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Swiss Mobility System: Transformation Potential and Process (B2.4)

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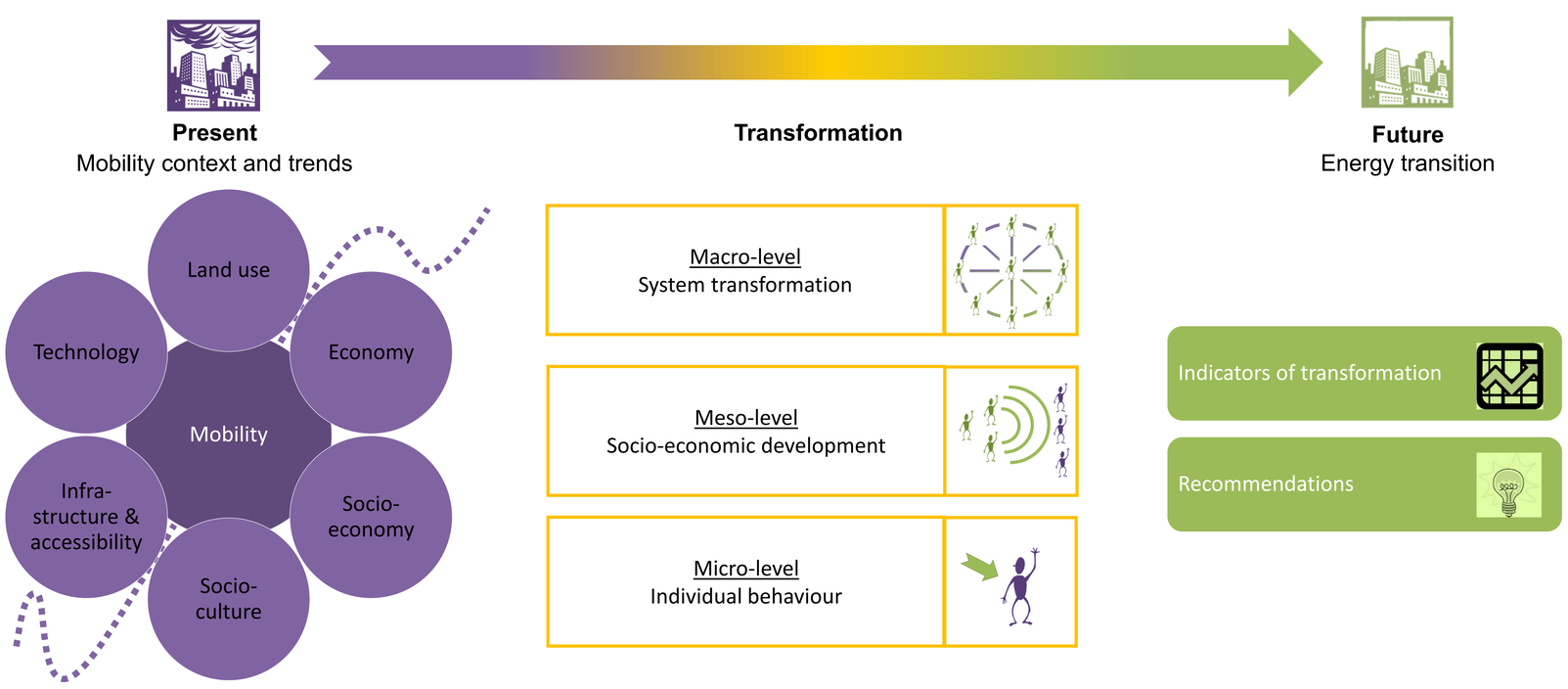
Research Questions

- Which main trends determine current and might determine future mobility in Switzerland?
- How can Swiss Mobility be transformed at a macro-level, meso-level and micro-level in order to reach an energy transition?

Key Messages

- Apply holistic and systemic perspectives on the Swiss mobility system
- Develop a vision of efficient and sufficient Swiss mobility in the future

Approach



Trends Influencing the Swiss Transportation System

The trend analysis is based on a comprehensive assessment of statistical data from Switzerland. The table reflects main trends for mobility and the expected impact they have. The results will be used for further assessment and verification with qualitative and quantitative methods.

	Expected development in the future	Relevance for mobility	Expected change on mobility
GDP	↑ Ongoing increase - with uncertainty	★ Economic growth and activity lead to commuting	↑ Slight increase of mobility demand
Working population	↑ Increase but slowing down (in a medium scenario)	★★ Potential commuters	↑ Slight increase of mobility demand
Fuel price	↑↑ Moderate increase with volatile dynamic	★ Depends on the price elasticity	↓↔ Reduced / stabilized car use
Population	↑↑ Moderate increase (in a medium scenario)	★ Mobility needs of new inhabitants	↑↑ Moderate increase of mobility demand
Age group over 65 years old	↑↑↑ Considerable increase	★★ Special mobility needs of the aging population beyond commuting	↑↑ Increase of leisure mobility
Age group under 24 years old	↔ Lower/constant share of population	★ Lower share of driving licenses	↓ Slight decrease of car use
Incomes	↑ Further increase depending on GDP / competitiveness	★ Increase of people traveling, travel distance and time	↑ Increase of (leisure) mobility
Land use	↑↑ Urban sprawl	★★★ Different regional impact on travel demand and modal choice	↑↑↑ Longer travel distance; increasing use of car or PT depending on region
Regulations on CO_2 emissions and energy consumption	↑↑↑ Considerable increase in strictness of the regulations	★★ Evolution of powertrain and fuels, but system remains car-based	↔ Constant mobility demand
Length and capacity of the road network	↑ Slight increase	★ New roads and parking areas increase attractiveness of car use	↑ Slight increase of car use
Length and capacity of the rail network	↑↑ Increase	★ New and faster connections increase attractiveness of public transport	↑↑ Increase of public transport use
Evolution of powertrain and fuel	↑↑ Evolution towards alternative technologies	★★ Innovation will occur, but the system is still based on individual vehicles (cars)	↔ Constant mobility demand with shift between vehicle categories
Disruptive technologies - driverless cars	↑↑↑ Expected market entrance in a decade	★★★ Change of mobility culture on the level of individuals and society	↑↑ Increase of individualized mobility and car use
Sharing economy	↑↑ Moderate increase	★★ Diffusion of the “mobility as a service” paradigm	↓ Shift towards multi-modal mobility with reduction of car use
Digital revolution	↑↑↑ Increase	★★★ Change of individual mobility patterns	↓↓ Reduction of car use and travel demand in general

Options and Barriers for a Sustainability Transformation of the Swiss Mobility System

Strengths	Weaknesses
• Energy efficiency of the transport system • Investments in existing rail network • High level quality public transportation network • Emissions legislations • “Energiewende” • Support for 2000 Watt society by communes and BFE • Potential for hybrid vehicles • Potential for shared mobility • Use of Biofuels	• Dominant paradigm of motorised individual mobility in policy and individual behaviour • Low occupation rates of cars • High standard of travelling speed • Fragmented political and administrational structures • High expectations about the level of transport connectivity • Urban sprawl due to settlement patterns with their functional specialisation
Opportunities	**Threats**
• Economic growth enabling innovation • Sharing economy • Digital revolution • Political strategies related to global climate change and rising ecological awareness • Land use legislation supporting reduced land consumption • Potential behaviour change of younger generations • Niche: E-Mobility • Niche: Hydrogen-Mobility • Niche: Automated driving with shared vehicles	• Economic growth increasing mobility demand • Rising personal income going along with additional mobility demand • Growing real estate prices enforcing suburbanisation • Increasing mobility demand related to immigration • Economic structural change with increasing spatial specialisation of jobs leading to longer commuting distances • Active lifestyles of growing older population increasing mobility demand • Niche: Automated driving with individual vehicles pushing motorised individual transport

Action Fields for Future Developments

Efficiency increases and technological innovation

- Short-term measures to quickly increase energy-efficiency
- Use of sustainable energy sources
- Introduction of new technologies

Avoidance of rebound effects of efficiency increases on mobility demand

- Time-efficiency rebound effects
- Cost-efficiency rebound effects
- Energy-efficiency rebound effects

Paradigm shift from mode-based to intermodal mobility

Development of the working world to meet sustainable mobility requirements

- Digital and flexible workplaces and working times
- Distances between workplace and home

Integrated spatial and transport planning

- Sufficiency principles for planning and decision making
- Quality of life in cities/agglomerations and mobility for leisure activities