

Offsite Biodiversity in Life Cycle Assessment of Buildings

This project, led by BUILD at Aalborg University in collaboration with COWI, investigates how building construction - particularly the extraction and production of construction materials - affects biodiversity in areas far from the building site. Rather than focusing solely on the local environmental impact of buildings, this research highlights the offsite biodiversity impacts that occur during the material life cycle.

Why Focus on Offsite Biodiversity?

Sustainable construction discussions often focus on the local environmental impact of buildings. In the case of climate change, there is broad recognition that emissions—regardless of where they occur - contribute to a global issue. However, biodiversity is still commonly viewed through a local lens. The ecological damage associated with the extraction, production, and transport of building materials - often far removed from the construction site - is currently overlooked. These offsite biodiversity impacts are rarely accounted for in sustainability assessments, representing a significant blind spot in the building industry.

Our Approach

This project will evaluate and compare several international methods used in Life Cycle Impact Assessment (LCIA) that consider biodiversity loss. Using real-world construction projects from COWI, we aim to:

- Identify which materials and processes have the most significant offsite biodiversity impacts
- Assess how current biodiversity-focused LCIA methods perform in practice
- Explore ways to adapt and simplify these methods for practical use in the building industry

The research will take place in Denmark over the next two years, using case studies from actual building projects to ground findings in reality.

Objective

The primary objective is to bridge the gap between scientific biodiversity assessments and the practical tools used by architects, engineers, and construction professionals. We aim to make biodiversity considerations as integral—and as accessible—as carbon footprinting is today.

Expected Outcomes

This research will contribute to more holistic sustainability practices in the construction sector. Outcomes include:

- Scientific publications detailing the findings
- Practical tools and guidance for assessing offsite biodiversity impacts
- A better-informed industry that can reduce its ecological footprint—not just locally, but globally