Urbanisation and Low Carbon Sustainable Transport

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ITF Urban Transport Model

Global passenger transport trends and impacts increasingly defined by changes in these variables in urban areas:

- Economic activity
- Land Use
- Fuel prices
- Road infrastructure
- Public transport service (Quality and quantity)
ITF Urban Transport Model

What we did:

- Simulated urban evolution based on average agglomeration classes (UN definition)
- Created an “urban front-end” to the IEA Mobility Model (MoMo).
- Modeled mobility, modal shares, CO2 emissions
ITF Urban Transport Model

What we cover:

- Motorised passenger inland transport
- Latin America (currently)
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What data we used:

- Development Bank of Latin America (CAF) Urban Mobility Observatory
- McKinsey Global Institute (MGI) Cityscope
- United Nations Population and Urbanization Prospects data
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How it works:

**Urban Travel**
- Population
- Urban GDP
- Population density
- Public transport service quality

**Non-Urban Travel**
- Population
- National GDP

**Transport Activity**

**Fuel Price**
ITF Urban Transport Model

How it works with IEA MoMo:

Urban Transport Model

- Urban Travel
  - Fuel Price
- Non-Urban Travel
  - Transport Activity

IEA MoMo

- IEA Baseline non-urban rail and bus
- Energy Use
  - Per km, based on stock and technology
- CO₂ emissions
Four Scenarios

Type of transport modes fostered by urbanisation

Road expansion

High

Private

Private transport-oriented mobility with high road infrastructure

Public transport-oriented mobility with high road infrastructure

Low

Private

Private transport-oriented mobility with low road infrastructure

Public transport-oriented mobility with low road infrastructure
Four Scenarios

Type of transport modes fostered by urbanisation

**Private**
- High urban sprawl
- Low transport service expansion
- Moderate improvement of public transport quality

**Public**
- Low urban sprawl
- High fuel prices
- High transport service
- Significant improvement of public transport quality
Mobility and CO$_2$: 2050

Long-term transport planning and policies translate into significant changes. Three scenarios (% of total p-kms)

### Baseline 2050
- Car: 69%
- Motorcycle: 10%
- Bus: 21%

### Private-transport oriented, high road growth
- Car: 83%
- Motorcycle: 7%
- Bus: 10%
- +19% p-kms
- +34% CO$_2$

### Public transport oriented, lower road growth
- Car: 48%
- Motorcycle: 7%
- Bus: 45%
- -2% p-kms
- -27% CO$_2$
Sustainability: Convergence in Mobility, Divergence in CO$_2$

Growth in P-kms Index (2010=100)

Growth in CO$_2$ emissions Index (2010=100)
Impact on total passenger inland transport outcomes for Latin America, 2050

Growth 2010-2050
Index (2010=100)

CO₂ emissions between +30% and -23% relative to the Baseline
Conclusions

- Public transport-oriented urbanisation could help slow growth in vehicle-kilometres travelled without sacrificing overall passenger mobility and reducing CO$_2$ emissions.

- Long-term strategic planning is needed, rather than isolated actions.
Final Remarks and Future plans

- Detail on assumptions and scenarios: ITF Transport Outlook 2013 (to be released in December).
- Tool for exploring multidimensional settings of urbanisation and magnitude/time-frame of their effect on future aggregate transport trends, related CO₂ emission evolution.
- Modal shift is linked to changes in urban configuration and policy paths.
- More specific policy analysis through these type of models could be possible but requires very careful examination of evidence and study on how to introduce it into the framework.
- Short and medium term plans for ITF: Expand methodology to China and India (and then other Asia).
Thank you

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