

CLIMATE CHANGE IMPACT ON SAFETY AND PERFORMANCE OF INFRASTRUCTURE

An in-depth assessment of the risks of climate change on existing and future bridges

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Projektets syfte och deltagande organisationer:

Project purpose: To establish an improved risk management of bridges in the light of a changing climate.

Participating organizations: Division of Structural Engineering, Lund University; Division of Risk and Societal Safety, Lund University; RISE; Rossby Centre, SMHI; and Skanska

Vad och vilka behövs för att nå hela vägen till innovation?

The following steps are needed to reach innovation:

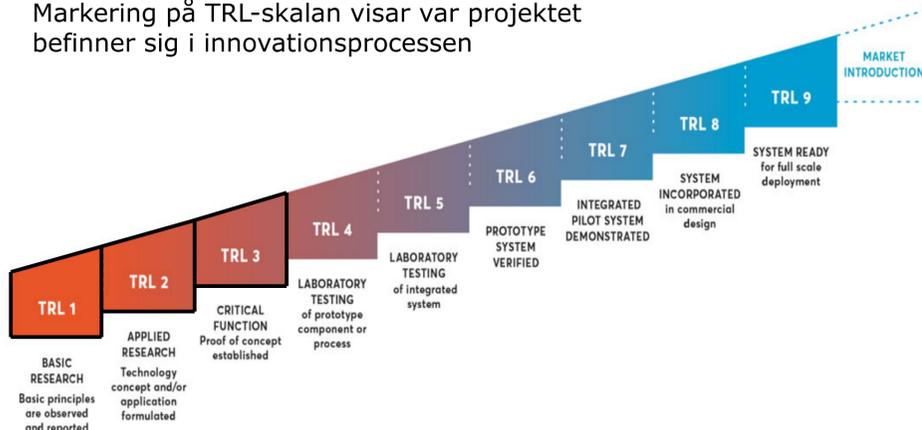
- Identifying the potential impacts of climate change on bridges.
- Developing and validating a risk-based method for the prioritization of climate change related impacts on bridges.
- Demonstrating methods for evaluating and assessing the critical risks of climate change on bridges.
- Suggesting, validating, and eventually testing cost-effective adaptation techniques for bridges in the light of these risks.

Innovation betyder förnyelse. Vari ligger det nya?

The project is innovative given that it aims to:

- Conduct a comprehensive review of climate change risks on bridges.
- Develop a risk-based prioritization framework for the identified risks.
- Quantitatively assess selected critical climate change related risks.
- Develop cost-effective adaptation strategies for these risks and revise the current design and maintenance practices related to them.

Markering på TRL-skalan visar var projektet befinner sig i innovationsprocessen

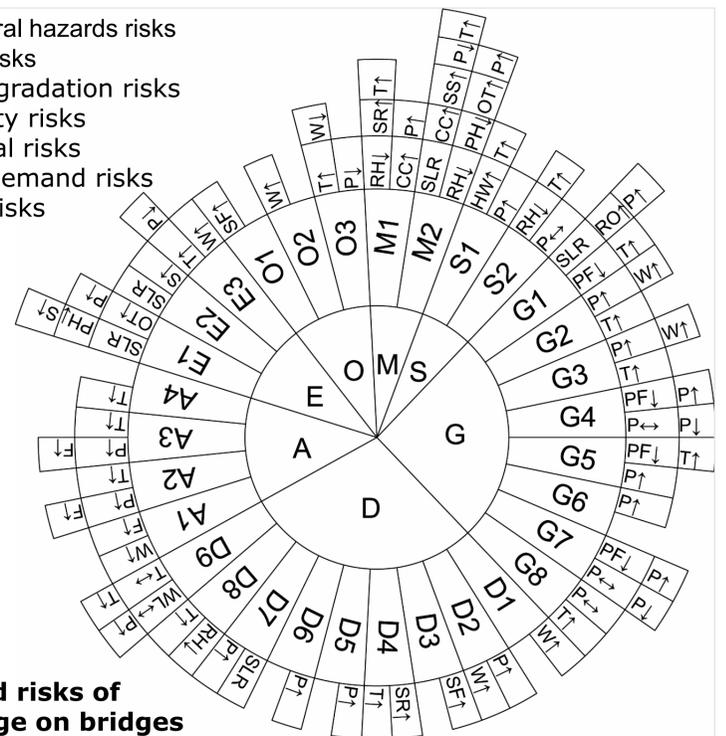


Mål i InfraSweden2030 som projektet avser bidra till:

The project contributes to the following InfraSweden 2030 objectives:

- Reducing the environmental impact of transport infrastructure, specifically as a result of non-essential maintenance activities.
- Developing efficient methods for extending the service life of transport infrastructure.
- Establishing innovative methods that take into account the entire life-cycle perspective already in the planning stage.
- Enabling large socio-economic gains by developing new and innovative methods and solutions that significantly improve the sustainability of existing infrastructure.
- Creating internationally attractive, innovative, and climate-friendly solutions for transport infrastructure.

- E- Extreme natural hazards risks
- O- Operational risks
- M- Material degradation risks
- S- Serviceability risks
- G- Geotechnical risks
- D- Increased demand risks
- A- Accidental risks



The identified risks of climate change on bridges

Förväntade resultat:

The following project outcomes are expected in the future:

- In-depth quantitative risk assessment of selected critical climate change related risks on bridges.
- Development and evaluation of cost-effective adaptation techniques for the selected critical risks.
- A critical review of the existing design, inspection, and maintenance practices, as well as code provisions, related to the selected critical risks.

Redan uppnådda resultat:

The following results have already been achieved:

- A comprehensive review of the potential effects of climate change on bridges.
- Development of a risk-based framework for the ranking of climate change related risks on bridges.

Förväntade nyttor och för vem:

The project is considered to be very significant for all stakeholders involved in the design, construction, operation and management of Sweden's infrastructure. The project clearly addresses the needs for climate adaptation identified by bridge owners such as Öresundsbron and Trafikverket. In developing these approaches, a more optimal allocation of resources can be realized for the bridge owners and managers while reducing potential socio-economic consequences of inadequate risk management of our infrastructure. Therefore, the outcomes of the project are of considerable significance to the well-being of the society as a whole.