Advancing biobased building materials in the Danish construction industry – Leveraging standards and standardization for institutional change

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Background and motivation

The construction sector is a major contributor to global greenhouse gas emissions, with conventional materials such as concrete and steel carrying a substantial carbon footprint. Bio-based building materials—derived from renewable resources like wood, hemp, and straw—are increasingly promoted as a key solution because they can capture and store atmospheric carbon and reduce emissions by up to 80%. Despite these advantages, their adoption remains slow. Significant barriers include inconsistent standards, limited technical knowledge, and challenges related to practical implementation. Bridging the gap between sustainability ambitions and the widespread integration of bio-based materials therefore represents a critical opportunity for advancing the green transition in the building sector.

Research hypothesis

The PhD project is grounded in the hypothesis that, although standards are essential for creating a level playing field that enables bio-based materials to compete with conventional alternatives, both the standards themselves and the processes through which they are developed face significant challenges. These challenges call for more flexible and adaptive approaches to support the broader uptake of bio-based materials—both within Enemærke & Petersen and across the wider construction industry.

Approach

The project's approach is grounded in institutional theory, which frames the slow uptake of bio-based materials as a challenge rooted in established norms, rules, and shared beliefs within the construction sector. Rather than relying solely on technical or economic explanations, the research focuses on broader systemic conditions and the social processes that shape change—spanning micro, meso, and macro levels of analysis. Core elements of the research design:

- Institutional theoretical lens: with a focus on institutional gaps and institutional work
- Literature mapping
- Archival data analysis and interviews

Aim of the study

The study examines the factors influencing the uptake of bio-based building materials in Denmark and how standards and standardization can strengthen capabilities for institutional change. The findings will help Enemærke & Petersen navigate broader systemic conditions, improve internal processes, and identify future development opportunities, ultimately benefiting both the company and the wider Danish construction industry.

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