



## **Embedding Climate Change Thinking on Roads: Economic Appraisal of Climate Change Adaptation Measures on the European Primary Road Network**

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Against the background of global climate change, national road administrations are increasingly confronted with a number of challenges in their efforts to (i) maintain the resilience of their road network and (ii) reduce the carbon emissions associated with the maintenance and operation of their network. Within the scope of DeTECToR (Decision-support Tools for Embedding Climate Change Thinking on Roads), a project commissioned through the Conference of European Directors of Roads (CEDR) Transnational Research Programme, we explore means of supporting this process with the development of decision-support tools for addressing two main challenges: making the business case for climate change adaptation and embedding consideration of climate change in the operations and procurement processes.

This is achieved by applying a data-driven approach based on the reclassification of relevant covariates for defined damage pattern categories into corresponding vulnerability levels. In addition, cost-effectiveness of potential adaptation options is calculated in order to facilitate intercomparison and cross-learning between different strategies for various scenarios. Results are mapped and visualized through a Web-GIS application.

This approach is illustrated at the example of three pilot studies located in different regions across Europe that exhibit different climatological settings and consequently allow for covering different damage pattern categories within the scope of the demonstration examples.

Our findings are suitable to support national road authorities in the economic appraisal of adequate maintenance and reinforcement measures by offering detailed information on which parts of Europe's road transport network are at particularly high risk regarding future climate change impacts.