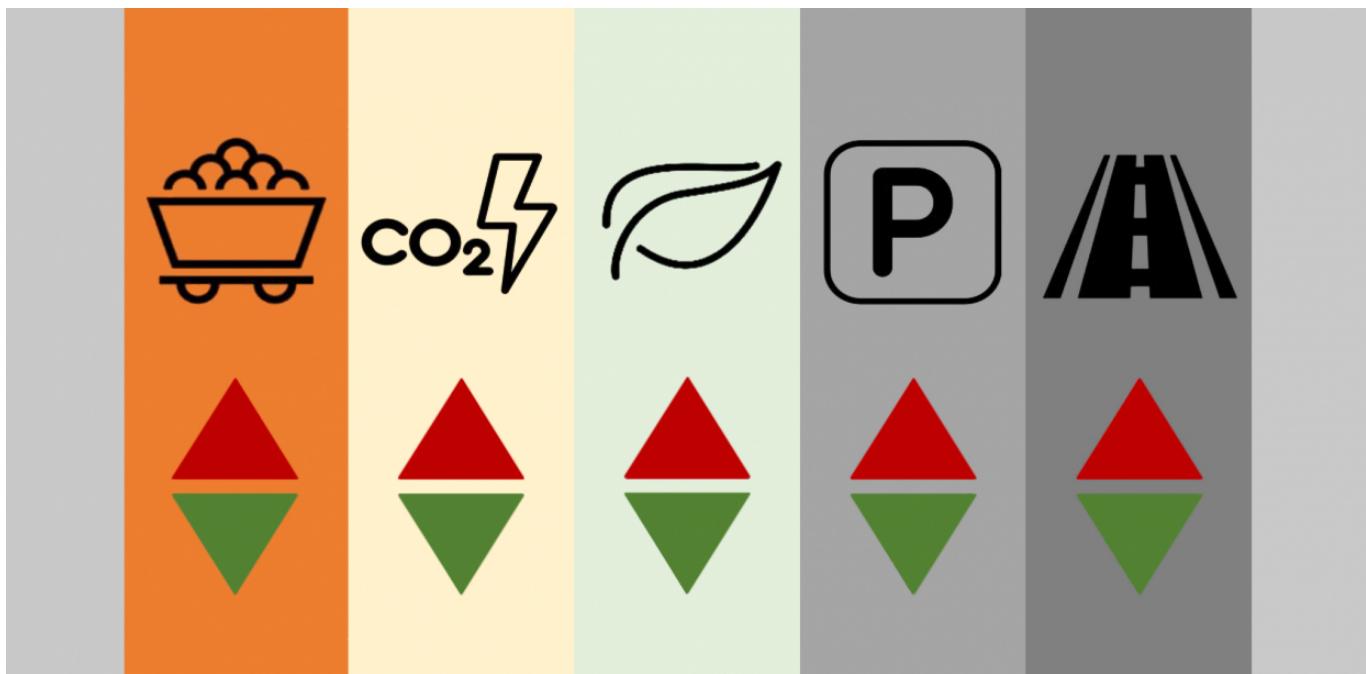


Impact of self-driving vehicles on resources, climate and the environment



Self-driving vehicles could make driving far more comfortable and safer than it has ever been. But what would be the impact of self-driving vehicles on energy consumption, greenhouse-gas emissions, traffic congestion, the availability of parking spaces and resources?

Vehicle automation could have a significant impact on our resources, climate and environment. EBP examined the anticipated impact and evaluated various proposed solutions. In particular, our examination focused on the following dimensions:

- Energy consumption, greenhouse gas emissions and other environmental factors (e.g. noise pollution): Engine type and specific utilization can be expected to have a major impact on these factors. More ride sharing and lighter vehicles would have a positive impact. Empty trips and increased vehicle use (e.g. because it would enable travelers to use their travel time to get work done) would have a negative impact.
- Resources: The number of vehicles available and their size can be expected to play a significant role. More ride sharing and car sharing would have a positive impact. Replacing forms of public transportation with privately-owned, self-driving vehicles would have a negative impact.
- Parking: The demand for parking space could be reduced by more ride sharing and car sharing.
- Traffic space: More ride sharing would have a positive impact. While the increased capacity and fluidizing effects of self-driving vehicles may lower demand at local levels, they

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BaslerFonds, Association of Swiss Cities and other partners

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Project Country	Switzerland

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are not expected to have much of an impact at the level of comprehensive traffic networks. All additional and empty trips would have a negative impact.

When all of the impact dimensions are taken into consideration, ride sharing represents the best – and perhaps only appreciable means – of having a beneficial effect on resource, climate and environmental factors. One approach to encouraging ride sharing would be to make the use of private motorized vehicles and/or parking more expensive. Otherwise, the economic incentives for ride sharing can be expected to remain low.

The biggest risk stems from the fact that self-driving vehicles would enable people to use their travel time for other purposes (e.g. work), and that this would encourage greater use of private vehicles. Empty trips as a consequence of automated driving can also be expected to present a problem. The targeted introduction of surcharges based on space usage, location and time would enable one to discourage such unfavorable developments.

Follow-up studies as a part of a total package

The project was a part of a comprehensive **study on the large-scale introduction of automated vehicles**. The study gave rise to a **preliminary analysis** and revealed a need to conduct follow-up studies relating to the following subjects:

- Traffic engineering
- Effects on road safety
- Data and IT infrastructures
- New offerings for shared transportation
- Freight transportation and city logistics by road
- Challenges for cities and other urban areas

Study results

We compiled our findings in a **synthesis**: Large-Scale Introduction of Automated Vehicles – Applications and Effects in Switzerland, Report of September 5, 2018