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Transport Outlook 2040 for Switzerland ARE (2016)



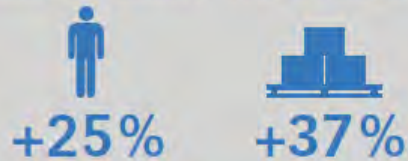
Discussion Forum “LCA of Mobility solutions”, 30 August 2017
Nicole A. Mathys, Federal Office for Spatial Development



Transport Outlook 2040

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

Passenger transport Freight transport



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.

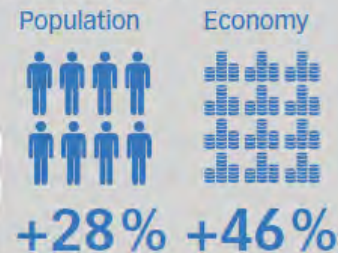
Shopping Leisure Work



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



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



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





Content

1. Motivation and delimitation
2. Main results
3. Sensitivities and alternative scenarios
4. Methods and data
5. Open questions



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:

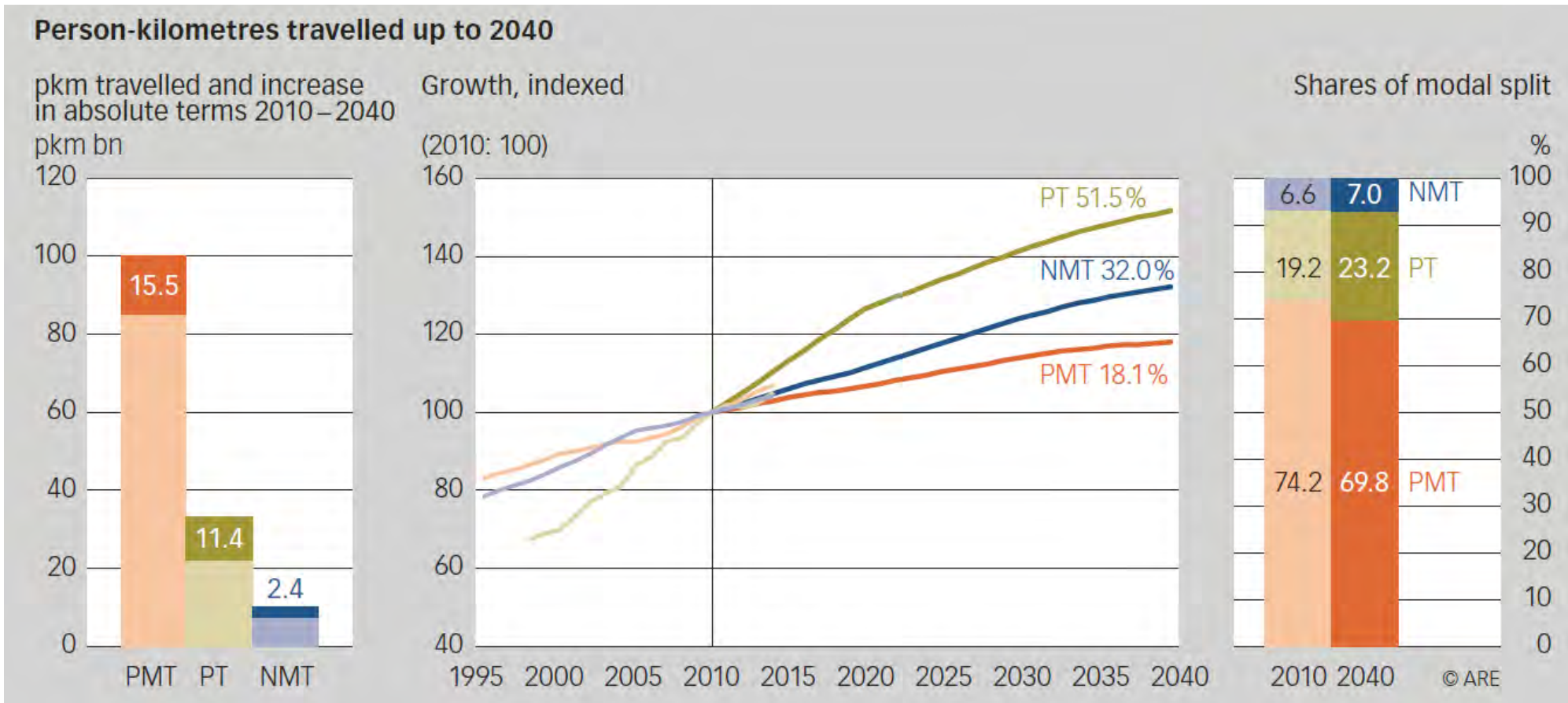
- population, GDP and macrovariables (altered in sensitivities)
- transport infrastructure (rail and road)
- oil price

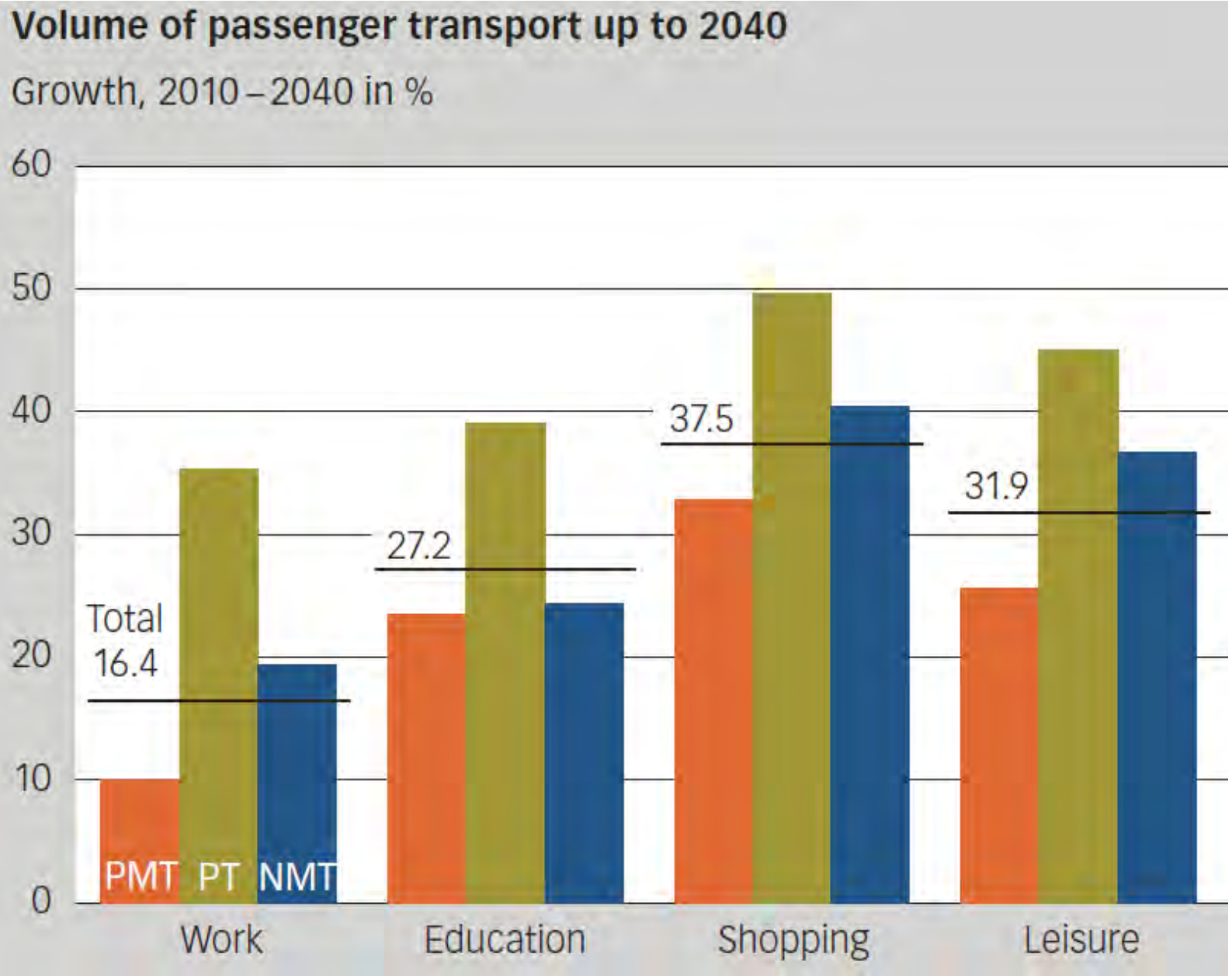
Assumptions depending on scenarios (selection)

- 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

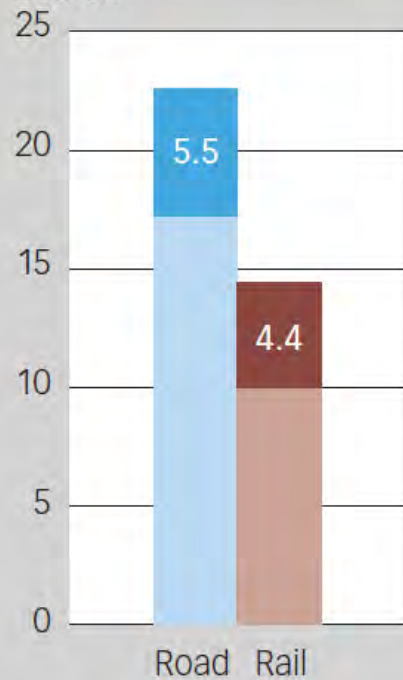
- **significant increase, but less dynamic than in the past**
 - continued population growth
 - decreasing share of working population (-), increased share and mobility of elderly
 - satiation: number of trips, mobility tools
- **satiation of infrastructure (rail and road) during peak-hours and between 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

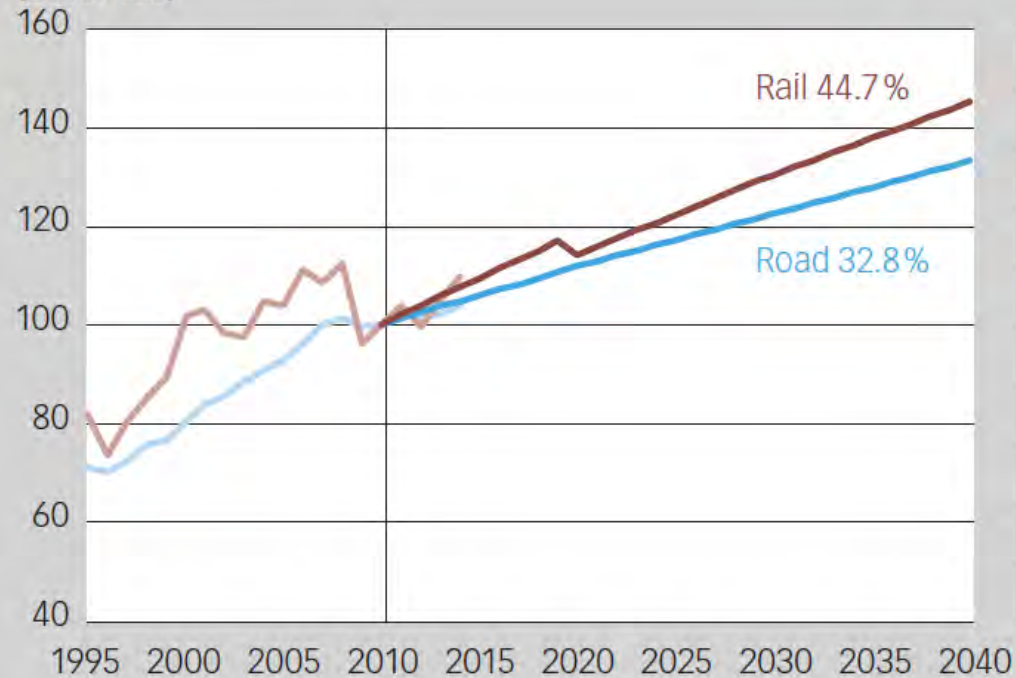
tkm transported and increase in absolute terms 2010 – 2040

tkm bn

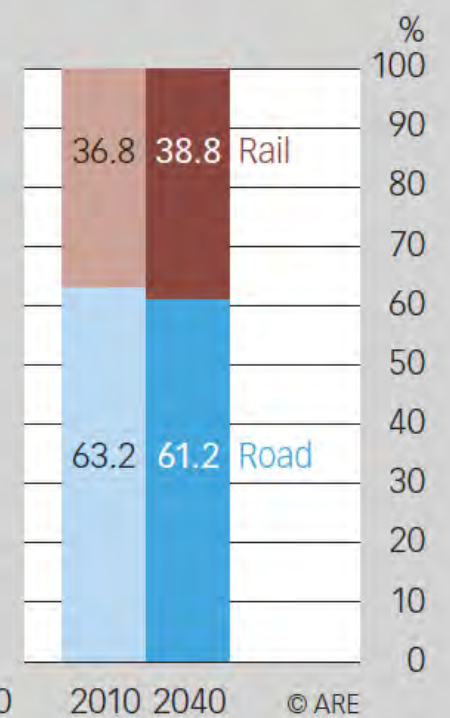


Growth, indexed

(2010: 100)



Shares of modal split



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Tonne-kilometres transported up to 2040

tkm bn



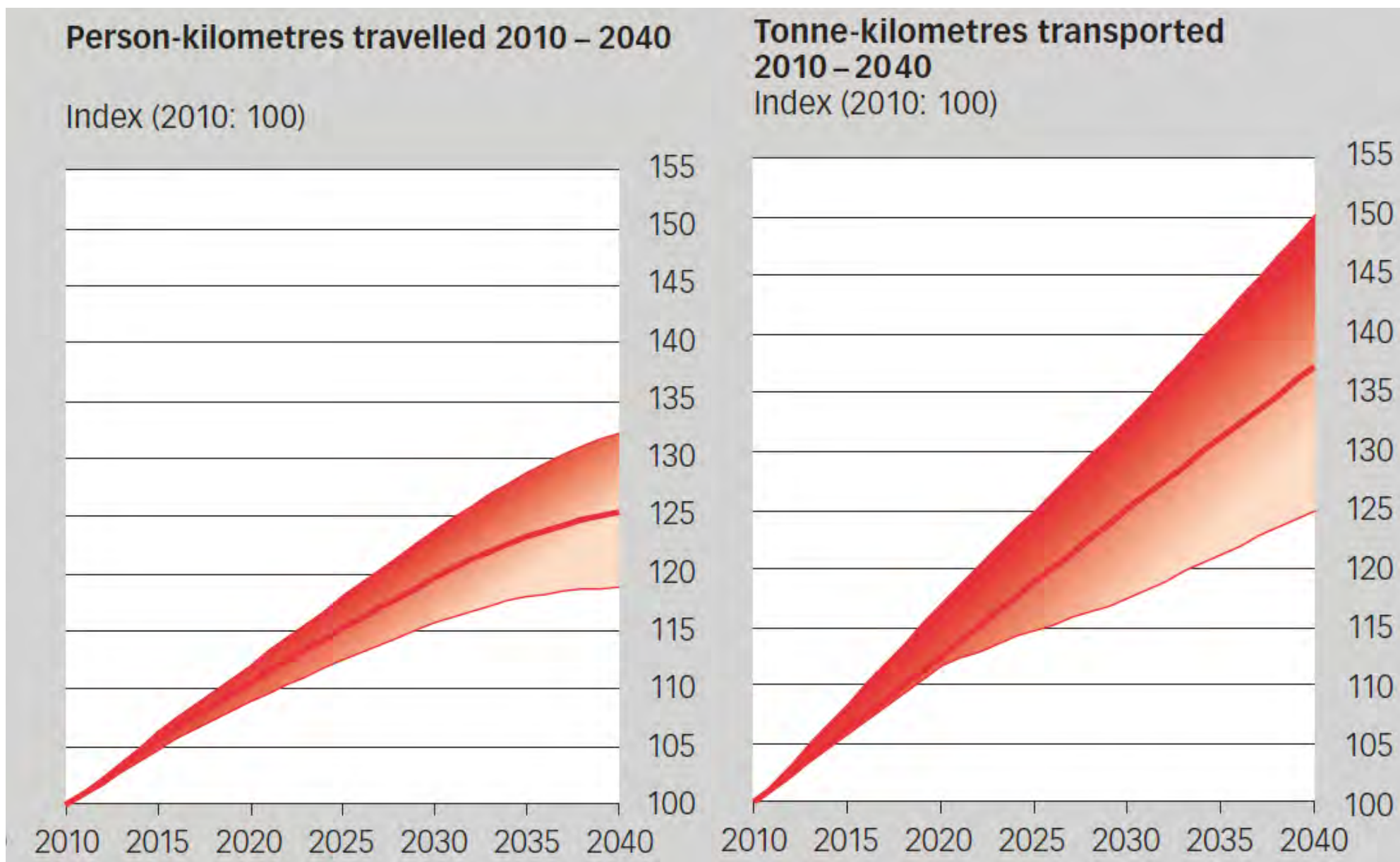


Wrap-up: REF, freight transport

- **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)

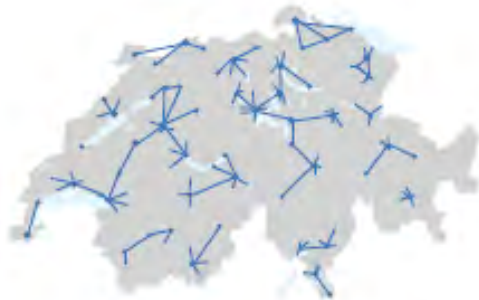




Explorative (\neq target) scenarios

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

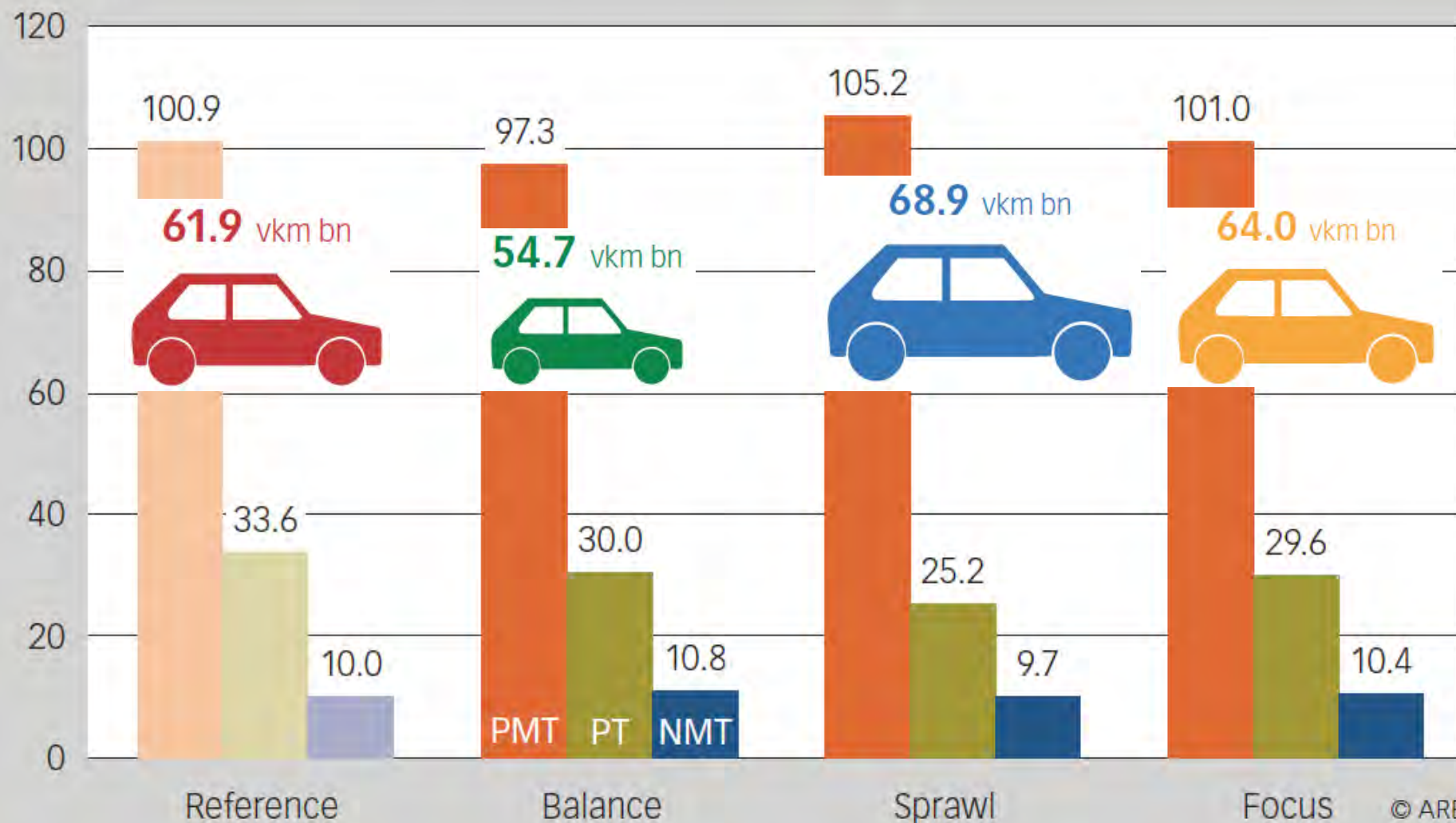




Alternative Scenarios

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

pkm bn





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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[Transport outlook 2040](#)

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[Mobility and Transport Microcensus](#)

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