

INFOBLAD



Fire as a Factor in Life Cycle Assessment – How does the risk of fire affect the climate impact of buildings?

Since 2022, there is a requirement in Sweden that the climate impact generated from the construction phase of new buildings must be declared. The law is planned to be tightened to include more building components and more stages of the building's life cycle, while also introducing limits for maximum climate impact for buildings. This project investigates whether the risk of fire can be a factor that needs to be considered in the calculations of the climate impact of buildings.

Purpose and Objectives

The purpose of the project is to examine how the climate impact of buildings can be affected if the contribution from the risk of fire is considered. Furthermore, the project explores how different types of structural and product choices, as well as fire protection systems, affect the climate impact of buildings when the risk of fire is considered in the calculation. The goal is to use such calculations to determine whether, and in which cases, the risk of fire should be considered in the calculation of a building's climate impact.

Methods and implementation

The project has developed a calculation model to account for the contribution of the risk of fire to the climate impact of buildings. Using the calculation model, the climate impact from the risk of fire has been calculated for different types of buildings. Further calculations have been made for different structural and product choices, fire protection systems, and with different technical lifespans of the studied buildings.

Results

The contribution of the risk of fire to the climate impact of a building is not a negligible part that can be ignored. Additionally, the percentage share of the risk of fire in the building's total climate impact increases the more climate neutral we are able to build. If the contribution of the risk of fire is not considered in the calculation of climate impact, suboptimization in the choice of fire protection systems is a possible risk. This occurs when fire protection is chosen to be omitted to reduce the calculated climate impact, whereas, in reality, the expected climate impact of the building increases due to more extensive damage in the event of a fire.

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