Low carbon clinics

Building cases from the Nordic countries and Estonia

23.1.2025

Nordic Sustainable Construction

WORK PACKAGE 1

Nordic Harmonisation of Life Cycle Assessment

WORK PACKAGE 2

Circular Business Models and Procurement

WORK PACKAGE 3

Sustainable Construction Materials and Architecture

WORK PACKAGE 4

Emission-free Construction Sites

WORK PACKAGE 5

Competences for Reuse in Construction & Programme Secretariat

Task 5
Acceleration Programme: Knowledge Sharing Clinics and Best Practice Catalogues

WORK PACKAGE 1

Nordic Harmonisation of Life Cycle Assessment

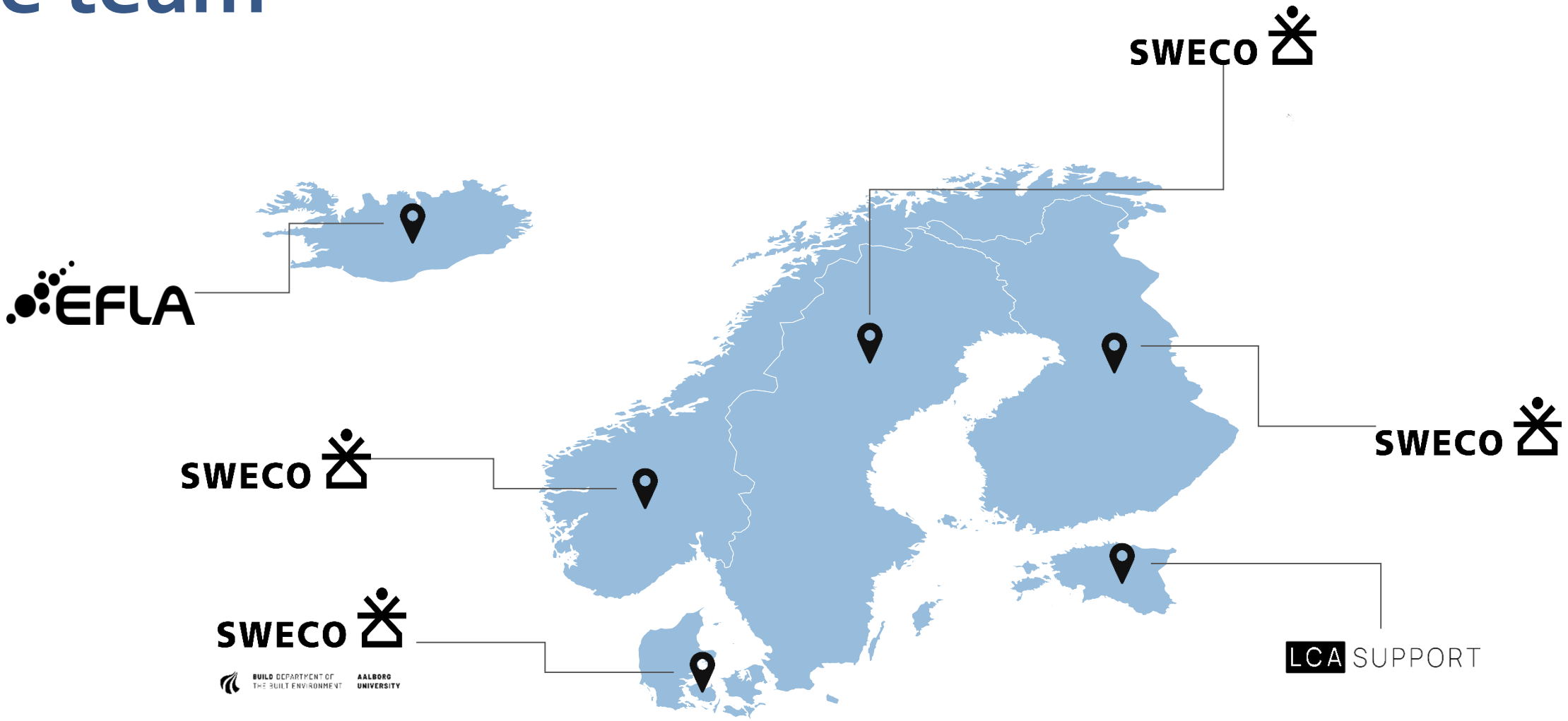
Task 5.1
LOW CARBON CLINICS

Task 5.2
BEST PRACTICE CATALOUGE

WORK PACKAGE 1

Nordic Harmonisation of Life Cycle Assessment

The team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EFLA
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AALBORG UNIVERSITY
LCA SUPPORT

The team

Anna Joelsson
Sustainability Strategist

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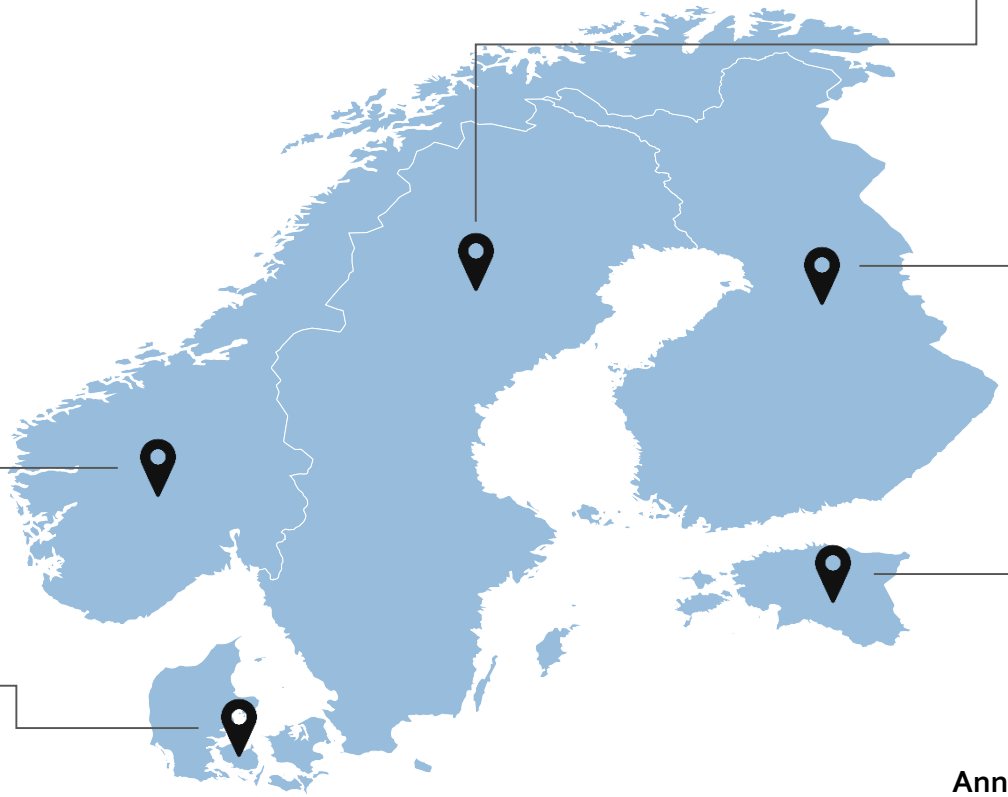

SWECO

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Nicolaj Hostrup Langkjær
Sustainability engineer and project manager

SWECO

BUILD DEPARTMENT OF THE BUILT ENVIRONMENT AALBORG UNIVERSITY

LCA SUPPORT

Anni Oviir
Founder, Director

Task 5.2

Create a catalogue of low carbon buildings from the Nordic countries and Estonia, assess their impacts, and document applicable solutions

Projects were gathered and evaluated to ensure various typologies and low carbon solutions

Share low carbon solutions among countries, highlighting regional differences and encouraging their exchange

Best Practice Catalogue – Building LCA cases from the Nordic countries and Estonia

Task 5.1

Aims at increasing the know-how in the market

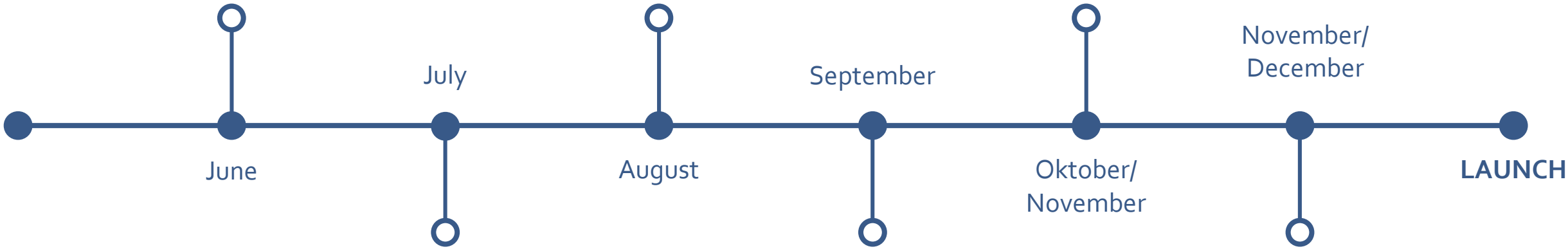
11 workshops for clients with projects in various building phases

Sharing real-life decarbonisation solutions and challenges

Webinar
First webinar was hosted
- Informing about the project
- Sign-up links

Project selection process
Still contacting clients (summer holiday)
- Review registered projects

Follow-up clinics
Drafting first graphs
- What have been implemented in the project from the first workshop?
- "Has it impacted the overall work with sustainability in the company?



Sign-up period
Contacting customers and partners to inform them about project registration
- What do they gain from participating?

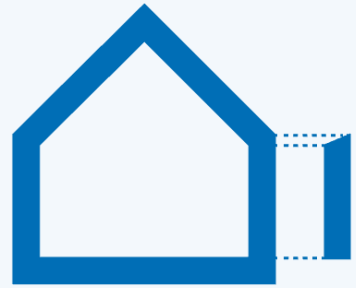
Low Carbon Clinics
Conducting workshops with the clients
- Agree with the customer what they want to get out of the workshop and who should participate

Drafting of catalogue
Gathering findings from all the workshops and the key findings
- Several proofreading sessions
- Final catalogue send to publisher

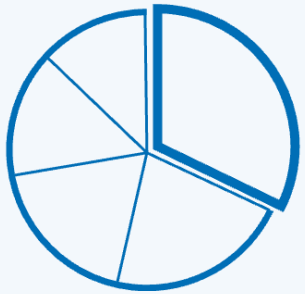
Low-Carbon Clinics

Carbon limit values and continuous LCA monitoring

Flexible use of buildings

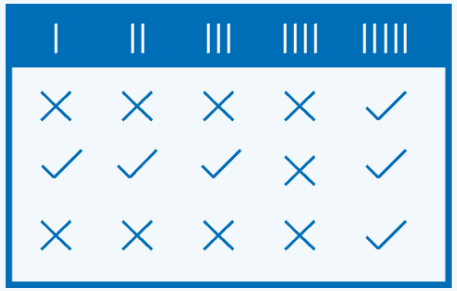


Hotspot analysis and data for early insights



Biobased materials and low-carbon solutions

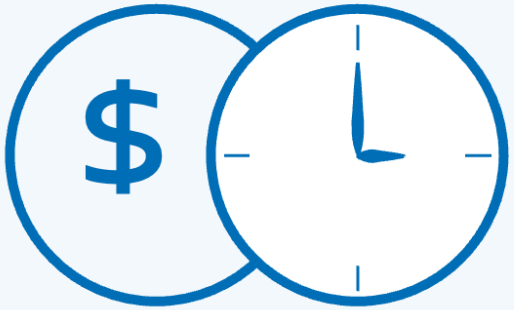
Calculation methods and integration of LCA across phases



Material-related challenges

Location / geological preconditions

Time and cost constraints



Estonian case: Loodusmaja (The Nature House)

Typology: Museum, Office
Area: 15,250 m² net floor area
Building Phase: Construction

Image: KavaKava (https://www.kavakava.ee/project/keskkonnamaja/)

Background

- Life Cycle Assessment (LCA) calculations during both the preliminary and technical design stages (2020, 2021)
- First public building to complete LCA study

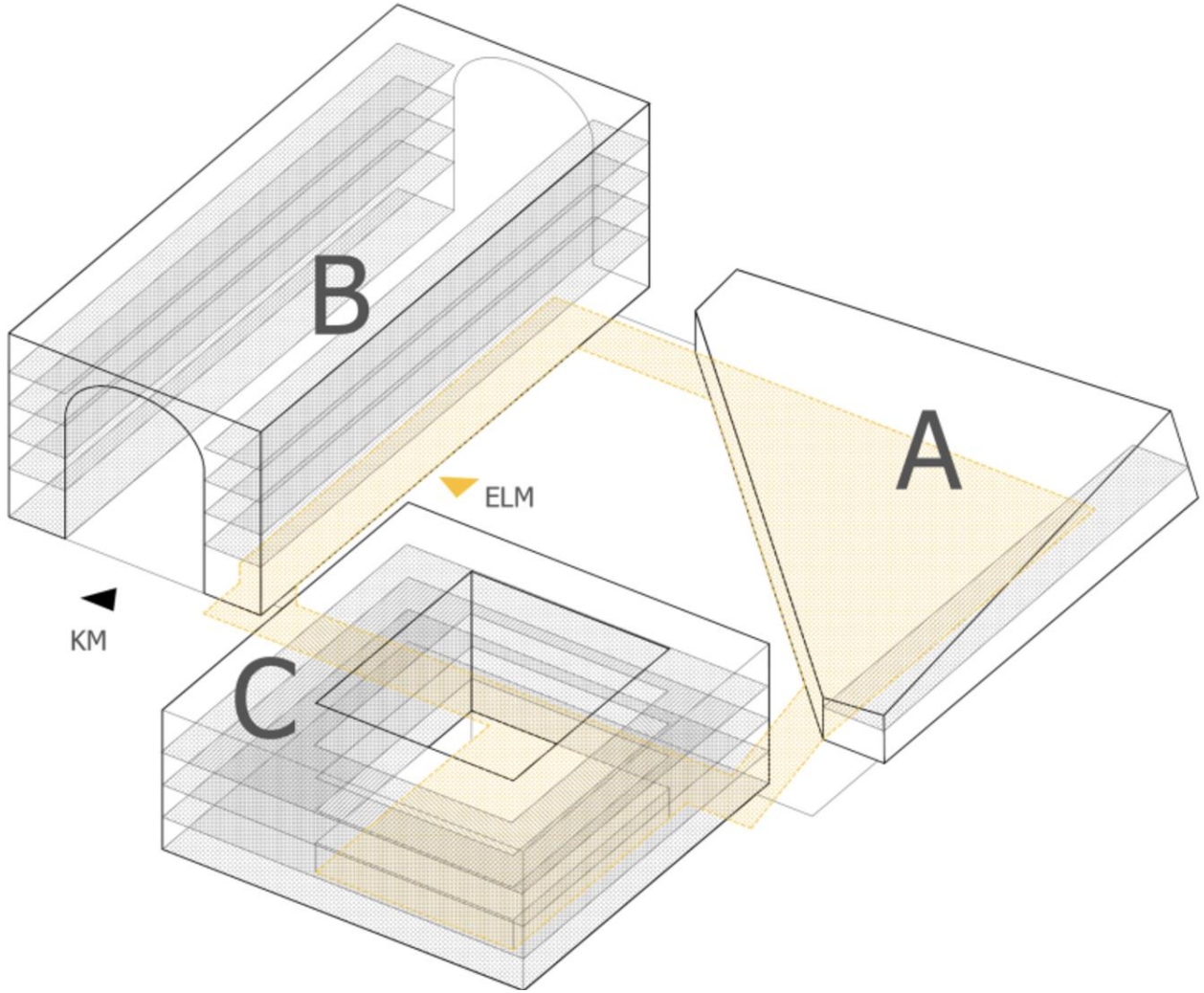


Image: KavaKava

Workshop: September 18, 2024

Participants: Client is the state (Riigi Kinnisavara and Ministry of Climate); Contractor (Nordecon); Architects; Engineers (14 people)

Key topics:

- Analysis of the completed studies
- Incorporating LCA practice into the workflow
- Conducting LCA for as-built

Key takeaways

- Process needed to integrate LCA into project planning across sector.
  - Unclear who is the party who is responsible for conducting LCA
- It is possible to optimise carbon footprint in every stage of the project :).
- First case where LCA has been conducted for design stage and as-built stage.
  - RKAS gains lots of invaluable insights by completing as-built LCA, including feedback to national method and database

Under construction

Examples from Sweden

Umeå Municipality
Concept for group home

OBOS Bostadsutveckling
Row houses

Catena
Logistics project

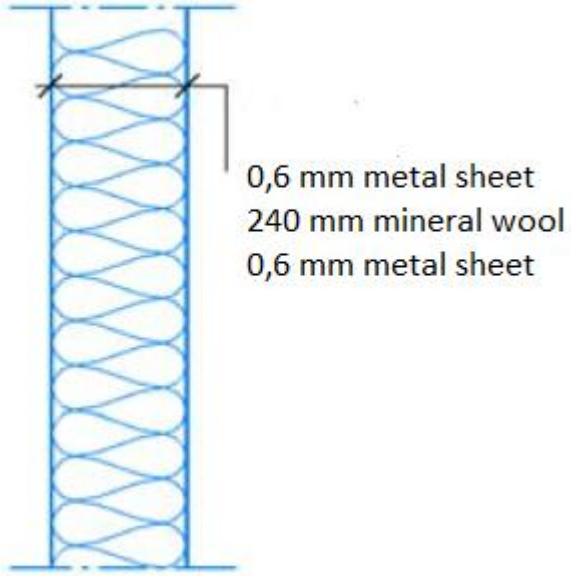
Logistics

- Sometimes high buildings with large outer walls compared to indoor floor area
  - ➢ Can increase kg Co_2/ gross floor area

- Few inner walls and small amount of room completions
  - ➢ Can decrease kg Co_2/ gross floor area

Logistics

How to find alternatives to the Sandwich panel outer wall construction



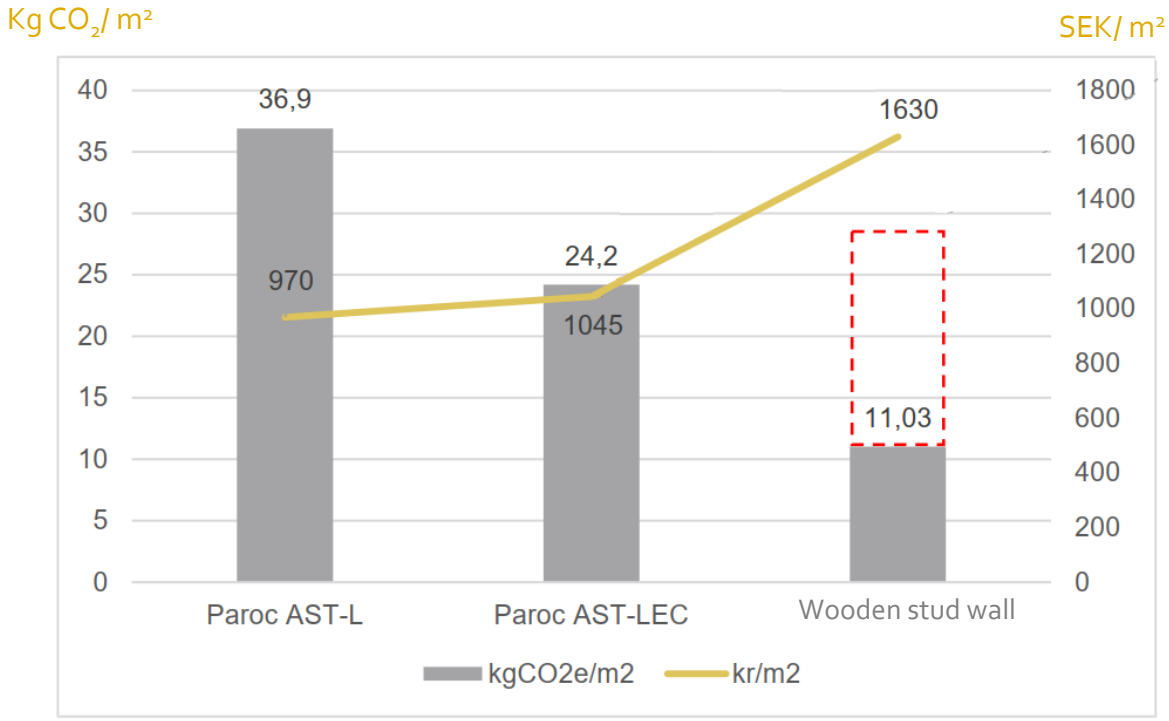
Benefits of the Sandwhich panel system

- Allows for quick assembly
- Small additions after assembly
- Low maintenance during the lifetime
- Meets other technical requirements such as fire safety and energy efficiency
- Relatively low cost

The disadvantage is the high climate impact

Logistics

How to find alternatives to the Sandwhich panel outer wall construction



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	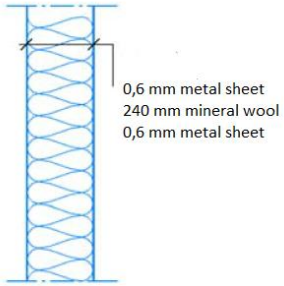	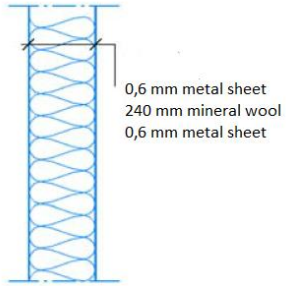
GWP (CO_2/m_2)	36,9	24,2
Energy use for production MJ	653	682
Share of renewable energy contracts	34%	51%
Virgin steel	87%	9%

Being a developer on a large market

— Have construction projects all over the country

➢ *How can we keep up with relating to all local limit values and calculation methods?*

- Environmental certification schemes also have different methods. Installing solar panels can give 15 times larger effect in one system than another

➢ How do we know what to do that have the best real effect?

- The detailed plans from the municipalities can be an obstacle

➢ We might not be able to find reused yellow brick for an entire neighborhood at a particular time

48 Swedish cities in Viable Cities

148 kg CO_2/ m^2 BTA for workshop project – and OBOS feel that they can do better!

The Municipality as a developer

— All activities are tax-funded

➢ *It is balancing act between trying new solutions and taking responsibility for taxpayers' money*

- Is not mandated to drive innovation

➢ *But do have the responsibility to develop the society in a good direction for future citizens.*

Workshops are valuable!

- Give a reason to come together
- Hear the word from an independent source
- Repetition brings behavior change