The impact of local transport system on green infrastructure – policy versus reality

The case of Poznan, Poland

Jędrzej Gadziński

Adam Mickiewicz University in Poznan

Institute of Socio-Economic Geography and Spatial Management

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- Cities as the places with the concentration of negative impact.

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- Perspectives for the future

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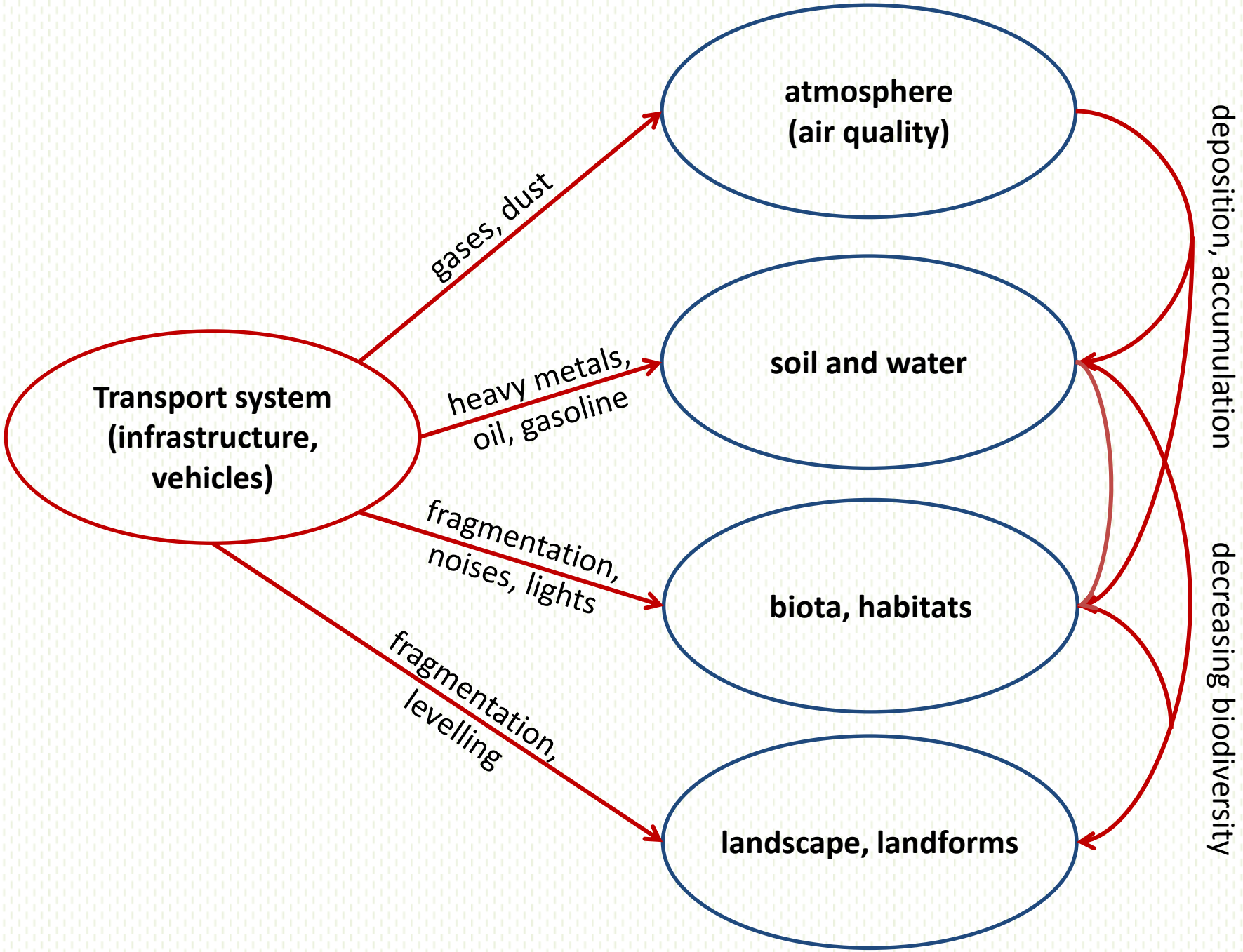
How do transport systems impact the natural environment?


atmosphere
(air quality)
soil and water
biota, habitats
landscape, landforms
Transport system
(infrastructure,
vehicles)
gases, dust
heavy metals,
oil, gasoline
fragmentation,
noises, lights
fragmentation,
levelling
deposition, accumulation
decreasing biodiversity

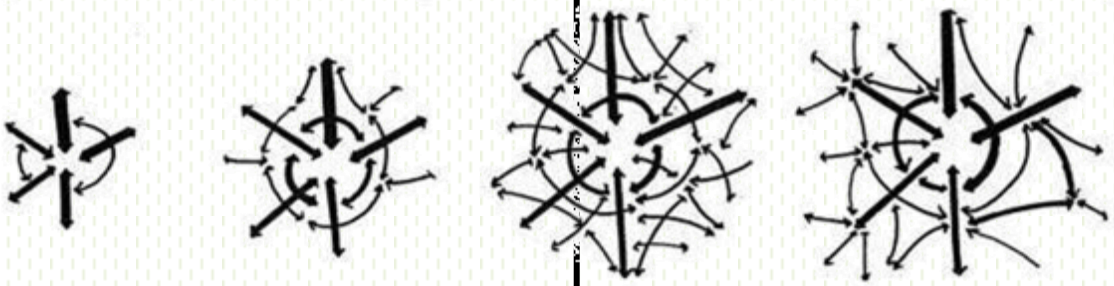
What contributes to the growing negative impact of transport in cities?

urbanisation processes

changes in lifestyle

motorisation

growing transportation needs



new investments in transport infrastructure

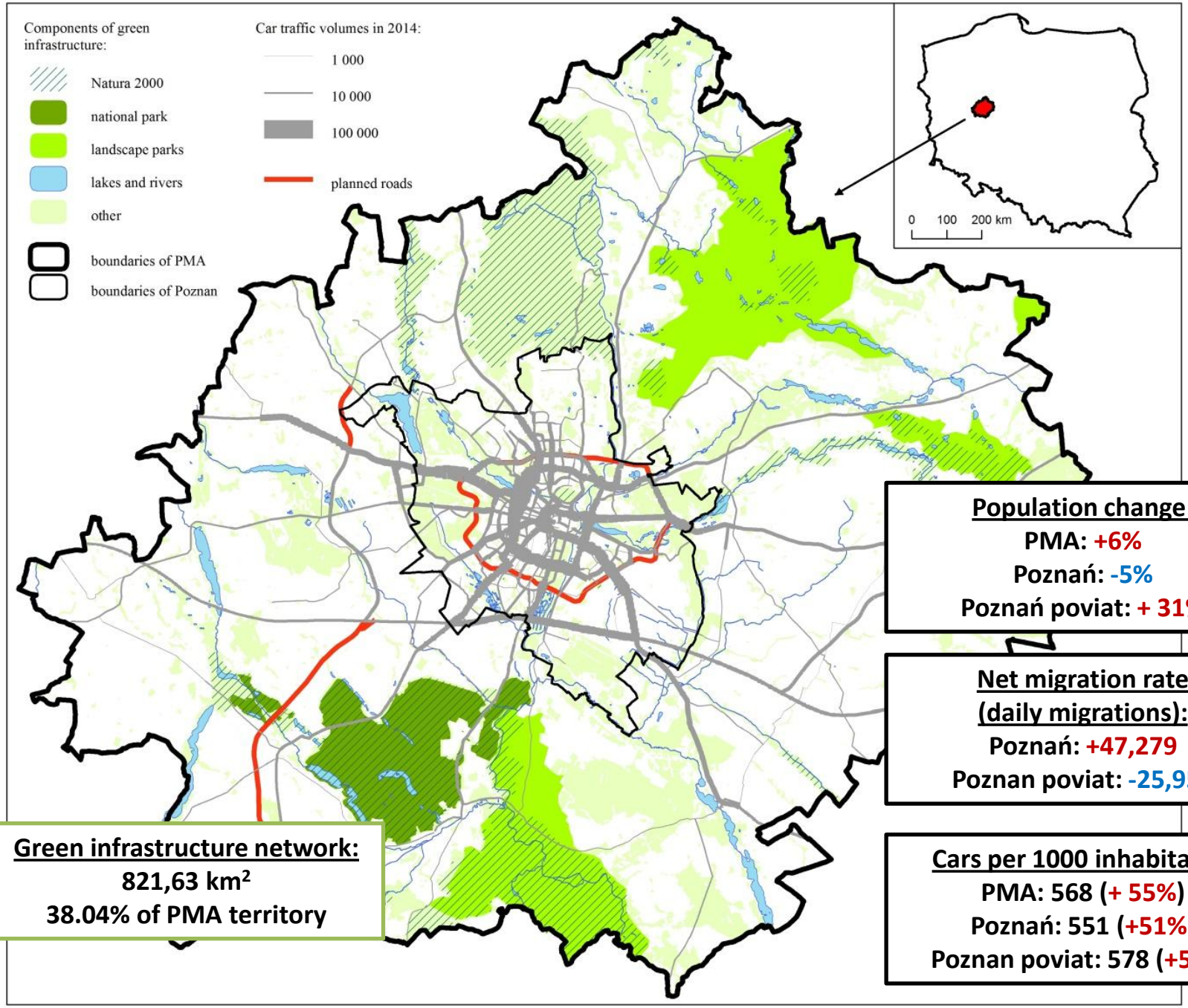
growing pressure on natural environment in urban areas

Source: Topp H.H. 2006. Trends, innovative Weichenstellungen und Hebel für Mobilität und Verkehr - von 2030 aus gesehen. Technikfolgenabschätzung. Theorie und Praxis, 3, 15, 12-20.

How are green infrastructure networks protected from negative transport impact?

(case study of Poznan Metropolitan Area)

Poznan Metropolitan Area **Poland**



Population change:
PMA: +6%
Poznań: -5%
Poznań poviat: + 31%

Net migration rate (daily migrations):
Poznań: +47,279
Poznan poviat: -25,952

Green infrastructure network:
821,63 km²
38.04% of PMA territory

Cars per 1000 inhabitants:
PMA: 568 (+ 55%)
Poznań: 551 (+51%)
Poznan poviat: 578 (+58%)

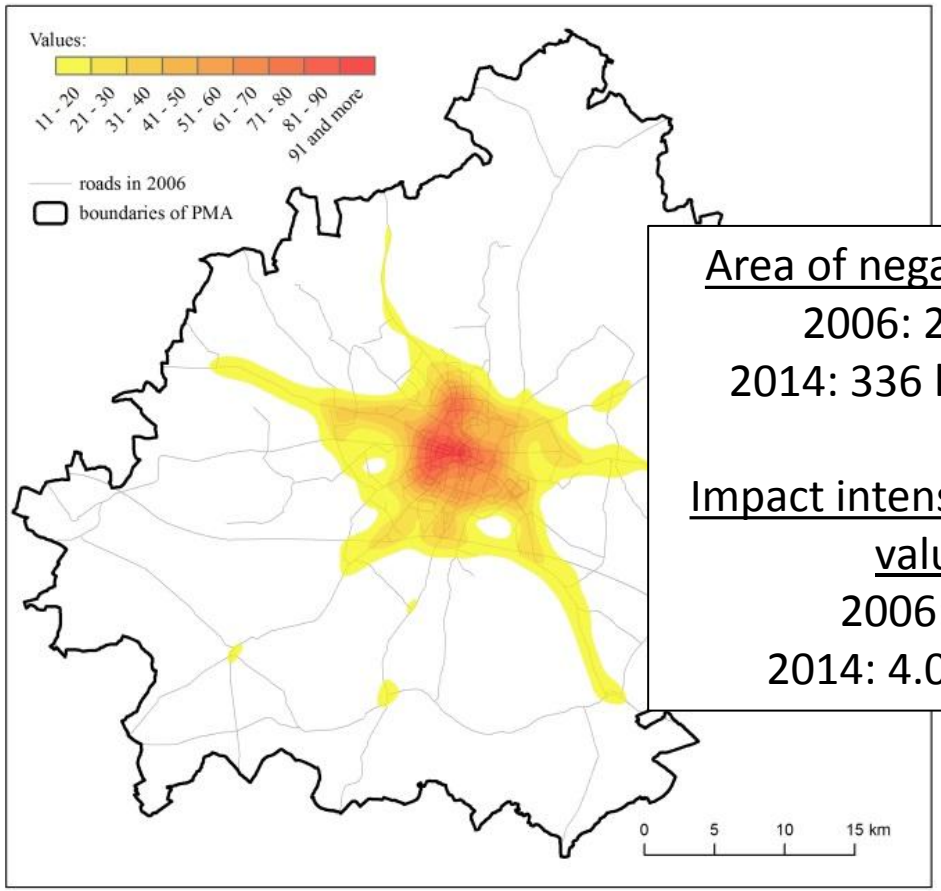
Transport policy objectives in PMA (since 2006):

- *sustainable development of transport system in Poznan Metropolitan Area with an achievement of ecological, social and economic goals*

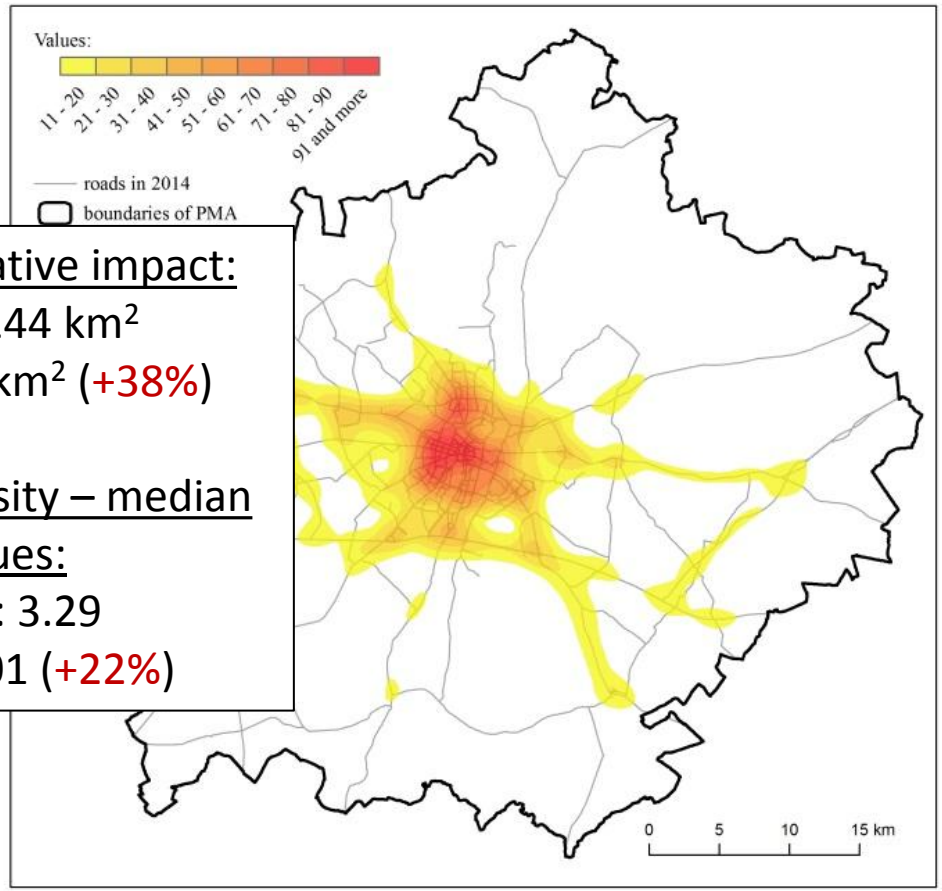
- ecological goals:
  - to reduce emissions of air pollutions and noises,
  - to protect natural areas from new transport investments,
  - to implement restrictions to car traffic,
  - to increase the percentage of public transport in the travels,
  - to triple the percentage of bicycle traffic in the city transportation,
  - to eliminate the heavy vehicle traffic through the city,
  - to change travel behaviour and reduce car traffic.
  - to integrate different modes of transport.

What are the effects of sustainable transport policy?

2006



2014



Area of negative impact:

2006: 244 km^2

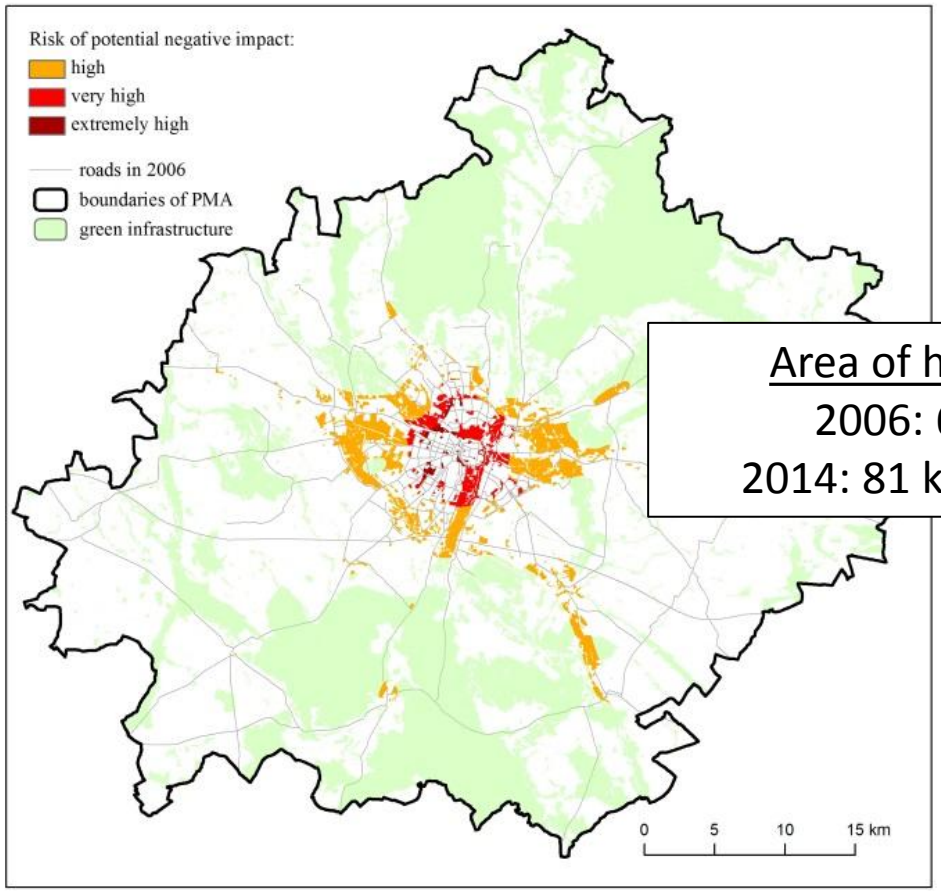
2014: 336 km^2 (+38%)

Impact intensity – median values:

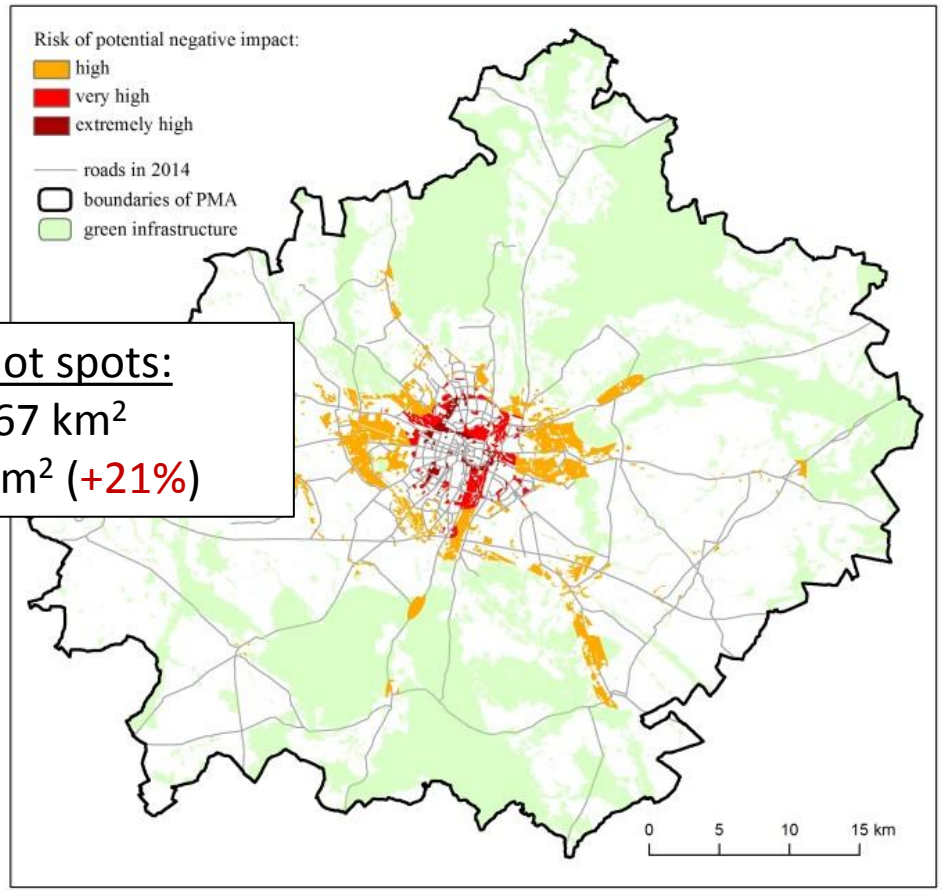
2006: 3.29

2014: 4.01 (+22%)

2006



2014



Area of hot spots:

2006: 67 km^2

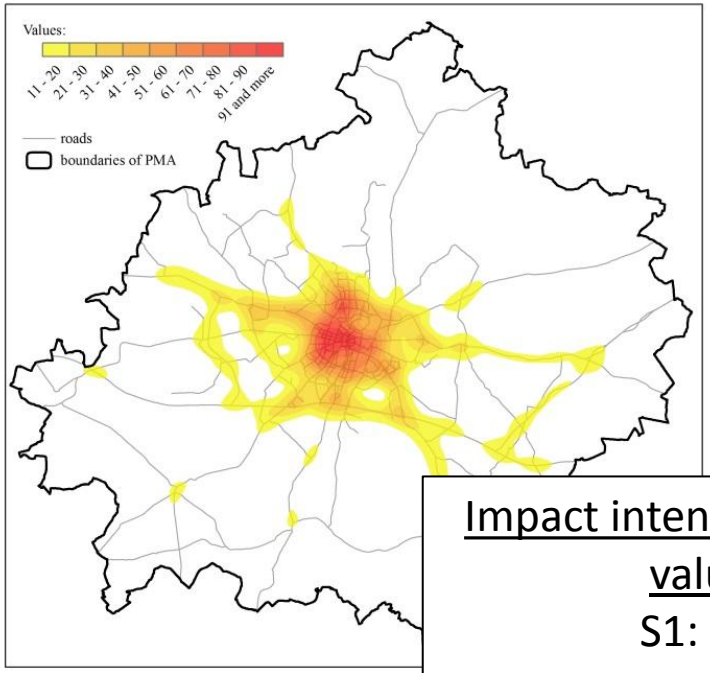
2014: 81 km^2 (+21%)

Perspectives for the future?

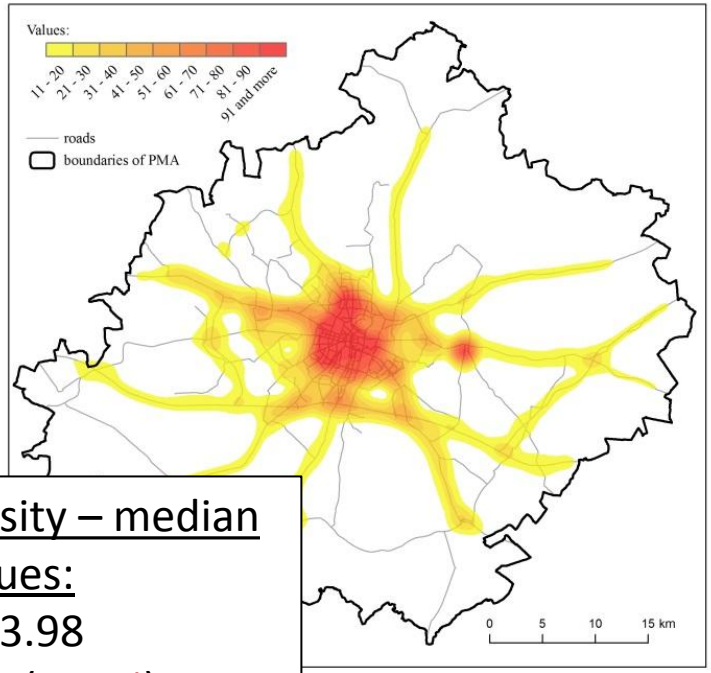
Possible scenarios in 2025:

	Car traffic volumes on roads	Network development
Scenario 1	stable	no new infrastructure investments
Scenario 2	increase	no new infrastructure investments
Scenario 3	stable	realisation of planned investments
Scenario 4	increase	realisation of planned investments

Scenario 1



Scenario 2



Impact intensity – median values:

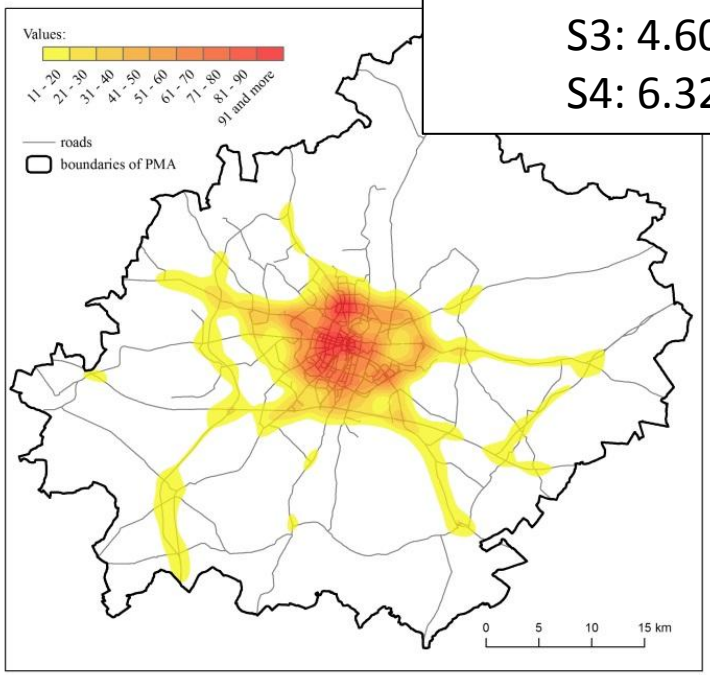
S1: 3.98

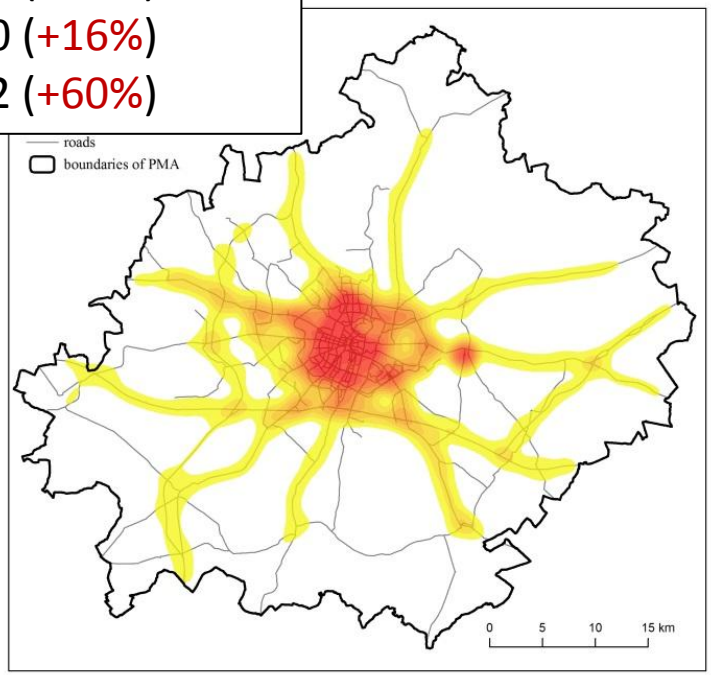
S2: 5.74 (+44%)

S3: 4.60 (+16%)

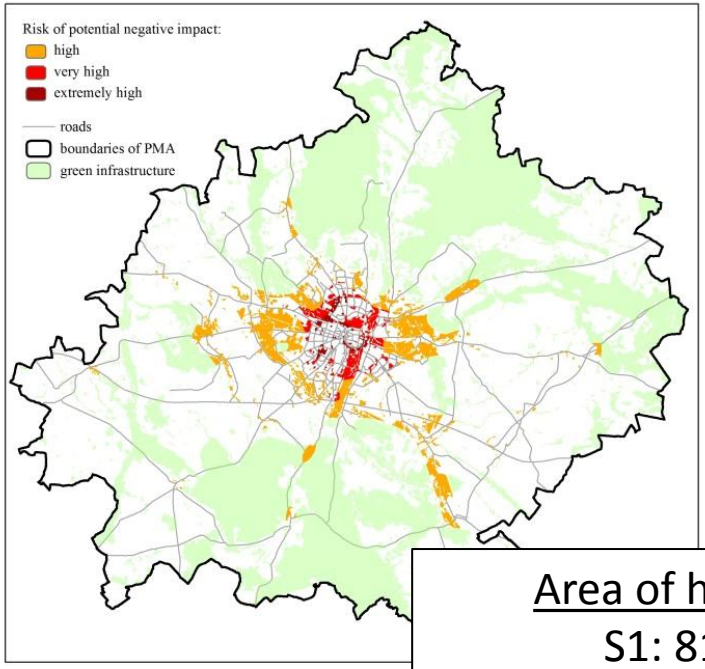
S4: 6.32 (+60%)

Scenario 3

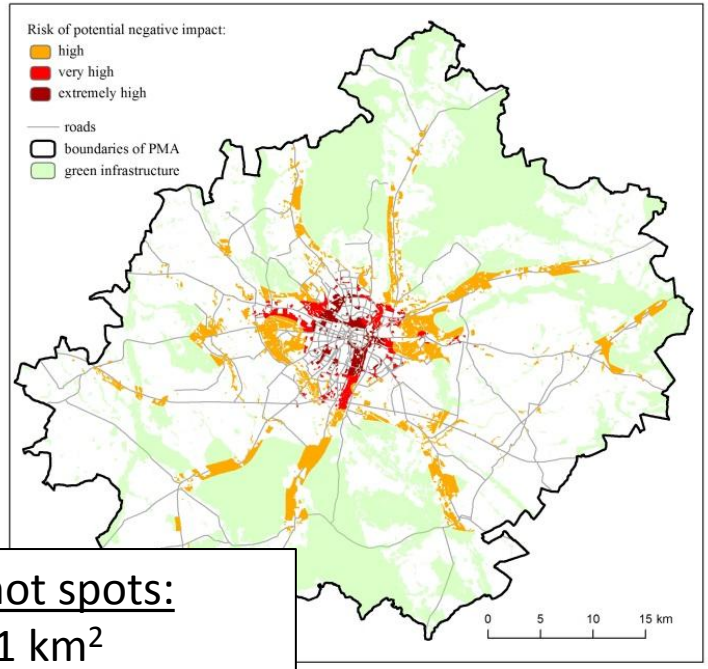




Scenario 1



Scenario 2



Area of hot spots:

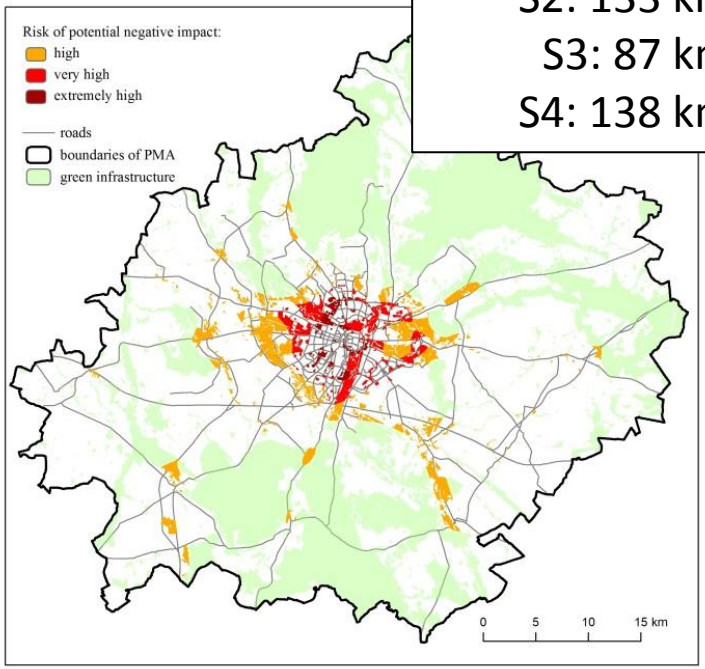
S1: 81 km^2

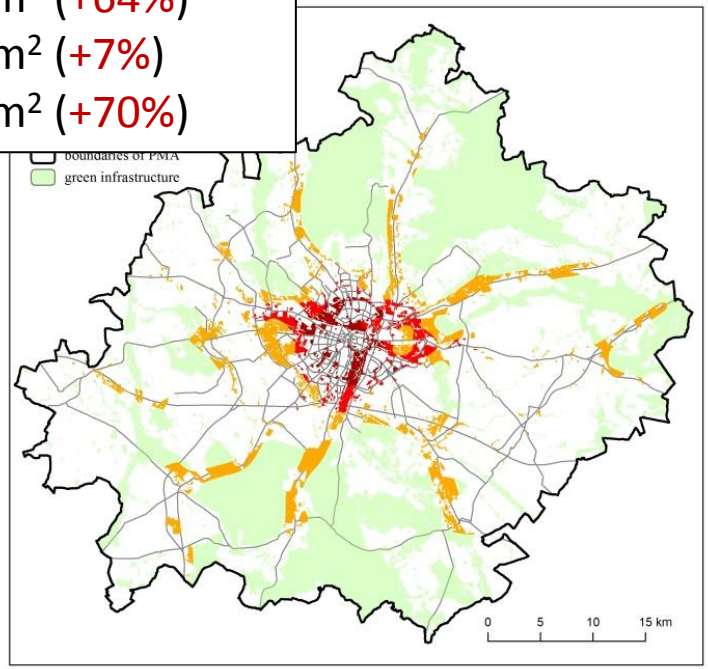
S2: 133 km^2 (+64%)

S3: 87 km^2 (+7%)

S4: 138 km^2 (+70%)

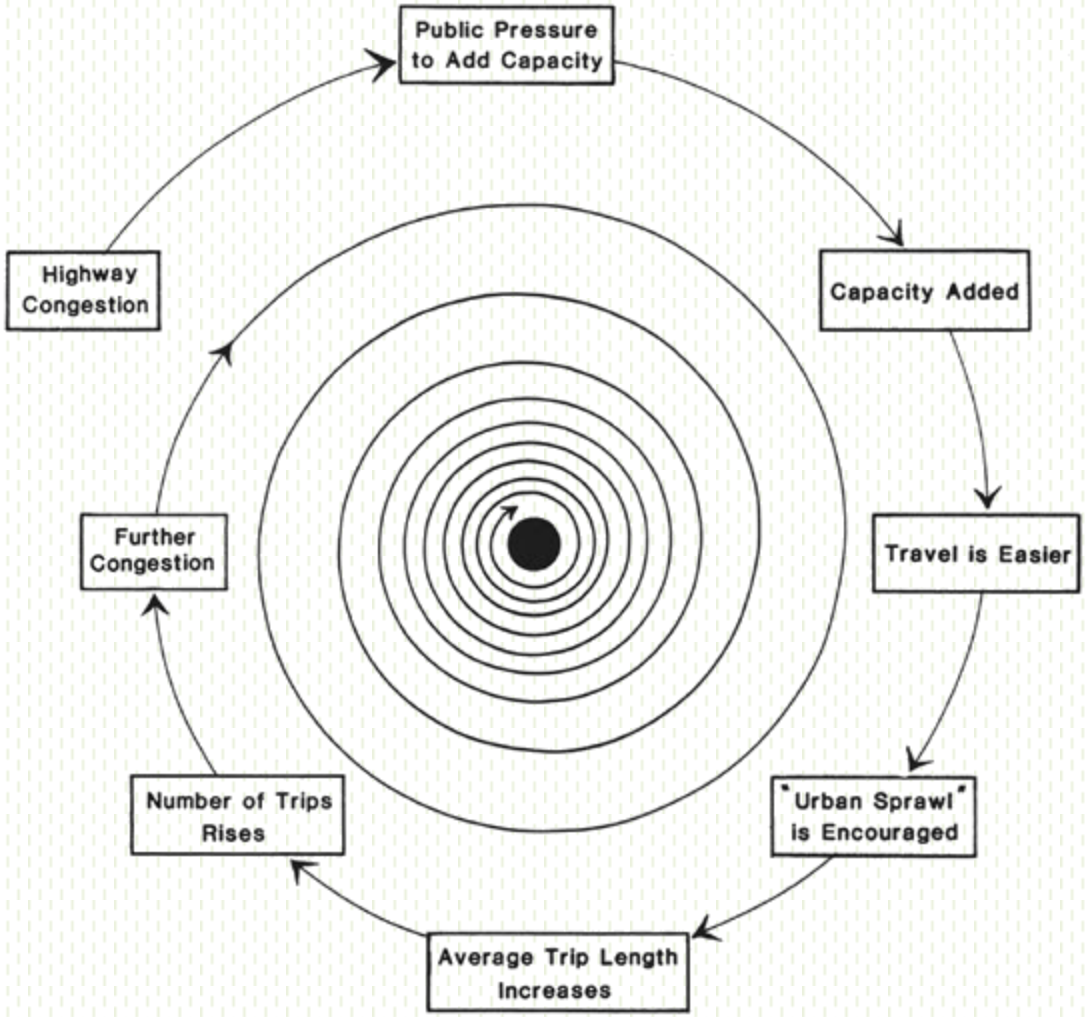
Scenario 3





Future transport policy?

- a never-ending programme of road building is not the answer



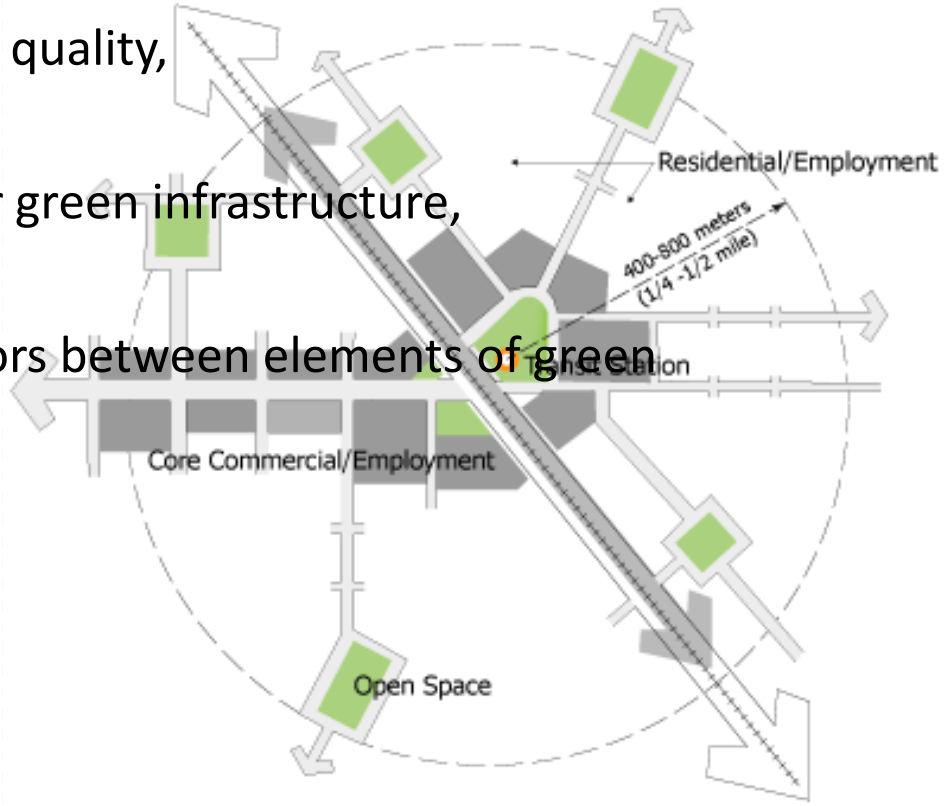
„Initial investments in improved highway facilities result in greater ease of travel and hence altered travel patterns – an increase in average trip length and in the number of trips being made. Over time […] this increased demand stimulated by the initial investment in increased transport supply fuels the need for even more facilities, and the feedback process repeats itself."

Plane D.A. 1986. Urban transportation: Policy alternatives. [In:] S. Hanson (red.), The geography of Urban Transportation. The Guilford Press, New York, London, s. 386-414.

So what to do?

Complex urban planning focused on sustainable development goals:

- reduction of movement needs (TODs),
- improvements in urban transport quality,
- strengthening legal protection for green infrastructure,
- establishing new links and corridors between elements of green infrastructure network,



Thank you for your attention!

dr Jędrzej Gadziński

Adam Mickiewicz University in Poznan
Institute of Socio-Economic Geography and Spatial Management
Dziegielowa 27,
61-680 Poznan

(+48) 516 103 533
jedgad@amu.edu.pl