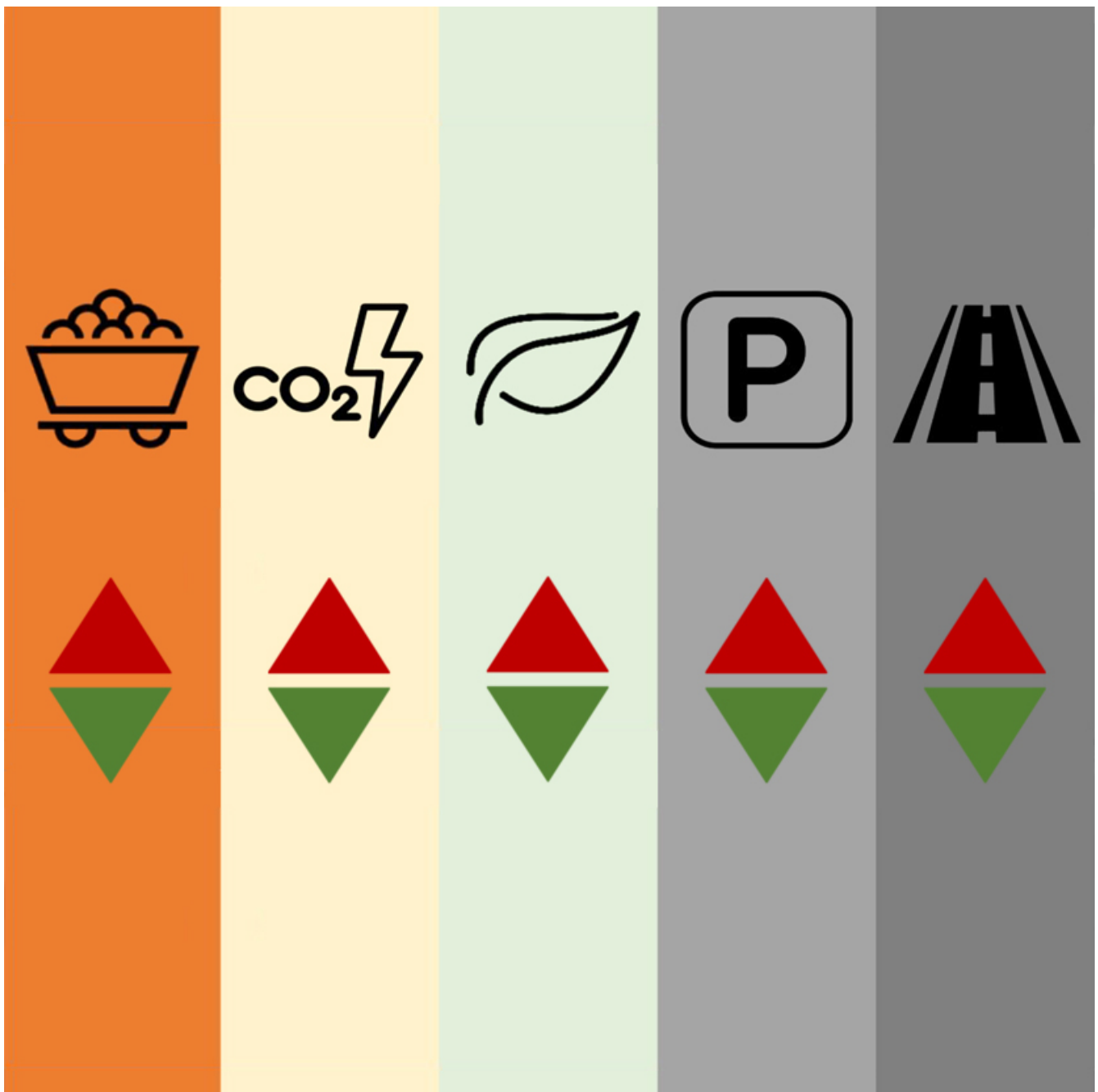


Impact of self-driving vehicles on resources, climate and the environment



Client

BaslerFonds, Association of Swiss Cities and other partners

Facts

Period 2017 - 2018

Project Country Switzerland

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 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

Contact Persons



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