

# Photovoltaic roofs for highways: concept and demonstrator

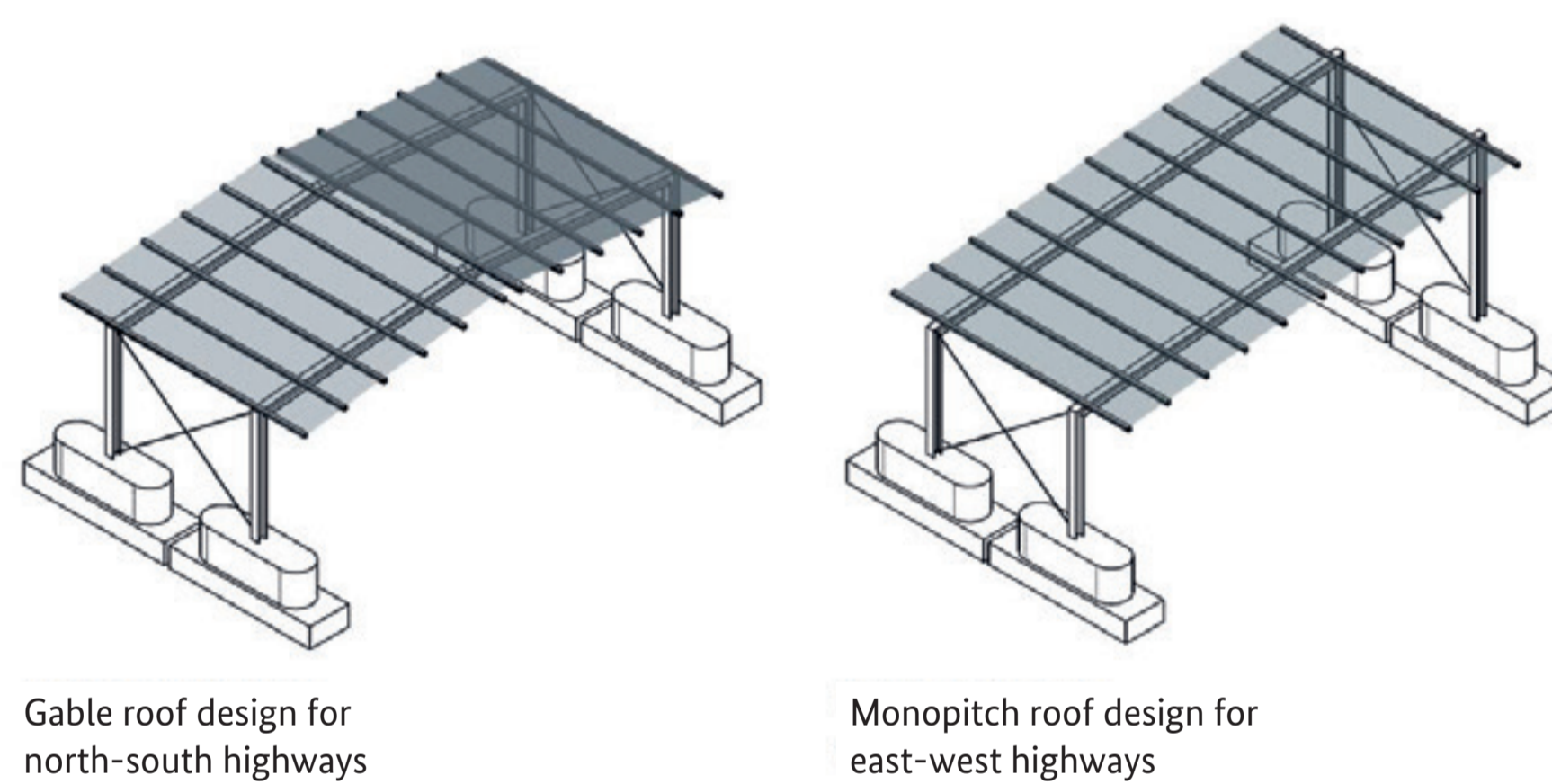
The research projects 'Photovoltaic roofs for highways – concept' and 'Photovoltaic roofs for highways – demonstrator' are being funded by the German Federal Ministry for Digital and Transport, the Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology and the Swiss Federal Roads Office FEDRO within the context of the 2019 D-A-CH transport infrastructure research cooperation of Germany, Austria and Switzerland. The programme is being managed by the Austrian Research Promotion Agency on behalf of the contracting authorities.

## Project objectives

- Survey of the technical parameters and requirements resulting from the deployment of photovoltaics above highways within the primary road network
- PV concept aimed at optimizing the utilization of PV output
- Concept of a modular supporting structure taking relevant load assumptions into account (wind, snow, fire, impact, aerodynamics)
- Evaluation of the likely impact on the road surface and noise mitigation
- Detailed design and erection of the demonstrator
- Monitoring and evaluation of the demonstrator by means of measuring instruments
- Value for money analysis taking PV output and other side effects into account

## Basic principles of the concept

- Scope of application: Solar roofs above highways within the primary road network
- Modular design, flexible length, adjustable to the course of the road
- Neither tunnel nor enclosure
- Steel supporting structure
- Durable, low maintenance



## Supporting structure

- Reference case: Carriageway with 2 lanes and hard shoulder
- Roofing 17 m wide, 5° inclination
- Headroom below the lower edge of the supporting structure: 5.50 m
- 10-m-long elements, can be combined flexibly for greater lengths
- Every single element is self-supporting
- Steel post and beam construction
- 2 designs (see above)

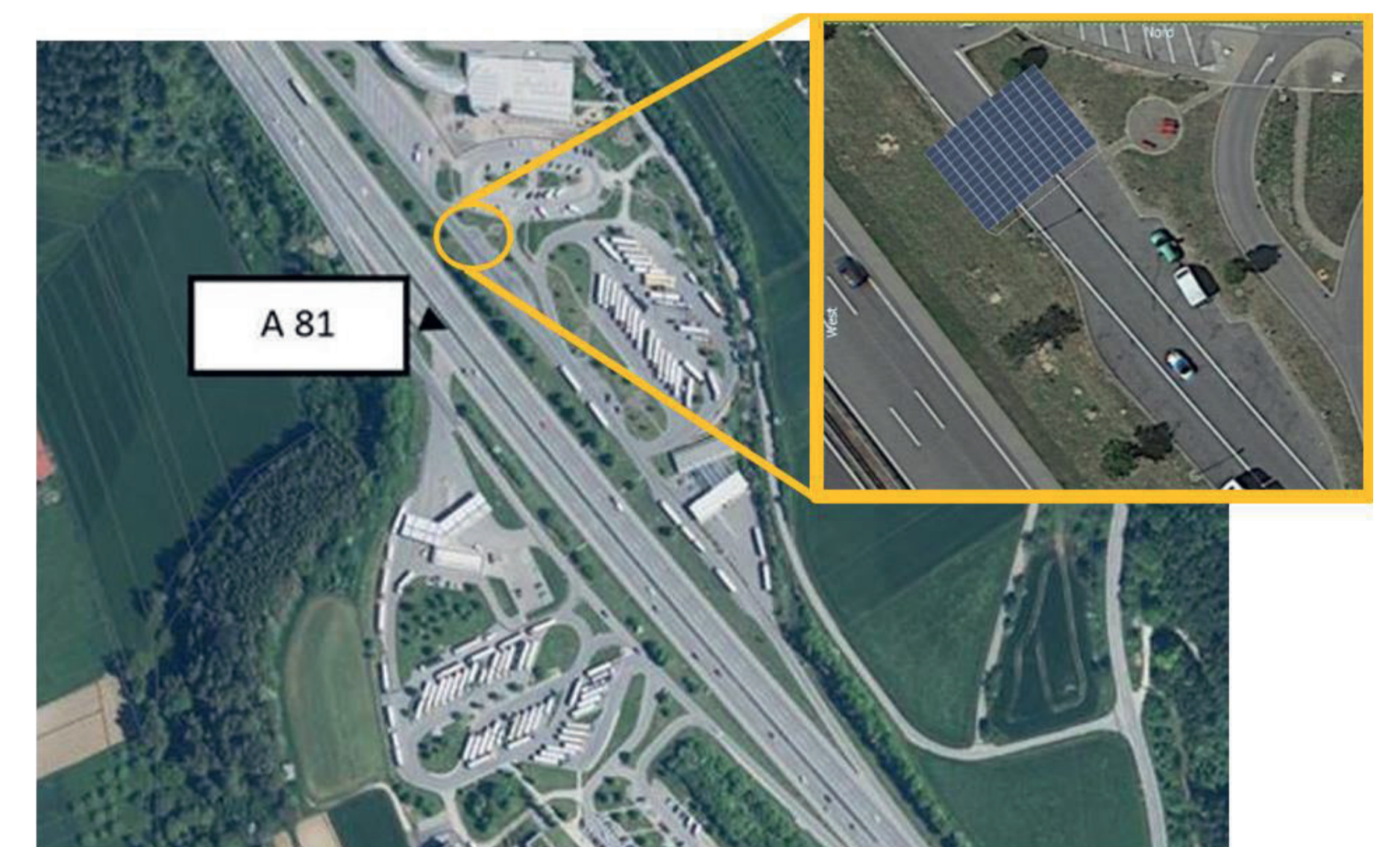
## Positive side effects

Assessment of the likely effects on the road surface during the conceptual phase by analysing comparable settings (e.g. under bridges)

- Reduced surface temperature and temperature gradient
- Reduced rutting in asphalt surfacing
- Less damage due to cracks in concrete surfaces

## Demonstrator

- Implementation of the concept in the form of a demonstrator above the flowing traffic at the access to or exit from a motorway service station (envisaged location is Hegau Ost service station and rest area, A 81 motorway, Baden-Württemberg, Germany)
- Installation of measuring instruments and continuous monitoring for 1 year



## Further information



= Transport  
Infrastructure  
Research

