

Sustainability assessment of road bridges

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Summary

The reason why sustainability criteria at the time have hardly any influence on the choice of a bridge design is that it is an extensive procedure which takes too much time to be done during the planning phase and so mostly the cheapest building price is the decisive factor. For easily making decisions with a holistic view, it is important to know the key factors that really have a noteworthy influence on the sustainability, considering the whole life cycle and not only the construction phase. Therefore, sustainability assessment is carried out on several bridges with similar boundary conditions. It was found that one of the most important parameters is a correct picture of future scenarios and that one structure should always be considered only as part of an entire construction stage.

Keywords: bridges; sustainability; composite; road bridges; life-cycle assessment; sustainability assessment, carbon footprint.

1. Introduction

Sustainability assessment is a useful instrument for a holistic evaluation of bridges. In future, it is intended to be used during the planning phase. The reason for this kind of evaluation is generally to improve the quality of constructions. This objective is achieved by affording a comparability of different designs which could offer a decision-making aid. The goal should be to plan not only individual bridges but whole alignments as economically, efficiently and socially accepted as possible without neglecting environmental aspects. The problem is that the implementation of a holistic evaluation usually is a tedious process. Therefore, a simplification is needed to make it realizable. One useful way to this target is to look at the current possibilities regarding the current boundary conditions and then to pick out the main indicators that cause a change and to eliminate those who don't affect the whole result in a significant value.

In the following report especially the carbon footprint for different Bridges is described, and a comparison between different construction types is shown.