

Chair of Logistics Management



University of St.Gallen

## **Vision Mobility**

**Switzerland 2050:**

**Expected or surprising  
developments?**



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- 1. Introduction**
2. Reference scenario
3. Goal theses
4. Recommended actions

# Motivation for the development of Vision 2050

## Motivation

- High quality transport systems are fundamental pillars of every modern society
- Continuously increasing demand for mobility in the freight- and passenger transport
- Infrastructure-bottlenecks in Switzerland are foreseeable today and are bound to increase in future.
- The transport policy consists of separate plans and decisions suitable for different transport modes as well as for passenger- and freight transport
- Necessity of an integrated approach for designing a multi-modal transport system
- The scope of projects currently in planning is at the most geared towards 2035 (too short for comprehensive infrastructure projects ) → It's high time to deal with Mobility 2050!



## Objective

Joint vision by a cross section of transport modes and stakeholders for future development of mobility in Switzerland with perspective 2050

▶ The study gives first impulses and food for thought for future development of freight- and passenger mobility in Switzerland – in the form of target hypotheses and recommended actions.



# Sponsors



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Alle Wege offen

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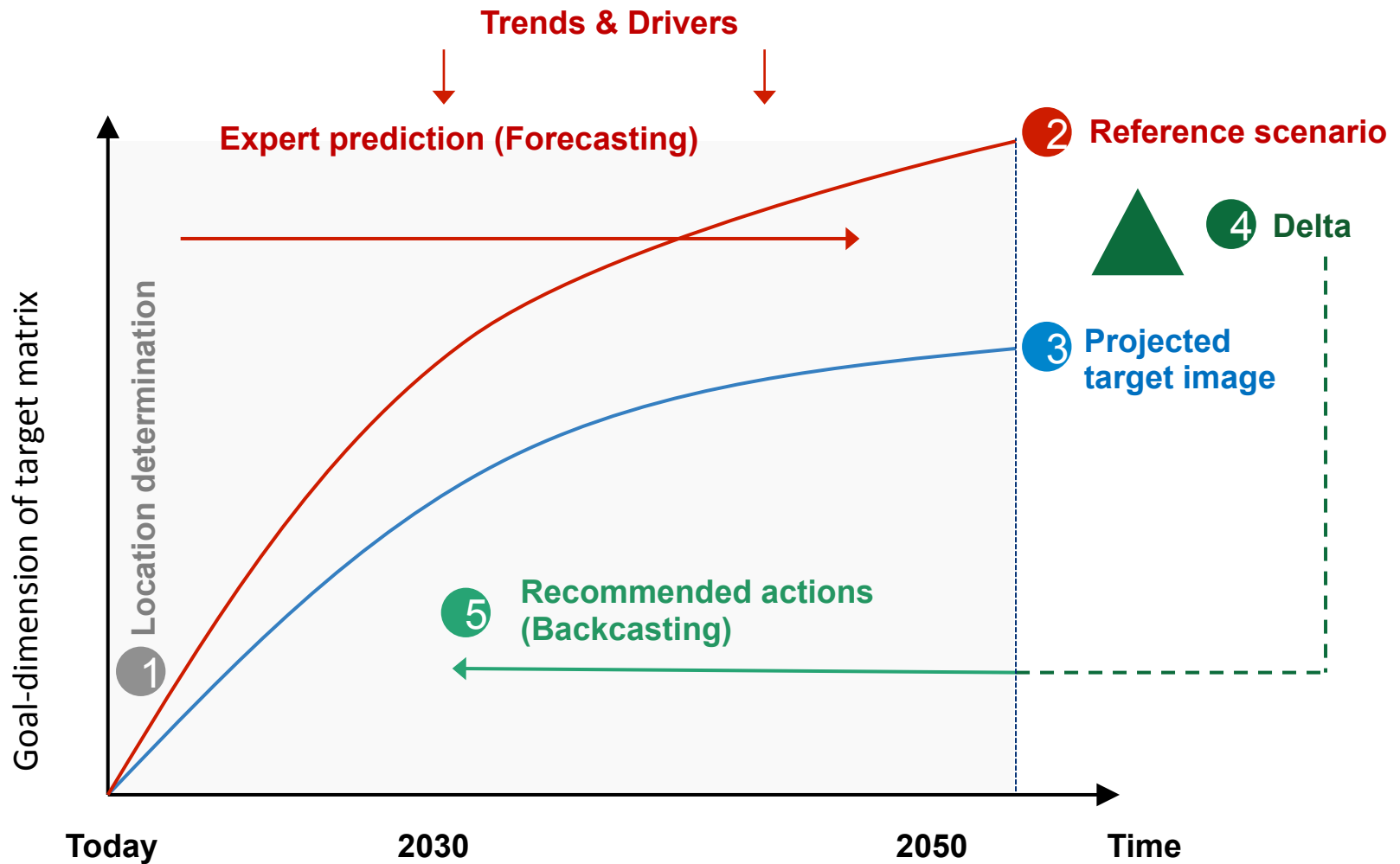


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# The Backcasting- approach



Based on available data till 2030, the reference scenario shows, which condition would be established on the basis of current trends and development forecasts. Expert estimations of the steering committee members have been taken into consideration for the time period up to 2050.

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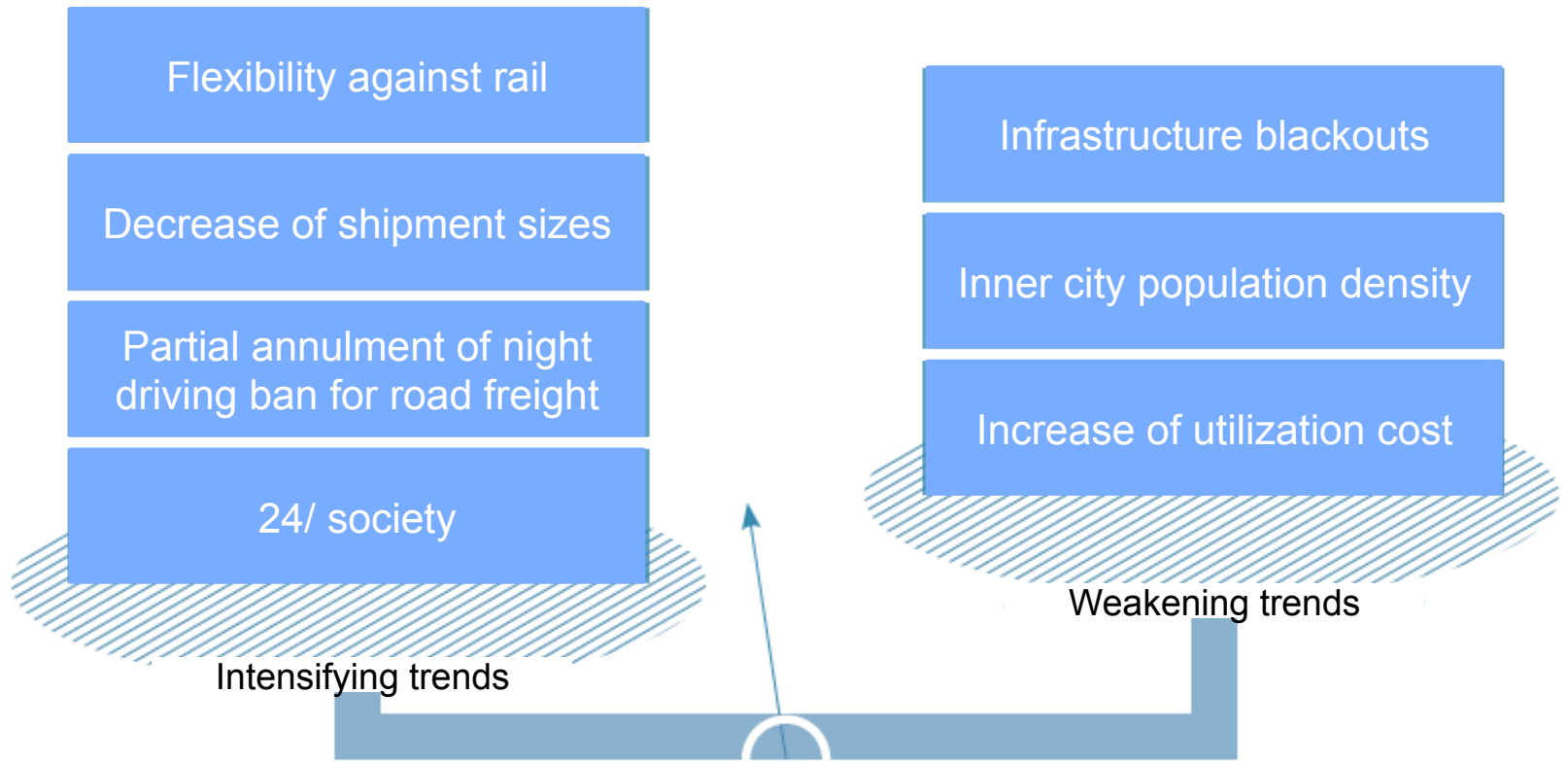
# Important trends as estimation aid for transport development till 2050 (excerpt)

## Overview of the observed trend effects

TRENDS	Public Transport	Rail Freight Transport	Individual Motor Traffic	Road Freight Transport	Passenger Air Transport	Air Freight Transport	Water Goods Transport
Increase urban sprawl	↘	↘	↗	↔	↔	↔	↔
Inner city population density	↗	↔	↘	↘	↗	↗	↔
Scarcity of land and resources	↔	↘	↘	↘	↘	↘	↔
Increase utilization cost (ticket prices, charges, fuel prices)	↘	↘	↘	↘	↘	↘	↘
Increase of infrastructure bottlenecks	↘	↘	↔	↘	↘	↘	↘
Prevalence of alternative drives	↔	↔	↔	↔	↔	↔	↔
Increase of energy efficiency	↔	↔	↔	↗	↔	↔	↔
Capacity expansion of infrastructure	↗	↗	↗	↔	↗	↗	↗
Infrastructure blackouts caused by climate anomalies	↘	↘	↘	↘	↘	↘	
Infrastructure blackouts cause by insufficient maintenance	↘	↘	↘	↘	↘	↘	↘

▶ For the reference scenario, the essential trends have been identified and their influence on the traffic volume, including probability of their occurrence has been evaluated (very strong, strong, neutral, weakening and very weakening)-

### Trends road transport - goods





# Mean value of the estimated transport development till 2050

<b>TRANSPORT STAKEHOLDERS</b>	<b>2010/2015 (BFS/BAZL)</b>	<b>2030 BASIC SCENARIO (ARE/BAZL)</b>	<b>VISION MOBILITY SWITZERLAND 2050</b>
<b>PASSENGER TRANSPORT ÖV (Mrd. pkm/a)</b>	23.6 (100%)	27.9 (118%)	32.5 (138%)
<b>PASSENGER TRANSPORT MIV (Mrd. pkm/a)</b>	88.7 (100%)	103 (116%)	99.3 (112%)
<b>GOODS TRANSPORT RAIL (Mrd. tkm/a)</b>	11.1 (100%)	16.9 (152%)	17.2 (155%)
<b>GOODS TRANSPORT ROAD (Mrd. tkm/a)</b>	17 (100%)	19.5 (115%)	20.5 (121%)
<b>PASSENGERS AIR (Mio. Pax/a)</b>	44 (100%)	65 (148%)	75 (170%)
<b>FREIGHT AIR (Mio. t/a)</b>	0.4 (100%)	0.6 (150%)	0.7 (175%)

BFS = Bundesamt für Statistik [The Federal Statistical Office (FSO)]  
 BAZL = Bundesamt für Zivilluftfahrt [Federal Office of Civil Aviation (FOCA)]  
 ARE = Bundesamt für Raumentwicklung [The Federal office for Spatial development]

# Assumptions for Goods transport development



## Good transport Road → + 21%



Partial withdrawal of the night driving ban (at least for low-emission vehicles) and continuing inclination towards reduced shipping volumes as a result of on-line shopping are assumed as increasing trends.



## Good transport Rail → + 55%



The growth is mainly due to improvements on the operating side and due to a positive economic development acting as reinforcing trends. The Gotthard and Cenerly base tunnels, which will soon be operational, will reduce the cost of rail transport in transit.



## Passenger services - Individual transport with motor vehicle (MIV) → + 12%



Besides the anticipated population growth and positive economic development, growing urban sprawl as well as technological development have a reinforcing effect.



## Passenger services - Public transport (ÖV) → + 38%



Growing urban density, shortage of land and resources, planned expansion of the infrastructure capacity as well as the increasing ratio of elderly people in the population have been identified as the key drivers.



## Air traffic → + 70% (Passage) / + 75% (Freight)



Basic assumption is, that by 2050 no new major airport locations will emerge and the current airfields will retain their regional characters. The intensifying trends are predominant due to increasing buying power in emerging markets and the increasing proportion of immigrant population.

## Problems

- Increasing demand for mobility stretches the mobility system to its limits
- Infrastructure extension is still widely used as a traditional instrument of regional policy
- Decision making processes foster sectorial interests instead of holistic prioritization
- Extension of infrastructure capacities are often not critically reflected in policymaking, but are controversial on local level; extension plans are frequently blocked
- Government funding for the infrastructure extension tends to decrease, against increasing funding needs for infrastructure maintenance
- All modes of transport will gradually be influenced by information technology (digitalization)
- (Digital) Technological developments are not present in political opinion making – «disruptive potential» of new information providers



**Risks:**  
**«More of the same»**  
**missing sustainable future development**



Decision making structures at federal and cantonal levels hardly support the integration of the transport modes due to separation of decisions by transportation modes. Also agglomeration programs of the Swiss confederation generally remain limited to the respective planning areas.

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- The core of the «Vision Mobilität 2050» are the 38 goal theses
- They together describe the picture of «desirable» mobility in future



**Thesis: «External costs are included in the calculation of the transport system’s operating cost, to be borne by the user.»**

International integration
Society and law
Resources, Space & Energy
Request
<b>Financing</b>
Planing & Organisation
Infrastructure
Proposal
Operation

- Cost calculation for utilisation of the transport services includes the full cost, which include the external cost (congestion, accidents, environment)
- Promotion of incentives for the development and use of advanced technologies that contribute to the reduction of external costs
- Providers and users focus more on environment and safety
- Higher transparency and economic plausibility of external costs
- Influence of decisions of service providers and users



Society and law



«Users accept the compilation, forwarding and assessment of traffic data for purposes of capacity planning.»

Resources,  
Space & Energy



«Driving energy is derived mainly from renewable energy»

Planing &  
Organisation



«Traffic inducing institutions contribute to the reduction of traffic peak hours»

Infrastructure



«Initial investments in infrastructure are financed predominantly by tax money, reinvestments and maintenance are paid by traffic system users.»

Proposal



«Providers with new business models and new transport modes expand the mobility supply and are integrated in the overall system»

Operation



«The traffic is technologically extensively automated.  
Autonomous and linked systems are to a large extent implemented in most instances.»

# Agenda

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# Selective recommendations for actions from the study «Vision Mobility Switzerland 2050»

Examples

44 recommended actions, classified in 9 subject areas show the partially controversial path to  
«Vision Mobility 2050»

Society and law



«For **travel to work** and **Business travel** there is no **tax relief** any more»

Resources,  
Space & Energy



«**Space management measures** have to support **life concepts** enabling **light traffic**»

Planing &  
Organisation



«Administrative **basic conditions** for an **organizational and technical linkage** of transport modes have to be established to create an **integral transport system**»

Infrastructure



«The **extension of the transport infrastructure** has to be oriented towards bottlenecks alone as long as the bottlenecks cannot be removed by intelligent (capacity) management »

Proposal



«**Innovation programs** must be created for **efficiency- and qualitative leap** in the transport systems.»

Operation

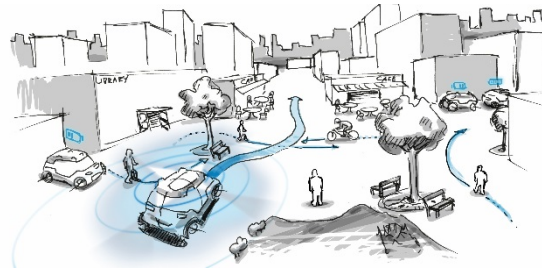


«**Technical and organisational measures** to ensure the **safety and security of transport users** have always to be tested according to the **current state of the technology**»



## New questions of governance

- Traditional strategies focusing transport modes should be replaced by an **integrated master plan**; consequently conventional planning processes will become less significant
- State control on transport sector: In the past, by nationalization of infrastructures, but **the control impact of the infrastructures** is decreasing
- Future development drivers – especially **information technology and data** – are owned and controlled by companies, which can not be nationalized
- **New business models** will meet the market demands of users in a better way than the conventional forms of the service provider agency and accounting
- Possible approach: **Pilot projects** in areas of innovative technology, new business models, new mobility forms



If this study is successful in enriching discussions on the transport policy about the required and desired mobility in Switzerland, then the first target is achieved.



4 Inhalts-, Abbildungs- und Tabellenverzeichnis

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# Thank you!

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