



## Assessing weather related risks to the German transport infrastructure

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Transport infrastructure is exposed to manifold natural hazards with extreme weather events and climate change being two of the most relevant ones at short and long timescales, respectively. The different modes of transport with their specific infrastructures are affected by these hazards in different ways and to different degrees. Events that have resulted in particularly high damages to transport and its infrastructure in recent years are heavy precipitation events associated with flash floods, large-scale flooding of rivers, and landslides as well as strong wind events. In coastal areas storm surges and sea level rise pose additional significant threats to the transport sector. Ensuring safe and sustainable mobility gains more importance with progressing climate change.

The challenges and risks resulting from a changing climate and altered frequencies of extreme weather events to German transport and infrastructure are taken up by topic 1 “Adapting transport and infrastructure to climate change and extreme weather events” of the network of experts of the German Federal Ministry of Transport and Digital Infrastructure (BMVI). Six departmental research institutes of BMVI combine their competencies in order to obtain a coordinated and intermodal view on relevant risks and adaptation options for land and water transport in Germany. This contribution presents the current status of the ongoing research activities within the BMVI network of experts.

The current and potential future risk of the hazards flood, low water, storm and landslide are assessed based on a consistent set of observation and scenario data. The results of hazard and transport mode specific analyses are going to be integrated into a risk assessment tool, whose hierarchical modelling framework will be implemented into a Geographic Information System (GIS). This risk assessment tool aims at providing information relevant to climate change adaptation at the network level. Pilot studies in several inland and coastal focus areas will complement the risk assessment. They allow addressing specific, intermodal risks like those posed by sea level rise in coastal areas or those connected to widespread flooding or low water situations in the inland. Based on the results of the risk assessment, adaptation measures will be suggested in order to mitigate the weather related risks to transport infrastructure. Adaptation options that will be assessed include: 1) review of (technical) regulations, 2) testing of material adjustments, 3) assessment of management options and 4) preliminary assessment of traffic disruptions and potential modal shifts due to extreme weather events. A continuous dialogue between science and practice will enable knowledge transfer and thus foster innovative solutions for climate change adaptation and a sustainable development of the German transport system.