

THE MINICO₂ HOUSES

FREJA RASMUSSEN,
MSC.ENV. ENG., PHD STUD



STATENS BYGGEFORSKNINGSINSTITUT
AALBORG UNIVERSITET KØBENHAVN



The project

Project owner: Realdania Byg

Period: 2012 – 2013

Building cost: 1,700,000 DKK = 230,000 EUR/each

Design first – calculations afterward

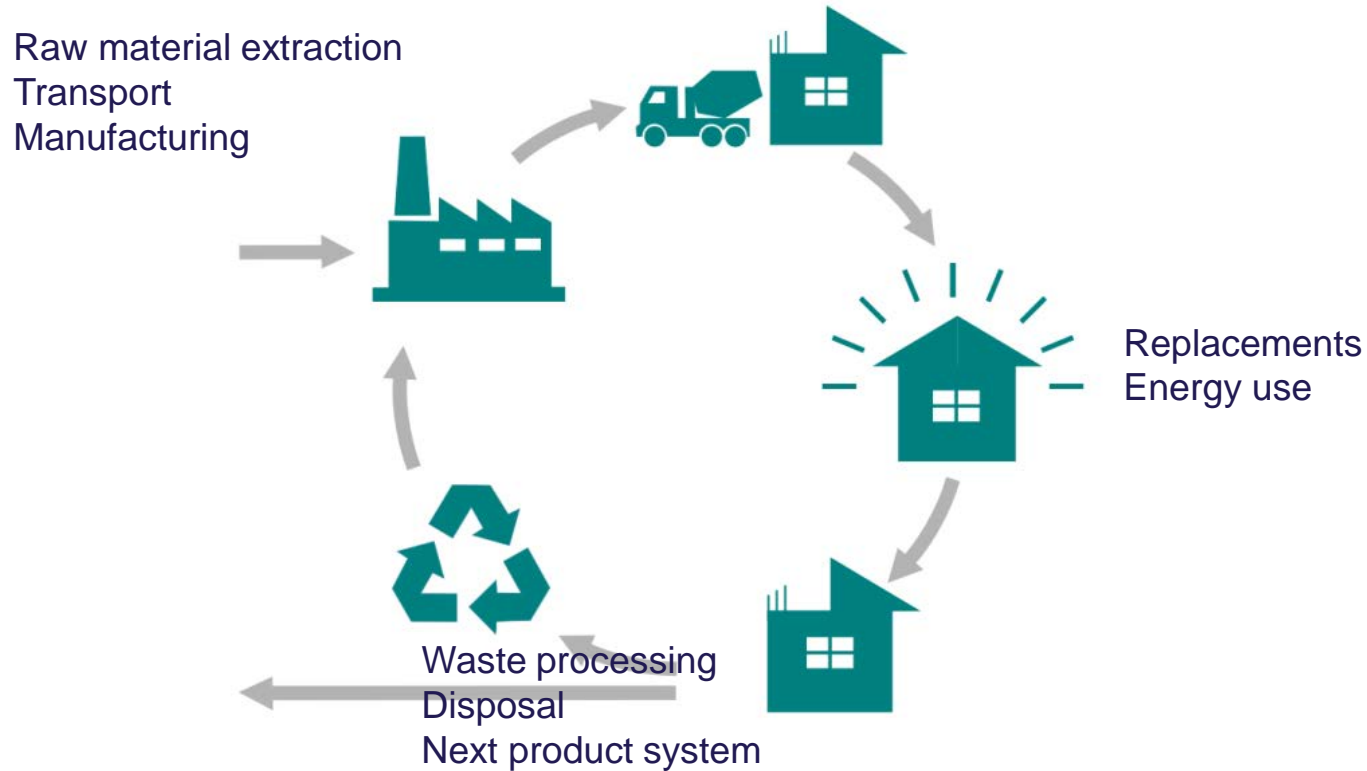
Aim in using LCA: producing a catalogue of design options displaying how to reduce the GHG emissions of a building throughout its life cycle

E.g.

Large overhang protecting windows from wear and tear = xx kg CO₂-eq



Life cycle stages included in calculations



Upcycle House – reused/recycled materials

Design measures:

Shipping container as structural element

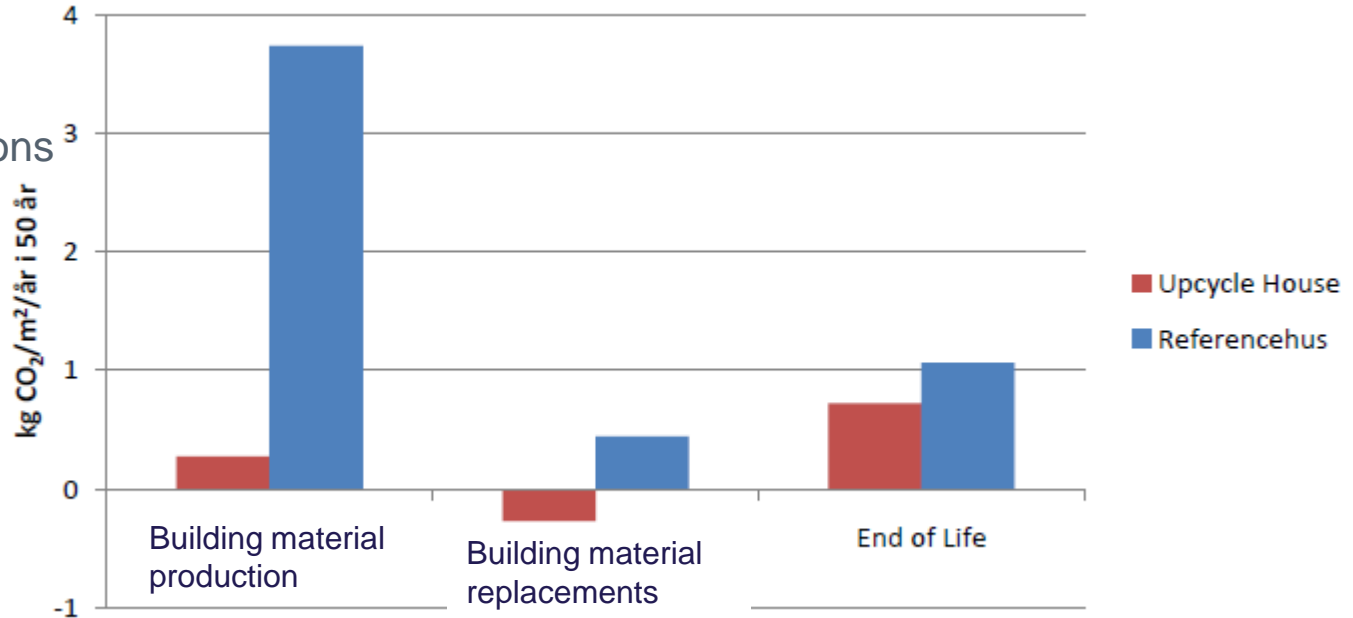
Reused construction wood

Reused bricks

Reused windows

Recycled materials

- Steel screw foundations
- Gypsum boards
- OSB plates
- Cork flooring
- Cellulose insulation

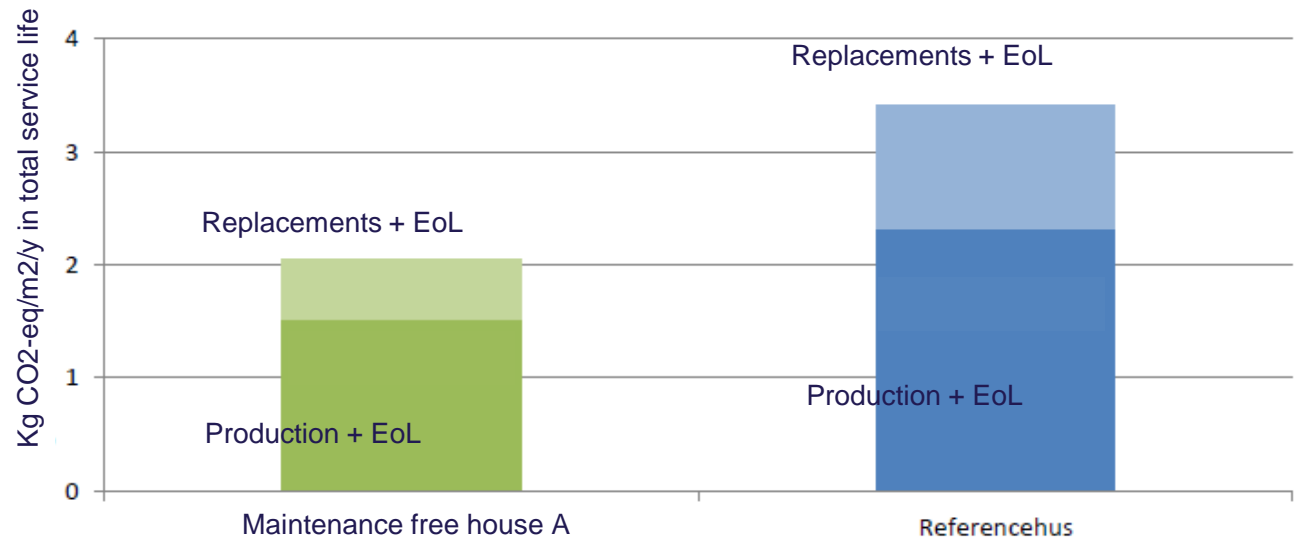


Maintenance free house A

Design measures:

Large overhangs

Single material design (brick)



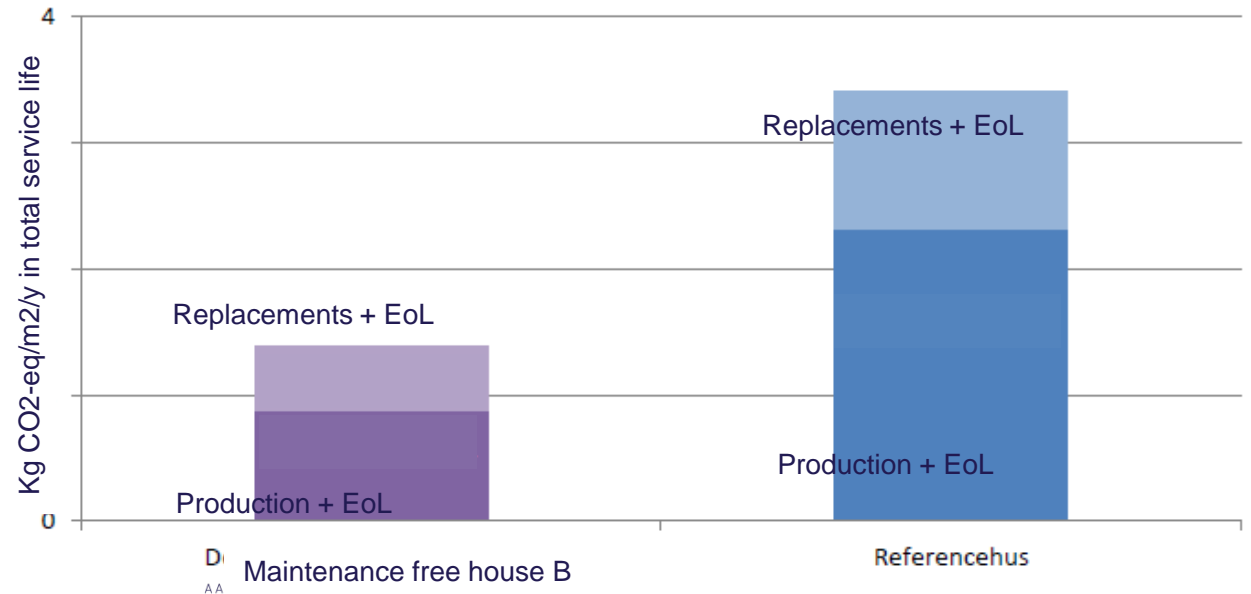
Maintenance free house B

Design measures:

Tempered glass coating

Large overhangs

Wooden prefab modules

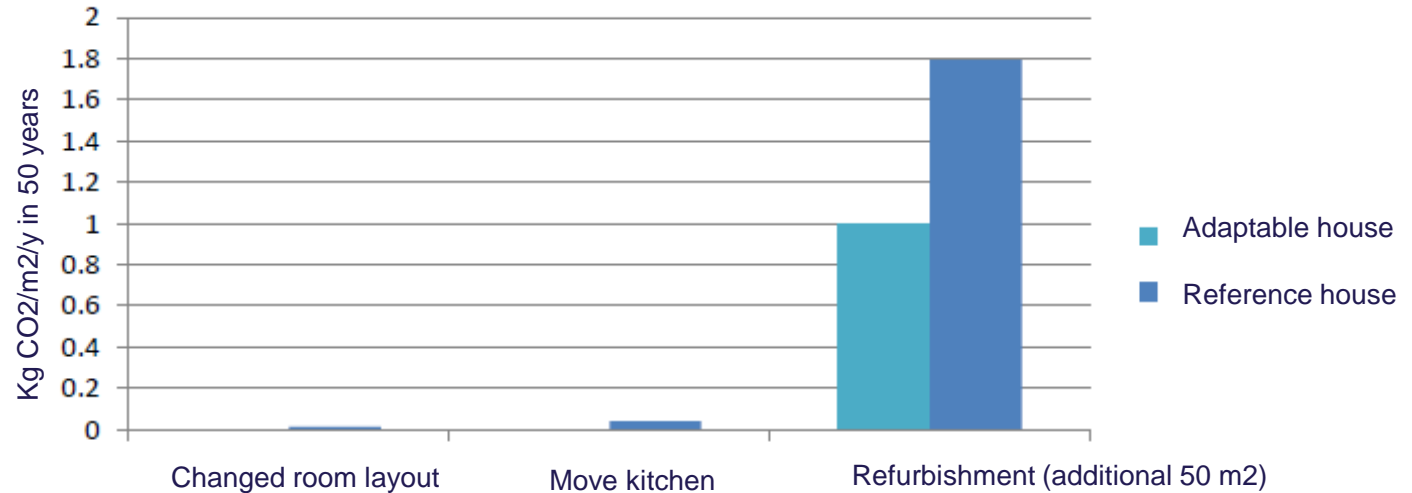


Adaptable House

Design measures:

Reusable external wall elements

Adaptable internal walls



Quota House

Design measures:

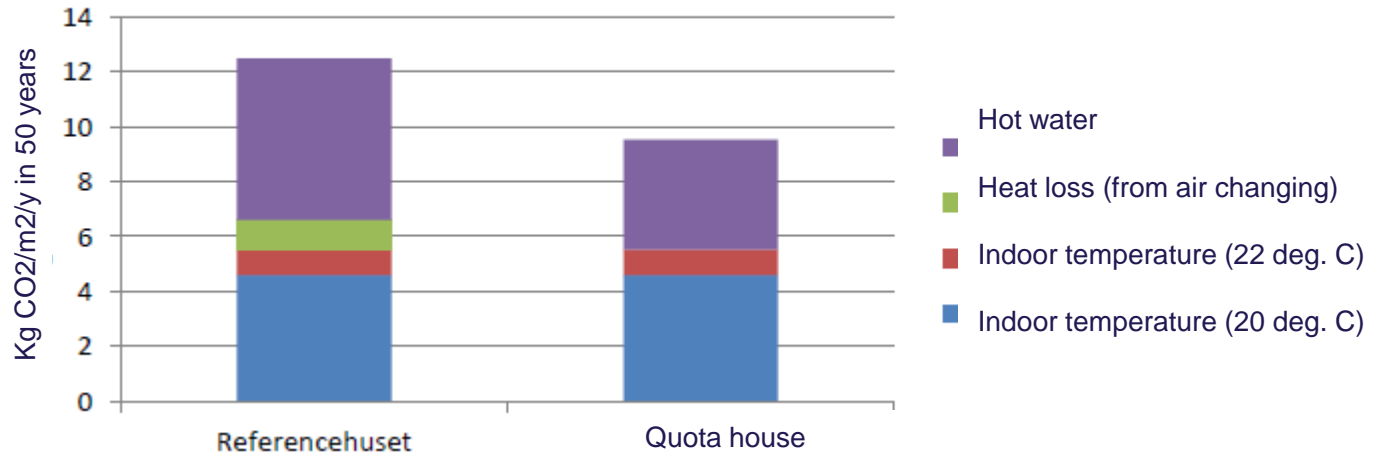
Zone planning og rooms

Nudging technologies

Digital user interface with CO2 quota visualisation



Heat use, distribution



Observations

Competitive element in low CO2 design is very appealing to design teams

The exact same service provided by the different designs?



THANK YOU



STATENS BYGGEFORSKNINGSINSTITUT
AALBORG UNIVERSITET KØBENHAVN