# Qualitative change to close Austria´s Paris gap: Shaping the pathway

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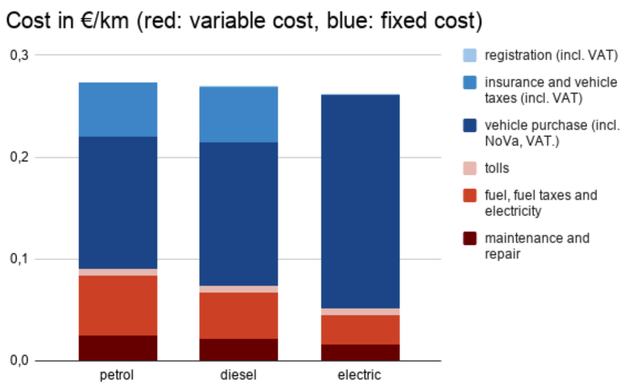
## Total Social Costs of Mobility

WP1

- Total social costs of mobility (TSC) are the sum of total user costs (TUC), total operator costs (TOC) and total external costs (TOC) of transportation [1]. Additionally, it includes the infrastructure costs (TIC) of different vehicle types. Hence TSC comprise direct costs and indirect costs of transportation.
- Based on secondary data, we calculate TSC for Austria for different modes of passenger transport including individual transportation (car, motorcycle, bicycle, walking) and public transport (bus, tram, subway, train), specified for geographical patterns as well as different time windows.

| TUC/TOC | TEC | | | TIC |
|---|---|---|---|---|
| Vehicle costs | Accidents | Climate change | Health benefits | Infrastructure Costs |
| Travel time | Air pollution | Congestion | Noise | |
| | Barrier effects | Habitat damages | Well-to-tank emissions | |




### Insight 1

While measures that primarily aim at improvement-strategies might have the potential to close the Paris gap, they come with significant downsides. Thus, a focus on shift and avoid strategies is necessary.

### Insight 2

The modelling of different paths for the mitigation of greenhouse gas emissions from passenger transport in Austria shows considerable differences in the composition and the respective trajectories of the Total Social Cost of Mobility.

## Policy Packages

WP3, WP1, WP2

- In order to achieve the desired decarbonisation of the Austrian passenger transport by 2040, single measures are not sufficient; instead, comprehensive bundles of policy measures are required. More disruptive policies can only be implemented if accompanied by other measures that strive for public acceptance and offer co-benefits additional to the sole goal of emission reduction.
- Such a policy bundle has to include planning elements, positive and negative incentive structures, regulatory provisions as well as soft policies.
- Based on a stakeholder workshop on 17.01.2020 in Vienna, expert interviews and a literature review, three policy packages have been designed.

**Regulatory package (1)**
- Stop new admission of fossil fuelled cars (2027)
- Ban on the use of fossil fuelled cars (2037)
- Management and reduction of parking areas

**Capacity package (2)**
- Restriction on the overall admission and rides of fossil fuel cars
- Car-free city centres
- Conversion and reduction of road infrastructure

**Economic package (3)**
- Ecological tax system
- Congestion charge for city centres

**All packages (1-3)**
- Reduction of speed limits
- Road Pricing
- Socio-ecological redesign of commuting allowance system
- User orientation of public transport
- Public transport kick and guarantee
- Carpooling/-sharing, on-call bus and share taxis
- Regional development and planning
- Raising awareness for alternative mobility modes
- Support of non-motorised private transport
- Intelligent technologies and digitalization
- Support of e-mobility
- Electrification of public transport
- Company mobility Plans
- Home Office
- Mobility efficiency act

### Insight 3

To enable qualitative change in passenger transport, a combination of radical policies (effectiveness dimension) and complementary measures (implementability dimension) will be necessary.

### Insight 4

For a transport policy package to be successful, important geographical differences have to be considered in the design stage.

### Internal Report

Nabernegg, S., Geringer, D., Fischer, L., Grinschgl, C., Romirer, C. Policy packages for sustainable passenger transport in Austria. July 2020.

## Teleworking + public acceptance

WP2, WP1

- In the existing literature, there is no clear pattern of change in mobility behaviour and emission effects reported [2-4].
  - Depending on the location of workers (urban, suburban or rural), household composition and the size of rebound effects e.g. for shopping and leisure activities may also increase traffic emissions.
  - Furthermore, long term rebound effects could only be quantified and by panel data analyses, accounting also for residential choices of workers.
- We conduced discussions in focus groups on framework conditions of teleworking and keep close exchange with other institutes (VCÖ, TU Vienna and Umweltbundesamt), currently investigating teleworking in the context of measures from the corona outbreak in Austria.
  - Acceptance for teleworking in the Austrian population is high in general and increased further during corona.
  - The potential emission reductions from teleworking is estimated rather small.
- A survey on the public acceptance of our policy packages and teleworking as specific focus, using choice experiments, will be conduced in autumn, for which the preparations are mostly finished.

### Insight 5

Enhancing telework as a stand-alone mechanism does not substantially reduce, or can even have counterproductive effects on emissions.

### Insight 6

Adequate framework conditions enable telework to contribute to a reduction in emissions and to reducing personal barriers of access.

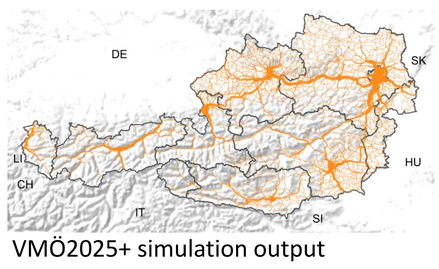
### Journal Paper

Thaller, A., Posch, A., Dugan, A., Steininger, K. Transforming mobility as we know it – How to balance policy packages for sustainable passenger transport between disruptiveness and implementability. *Transportation Research Part A*. (Under review)

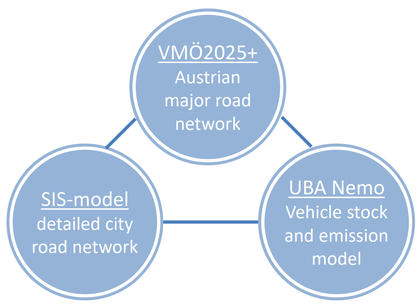
## Transport system modelling

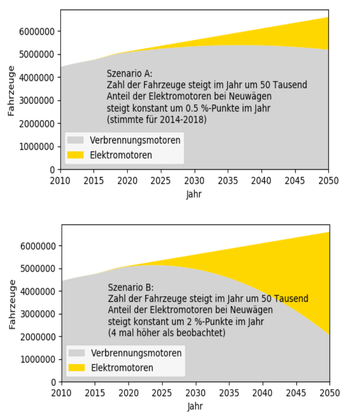
WP1

- In the system of models on transport and environment of the project consortium (VMÖ2025+, SIS-model and UBA Nemo), the implementation of our policy packages (1-3) was prepared.
- A reference case simulation and first policy simulation (e-mobility only) are accomplished.



VMÖ2025+ simulation output




### Insight 7

Neither with the current, nor with strongly increased (assumed) penetration rates of electric vehicles only, the emission targets of the Austrian government are achievable.

## Economic implications

WP4

Using results from the transport system modelling, macroeconomic effects of a low carbon transition of the passenger transport system in Austria will be analysed in a macroeconomic (CGE) model incorporating also a closely linked transition of the electricity sector.
Investigated aspects will focus on
- Employment effects, including sectoral in-work poverty and qualification gaps
- Rebound effects from shifts in private (car purchase) and public investment (infrastructure)
- Housing cost and relocation interactions with the mobility system

## Project structure

Acknowledging valuable inputs from the proposal review, the project structure was adapted to have an **earlier integration of stakeholders**. Accordingly, a stakeholder workshop was held in Jan 2020 in Vienna. The workshop fostered an active exchange with experts and practitioners in the field and allowed to co-create policy packages that are able to transform the transport system towards carbon neutrality. The design of policy packages (WP3) was accordingly advanced in the project timeline.

**Scientific Advisory Board**

Kay Axhausen (ETH Zurich)
Stef Proost (KU Leuven)
Erika Wagner (Johannes Kepler University Linz)

International SAB meetings:
- Kick-off: 19.11.2019,
- Second meeting 25.9.2020
  Draft conclusions and method details to be discussed
- Third meeting 24.9.2021
  Draft final results to be discussed

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