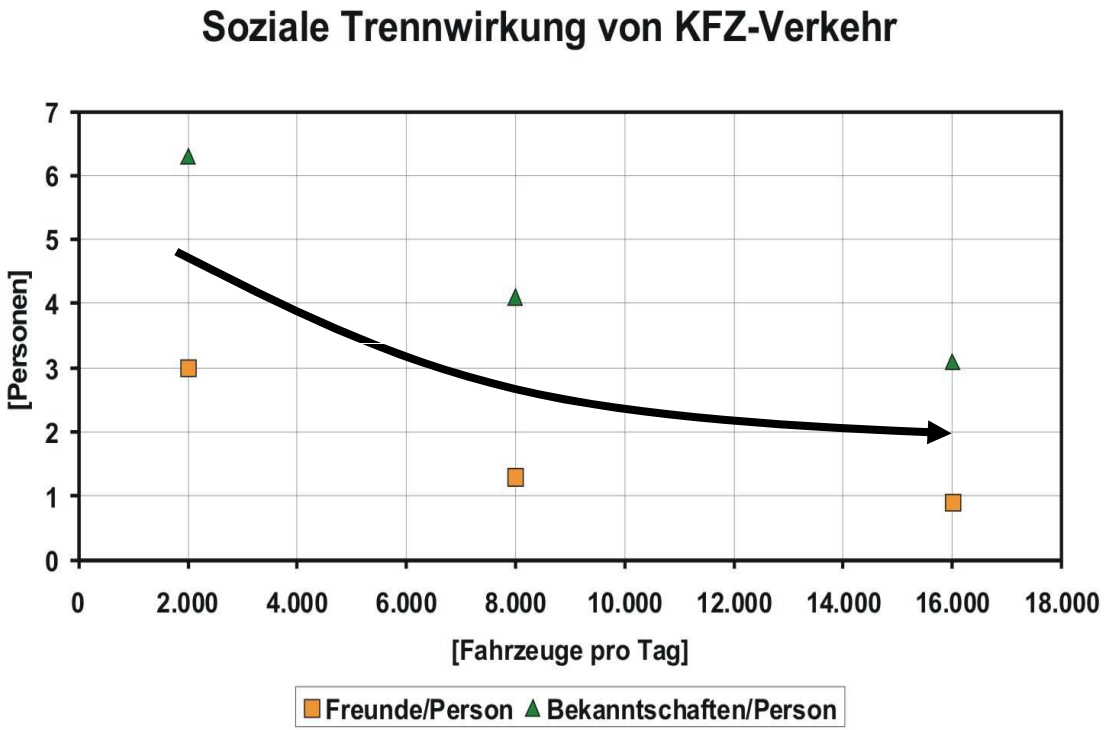


Abbildung: Quelle:: Pfaffenbichler, P. C. (2001). "Verkehrsmittel und Strukturen." Wissenschaft & Umwelt INTERDIZIPLINÄR(3): 35-41.

Speed & social environment I





Quellen: Appleyard 1981