Prediction of land use and transport changes in dynamic environments – modelling the bipolar Vienna – Bratislava metropolitan region

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The region Vienna – Bratislava: history and status quo

Gross regional product in PPP per person 1998

- Bratislava district
- Vienna
- Vienna Northern hinterland
- Vienna Southern hinterland
- Burgenland North

Index national = 100  Index EU = 100

Quelle: (Hrdina et al., 2002) S. 4, (MA 18 - Stadtentwicklung und Stadtplanung, 2003)
The model MARS of the region Vienna - Bratislava

1. No model
2. Simple cost based
3. Spreadsheet model
4. Sketch planning model
5. Network assignment model without elastic assignment
6. Network assignment model with elastic assignment
7. Network assignment model in conjunction with external demand / mode-choice model
8. Four stage model
9. Land-use Transportation Interaction (LUTTI) model
10. Strategic Transport/ Environment Model

Complexity through systems involved

Complexity through spatial detail
The model MARS of the region Vienna - Bratislava
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Commuting trips

\[ y = 1.1861x - 941.51 \]
\[ R^2 = 0.9116 \]

\[ y = 1.1173x - 35.178 \]
\[ R^2 = 0.9204 \]

\[ y = 0.8566x + 85.538 \]
\[ R^2 = 0.8851 \]
First results – car-km/resident and day
First results – Link with animated GIS
Conclusions

- The special history and situation of the region Vienna – Bratislava requires dynamic modelling.
- The model MARS of the region Vienna – Bratislava is still under development.
- Important task like calibrating the land use part have not yet been carried out due to difficulties with data availability.
- First results for a “Do nothing“-scenario show a continuing trend of sub-urbanisation and increase in car use.
- In the next step we will define different policy instruments and strategies and calculate their effects on land use, transport and the environment.
We would like to thank the “Wiener Wirtschaftskammer”, for funding the underlying project PLUTO (Prediction of Land Use and Transport changes due to Open borders – a modelling framework for the Vienna – Bratislava metropolitan region).

Thank you for your attention!

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