



Lighthouse Joensuu

Testing Level(s) in the
Residential Market 18 Dec 2018

Lauri Linkosalmi

Why level(s)?

- From use stage energy efficiency to the life cycle approach
- To see performance of massive wood structures over the life cycle
 - Life cycle energy and carbon
 - Resource efficient and circular material life cycles
 - Healthy and comfortable spaces
 - Adaptation and resilience to climate change
 - Optimised life cycle cost and value



Level(s) testing in Finland

Level(s)-testaus Suomessa

Vähimmäisvaatimus:

Taustat

1. Kuvaus rakennuksesta ja käytetyistä laskentaskennoista

2. Määrä- ja materiaaliluettelo

Tulokset

3. Energiaselvitys

4. Rakennuksen elinkaaren hiilijalanjälki

Palaute

5. Laskennassa käytettyjen tietojen kyselylomake

6. Level(s)-palaute

UPDATE

+

Valinnaiset:

Elinkaariarviointi (lisäindikaattorit)

Elinkaarikustannusten arvio

Muuntojoustavuuden tarkistuslista

Rakennus- ja purkujätteiden määrä

Veden kulutus käyttövaiheessa

Sisäilmaluokka

Level(s) testing

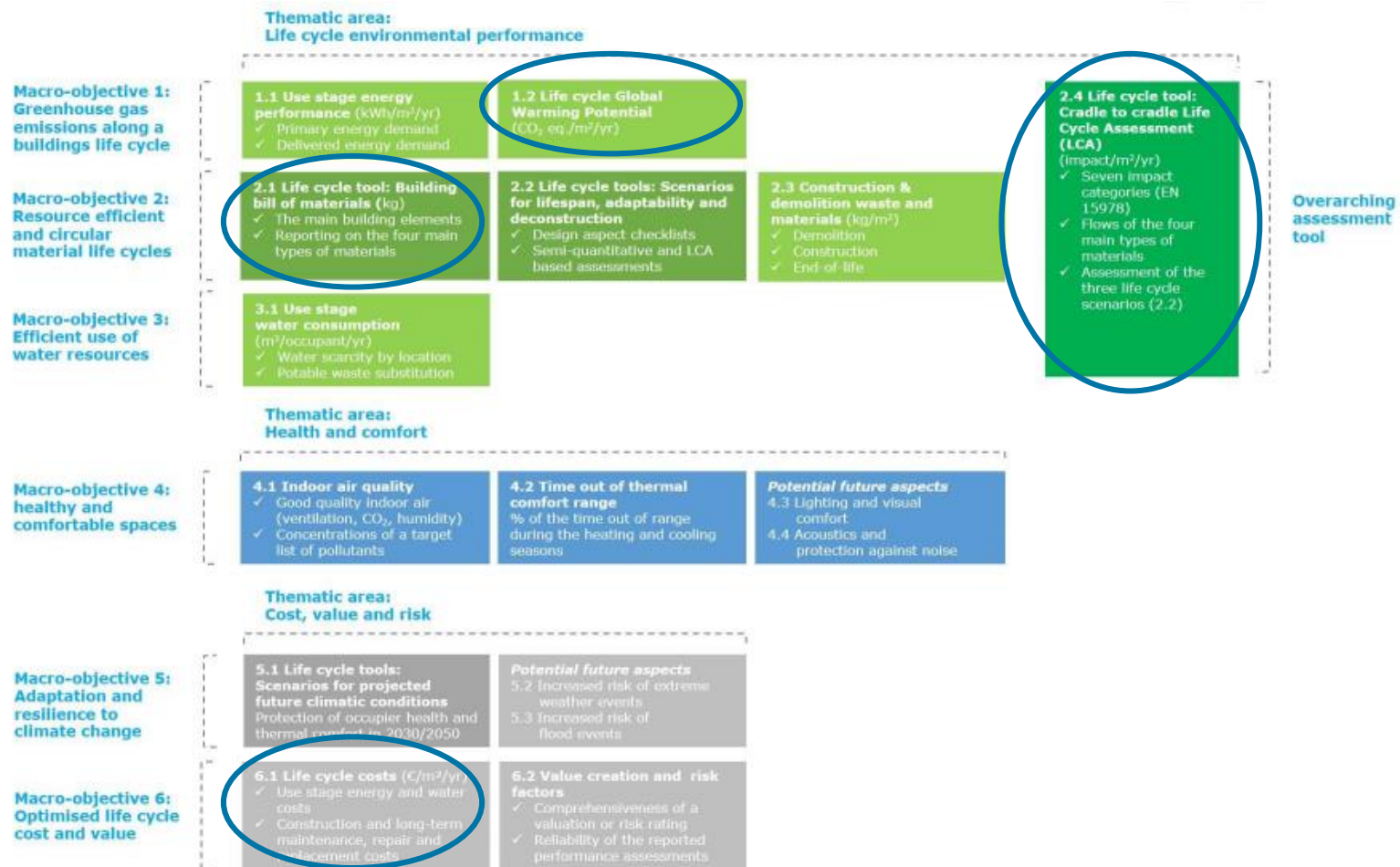


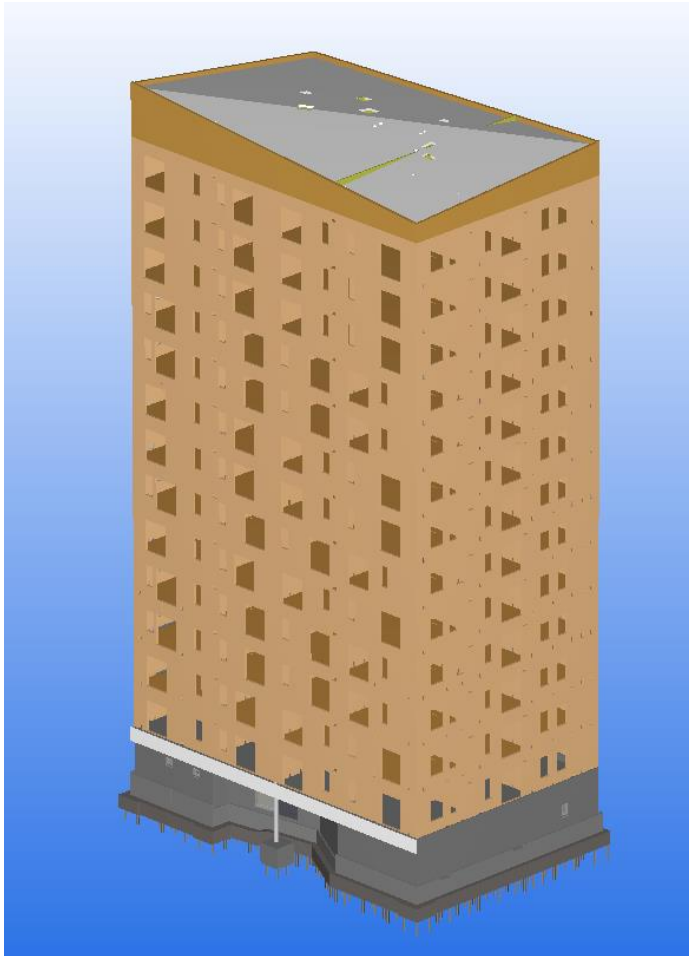
Figure 2.1 Overview of the Level(s) framework

Lighthouse Joensuu, Finland



- 14 storey wooden building with 117 student apartments
- Main and architect designer: Arcadia Oy architectural firm
- Constructor: Rakennustoimisto Eero Reijonen Oy
- Client: Joensuun Elli student's apartment company
- Wood structure supplier: Stora Enso Wood Products
 - 2000 m³ massive wood
 - LVL (Laminated Veneer Lumber) wall elements
 - CLT (Cross-Laminated Timber) floor elements

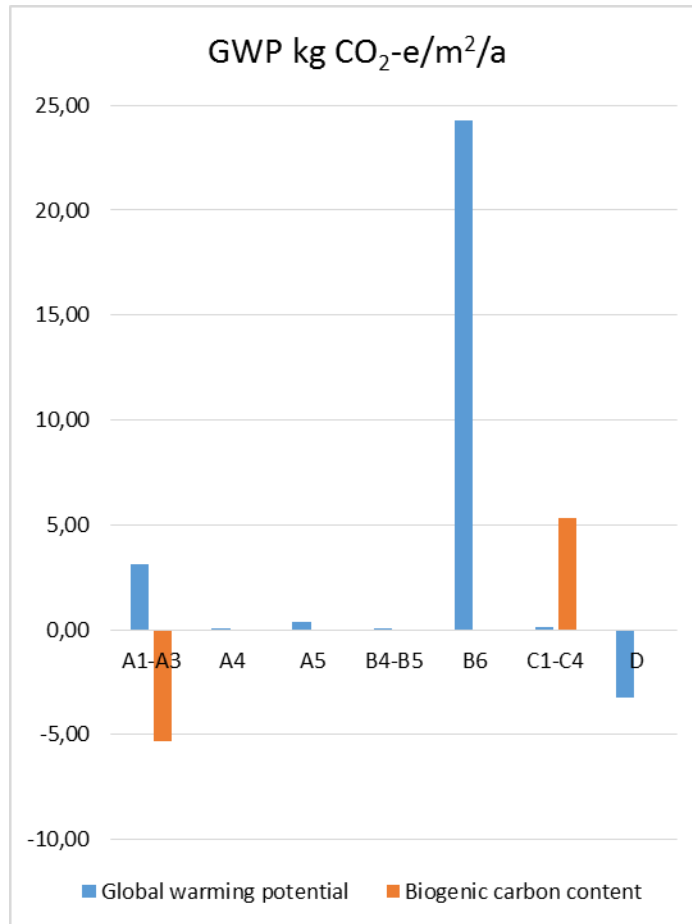
Level(s) testing with data modelling



- First stage assessment for main structures
 - Foundation
 - Exterior and interior wall elements
 - Floor elements
 - Roof structures
- Study coverage: Construction materials (A1–A3), construction (A4–A5), replacements (B4–B5), use stage energy use (B6), and end-of-life (C1–C4)
- Testing via the guidance and a tool
- Assessment done by One Click LCA
 - Level(s) calculation integrated to the tool
 - Material information via BIM
 - Material data from EPDs



Outcomes



- Level(s) support strategy to go beyond on a product level impacts to the life cycle performance
 - National demand on buildings environmental performance is increasing in Europe
- Access to building level data
 - Reference buildings needed
 - Co-operation with constructors
- Same caps in the data
 - Same indicators are not reported in Environmental Product Declarations yet
 - Guidance document is not clear, information in many places



Lauri Linkosalmi, Senior Manager Products Stewardship

Stora Enso Wood Products

lauri.linkosalmi@storaenso.com