Transport Outlook 2040 for Switzerland ARE (2016)

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Transport Outlook 2040

Kilometres travelled will continue to grow substantially, but less rapidly than in the recent past.

- Passenger transport: +25%
- Freight transport: +37%

Trips for shopping and leisure will increase the most, travel to and from work the least. This is due to the changing proportion of the working population and mobile pensioners.

- Shopping: +38%
- Leisure: +32%
- Work: +16%

The sharpest rise in passenger transport (pkm) will be recorded by public transport, the lowest by private motorised transport.

- PT: +51%
- NMT: +32%
- PMT: +18%

Population and economic growth remain the principal forces driving increases in transport.

- Population: +28%
- Economy: +46%

The volume of freight carried by rail (tkm) will grow more quickly than that carried by road.

- Rail: +45%
- Road: +33%
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1. Motivation and delimitation

**Objective:** development paths for passenger and freight transport up to 2040 as a basis for strategic decisions

- common and coherent framework
- informed and coordinated decisions for infrastructure development, transport policy, energy policy and spatial development

**Elaboration:** ARE in cooperation with other federal offices and external contractors
Delimitations

Passenger and freight transport: coordinated and simultaneous update of all transport modes (except air: projection given by Federal Office of Civil Aviation)

Scenarios: reference scenario (REF) and 3 alternative policy scenarios, 2 sensitivities (demographic & economic variation)

Quantitative methods: simulations with the passenger and freight transport models provided by the UVEK transport modelling center (@ARE)
Delimitations

Commun assumptions across all scenarios:
- population, GDP and macrovariables (altered in sensitivities)
- transport infrastructure (rail and road)
- oil price

Assumptions depending on scenarios (selection)
- spatial spread of workplaces and households
- mobility prices
- availability of mobility tools
- behavior: trips per person, day and purpose
- occupancy rates (both in passenger and freight)
2. Main results REF
Passenger transport
Wrap-up: REF, passenger transport

- significant increase, but less dynamic than in the past
  - continued population growth
  - decreasing share of working population (-), increased share and mobility of elderly
  - satiation: number of trips, mobility tools
- **satiation of infrastructure (rail and road)** during peak-hours and between agglomerations
  - discharge through planned infrastructure projects, but overall situation worsens
  - displacement of traffic to inferior road network
- strong increase in public transportation
- distances: stable for private transport, further increase for public transport
2. Main results REF
Freight transport
Tonne-kilometres transported up to 2040

- **Domestic**: 42.5%
- **Imports**: 42.5%
- **Exports**: 18.6%
- **Transit**: 29.8%

Growth, 2010–2040
Wrap-up: REF, freight transport

- **Main drivers:** population and economic growth
- **Transport growth below GDP growth:** increased productivity and structural effects
- **Shift in economic structure:** decrease in energy products
- **Advantages for rail due to cost projections**
3. Sensitivities (+/- 700,000 persons)
Explorative (≠ target) scenarios

REFERENCE: trend, relative prices unchanged

BALANCE: sustainability, densification, external transport costs internalized (and user-pays principle)

SPRAWL: further spatial fragmentation, user-pays principle (without internalization of external costs)

FOCUS: strong urbanization, user-pays principle with urban/rural differences
Alternative Scenarios

Person-kilometres travelled by passenger transport up to 2040, by scenario and mode of transport

Reference: 100.9 vkm bn
Balance: 97.3 vkm bn
Sprawl: 105.2 vkm bn
Focus: 101.0 vkm bn

PMT: 33.6
PT: 30.0
NMT: 10.0

PMT: 25.2
PT: 9.7
NMT: 10.4

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Wrap-up: alternative scenarios

• Spatial structure and public and non motorized transport friendly policies show potential for traffic reduction
• Scenario SPRAWL shows the upper level of private motorized transport development in terms of vehicle kilometers (above sensitivity high)
• Freight transport with less modal shift potential, urbanisation (FOKUS) favours road transport
4. Methods and data

- economic structure outlook
- workplace and household location outlook
- National passenger transport model (NPVM)
- Aggregate method for freight transport (AMG)

Most important data used
- demographic outlook (Federal Statistical Office, FSO)
- economic outlook (Secretariat for Economic Affairs)
- Mobility and Transport Microcensus 2010 (FSO/ARE)
  - 2015-data published this year, but trips and distances per person stay unchanged
- Freight transport statistics (FSO, Swiss Federal Railways)
5. Open questions, further work

- Should we expect disruptive technological or social changes? Which effects are expected?
- outlook concerning propulsion technologies and implied environmental effects (other federal offices)
- from environmental impacts to economic costs
  - ARE publishes yearly estimations of external costs and benefits of transport (used for instance to evaluate distance-related heavy vehicle fee)
Wishes to the LCA community

- objective, value-free and unbiased analysis
- open and transparent datasources and hypotheses
- international compatibility
- coherent methodology for all modes
- regional differentiation
- «forward/downstream»-looking datasources and methodologies
  - inclusion of new technologies (e.g. electricity production)
  - economic valuation (distinction between social and private costs)
Thanks for your attention!

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