

Jussila J., Nagy E., Lähtinen K., Hurmekoski E., Häyrynen L., Mark-Herbert C., Roos A., Toivonen R., Toppinen A. (2022). Wooden multi-storey construction market development – systematic literature review within a global scope with insights on the Nordic region. *Silva Fennica* vol. 56 no. 1 article id 10609. <https://doi.org/10.14214/sf.10609>

## **Supplementary file S1**

### **Details of literature review process used in the article**

#### **Phase I: Identification**

First, identical searches were conducted in Scopus and Web of Science databases by two researchers.

Search phrases used (for Title-Abstract-Keyword):

**Keyword 1:** wood OR timber (155 008 document results in Scopus)

AND

**Keyword 2:** building OR construction OR dwelling (1 091 239 document results in Scopus)

AND

**Keyword 3:** (policy OR municipal OR public) OR (business OR industry OR compan\* OR enterprise\* OR strategy OR competition OR market) OR (user OR customer OR consumer OR preference OR attitude\* OR view OR perception\* OR behavior) (9 663 491 document results in Scopus)

Publication year: after year 1999

Document type: article or review

- Total of 7117 document results in Scopus
- Total of 5491 document results in Web of Science

#### ***Exclusion in Phase I:***

Exclusion based on irrelevant journal name. Was conducted in database by manually eliminating articles.

- Total of 2803 documents results in Scopus after elimination based on journal title.

Next, further exclusion by irrelevant titles/abstract was conducted manually in Excel-format, case by case by two researchers independently (one with data from Scopus, another with data from Web of Science).

In both stages (journal name & article title) the emphasis was to include publications that considered wood material and building/construction industry.

- Total of 440 documents in Scopus
- Total of 385 documents in Web of Science
- Combined list of 696 articles

## Phase II: Screening

Starting with the combined list of 696 articles including full abstracts, the articles were divided to the researchers in the research group. The decision to include or exclude an article was based on examining the Title & Abstract and the reason for exclusion was added. Unclear cases were marked for further consideration and then discussed within the group of researchers to make the final decision. After the screening process, two researchers double-checked the results to verify inclusion or exclusion of the papers.

The Screening –phase resulted 528 articles to be excluded and 168 articles included for further assessment.

### **Exclusion in Phase II:**

Articles not relevant to wood construction were excluded in the process. Below are the most common research themes covered in the articles eliminated in the Phase II (Table below):

1	<b>Elimination criteria on studies</b>
2	history/archeological
3	architecture, conservation
4	engineering, structural engineering, technical beams, joints etc.
5	mechanical studies, technical tests, earthquake, vibration, seismic performance etc.
6	other material sciences; concrete, cement, insulation, plastics, composite etc
7	fire, sound, insulation, safety related
8	VOC emissions, indoor air
9	material science, wood ash etc.
10	roof, floor materials
11	heating, thermodynamics, electrical
12	biology/microbiology/nanotech
13	agriculture, soils, plants, fungus
14	animals, insects, pests, zoo, fish
15	forestry, forest practices, tropical forests. Forest management etc.
16	material usage, co2 emissions, nzeb, life cycle environmental,
17	medical, health, treatment
18	mining, infrastructure, road construction, bridges etc. technical studies
19	hydrology, water management
20	pulp, paper
21	energy, fuel, oil, gas, wind, solar
22	waste management, recycling
23	computer based modeling, 3D etc. Planning techniques
24	

## Phase III: Eligibility assessment

Total of 168 articles were included for the eligibility assessment based on full paper reading. The articles were downloaded in pdf-format and distributed to the research group for consideration. Each article was analyzed by two researchers individually before making the decision. Unclear cases were again discussed within the research group for verification.

Overall relevancy of each article was evaluated based on few main criteria 1) is the article peer reviewed? (reliability check), 2) does the article have relevancy in business/management studies? and 3) does the article has relevancy or contribution to wooden multi-storey construction. The last criteria turned out to be the most important one when making the judgement.

### ***Exclusion in Phase III***

Total of 126 articles were excluded at Phase III.

Exclusion criteria in Phase III:

Full text unavailable – 18 articles

Foreign language – 1 article

Book chapter – 2 articles

Not peer reviewed article – 11 articles

Focus in non-residential construction – 2 articles

No business relevancy – 4 articles

Not relevant to wooden multi-storey construction - 90 articles

### **Phase IV: Content analysis of included articles**

In total, 42 articles covering several issues in the wooden multi-storey construction literature were selected for content analysis. The focus in collecting data from the articles for further content analysis was on:

- 1) the type of data and method used in the study,
- 2) what key barriers or enabling factors for WMC-construction was addressed in the paper,
- 3) which were the key stakeholders identified in the article,
- 4) key results and contribution of the article and
- 5) what research gaps or suggestions for further research were addressed in the article.

Content of each of the article was again condensed primarily by two researches individually within the research group and the results and analysis was conducted by the research team in workshops.