
Something ~~Dutch~~ Swedish?

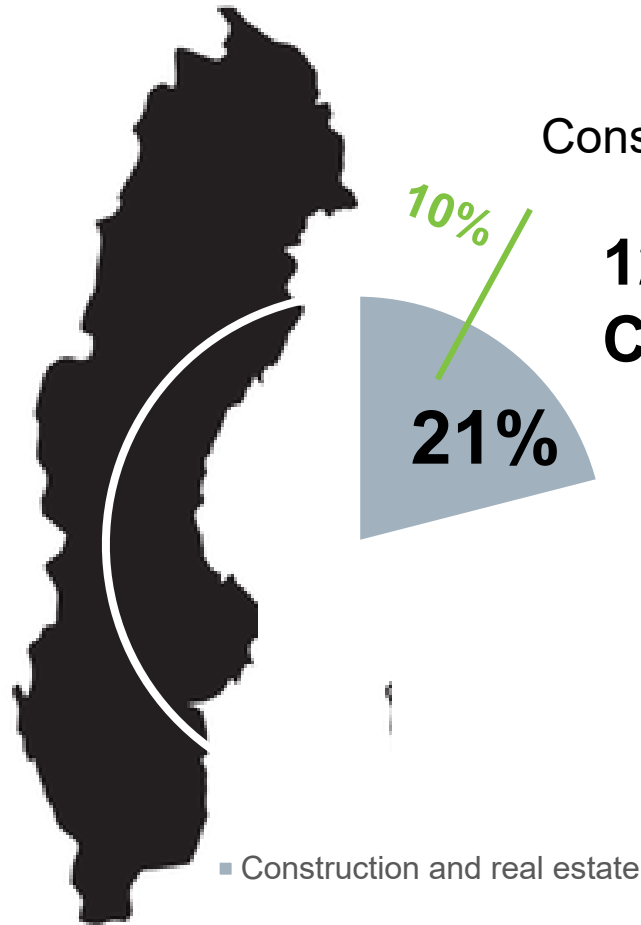
Jasper de Mink, BIM Strateg/ BIM Manager

#whitearkitekter

@whitearkitekter

white

The Challenge



Construction Industry and Real Estate

12.8 M ton CO₂e + 8.2 M ton CO₂e




Architecture for a Sustainable Life

ABOUT WHITE ARKITEKTER

@whitearkitekter
whitearkitekter.com

white



**Our vision is for all our projects
to be climate neutral by 2030,
through design excellence.**

Enabling sustainable life through the art of architecture

- Housing
- Offices
- Hospitals
- Schools
- Urban Planning
- Landscape
- Interior Design

Expertise in

- Project Management
- Sustainability
- Digitalisation

White in short 2021

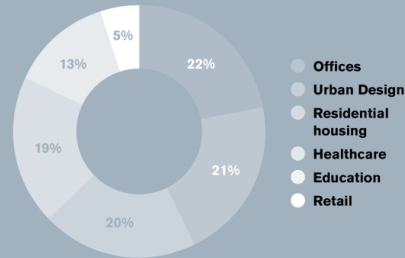


776 employees

of whom:



Market areas 2021:
(% of incoming orders)



466

MSEK to training, research, development and innovation

19 projects have goals for climate neutrality or better
(9% of projects)

771 MSEK turnover

46%
projects with climate goals

34
Research projects through White Research Lab

94%

of our trips within Sweden are made by train



33%

of projects have a bearing solid wood frame
(21% last year)

51%

projects conducted under a certification system

We worked in 11 different countries in 2021

Sweden, Norway, Denmark, Finland, UK, Germany, Latvia, Canada, Kenya, Ethiopia and DR Congo.

392

tonnes CO₂e emissions
(364 tonnes 2020)

0.69

tonnes CO₂e emissions per FTE
(0.73 t/FTE 2020)





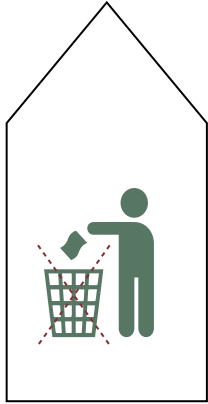
Role of the client

SKELLEFTEÅ KOMMUN

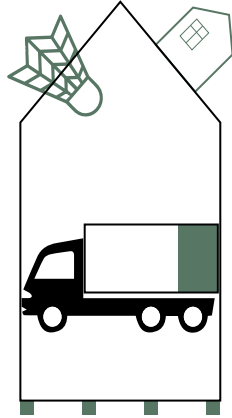
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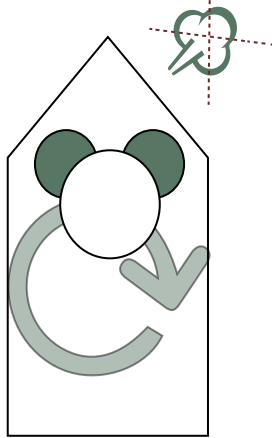
Environmental aspects



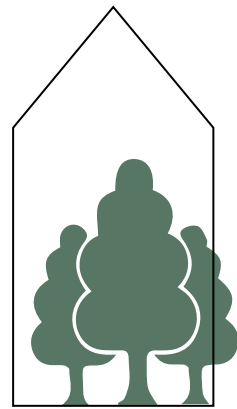
NO WASTE



LIGHTWEIGHT



CO2-NEUTRAL



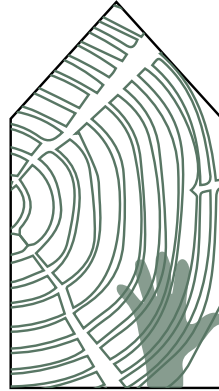
ABUNDANCE OF RAW MATERIALS



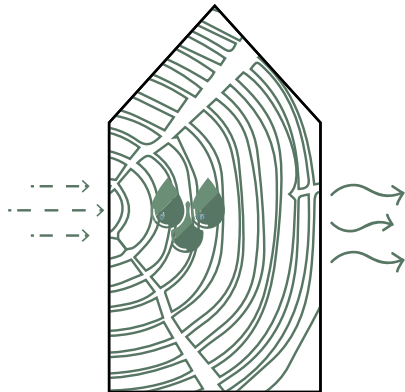
Environmental aspects



**QUIET & CLEAN
CONSTRUCTION SITE**



**THERMAL
PROPERTIES**



**MOISTURE REGULATING
QUALITIES**



**HEALTHY
MATERIAL**



WHITE ARKITEKTER



Skellefteå

SARA CULTURE CENTRE & BIM

Cityplan with a Monumental Building



PO Hallman; 1905



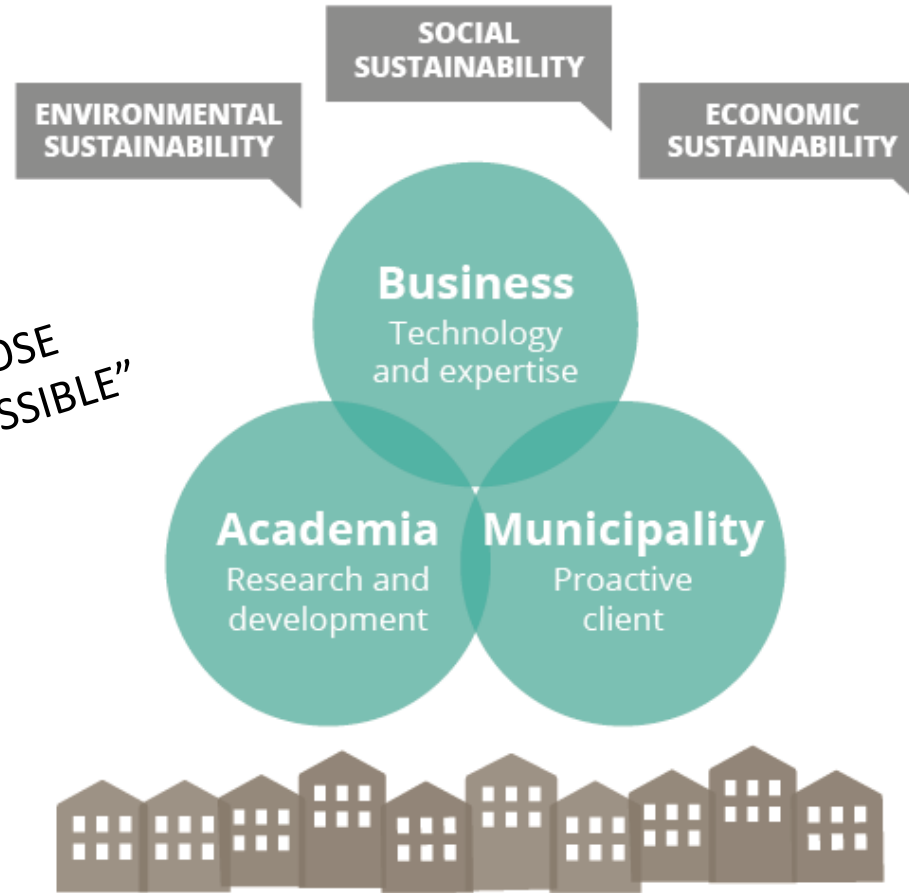
Situation 2015



Situation 2022

The City's Wood Strategy

“IN SKELLEFTEÅ, WE ALWAYS CHOOSE WOOD TO BUILD WITH WHEN POSSIBLE”



WOOD FOR A **SUSTAINABLE SOCIETY**



A lot of Wood! For the client!

“When you ask for wood, you get wood”

Can we ask for digitalisation?

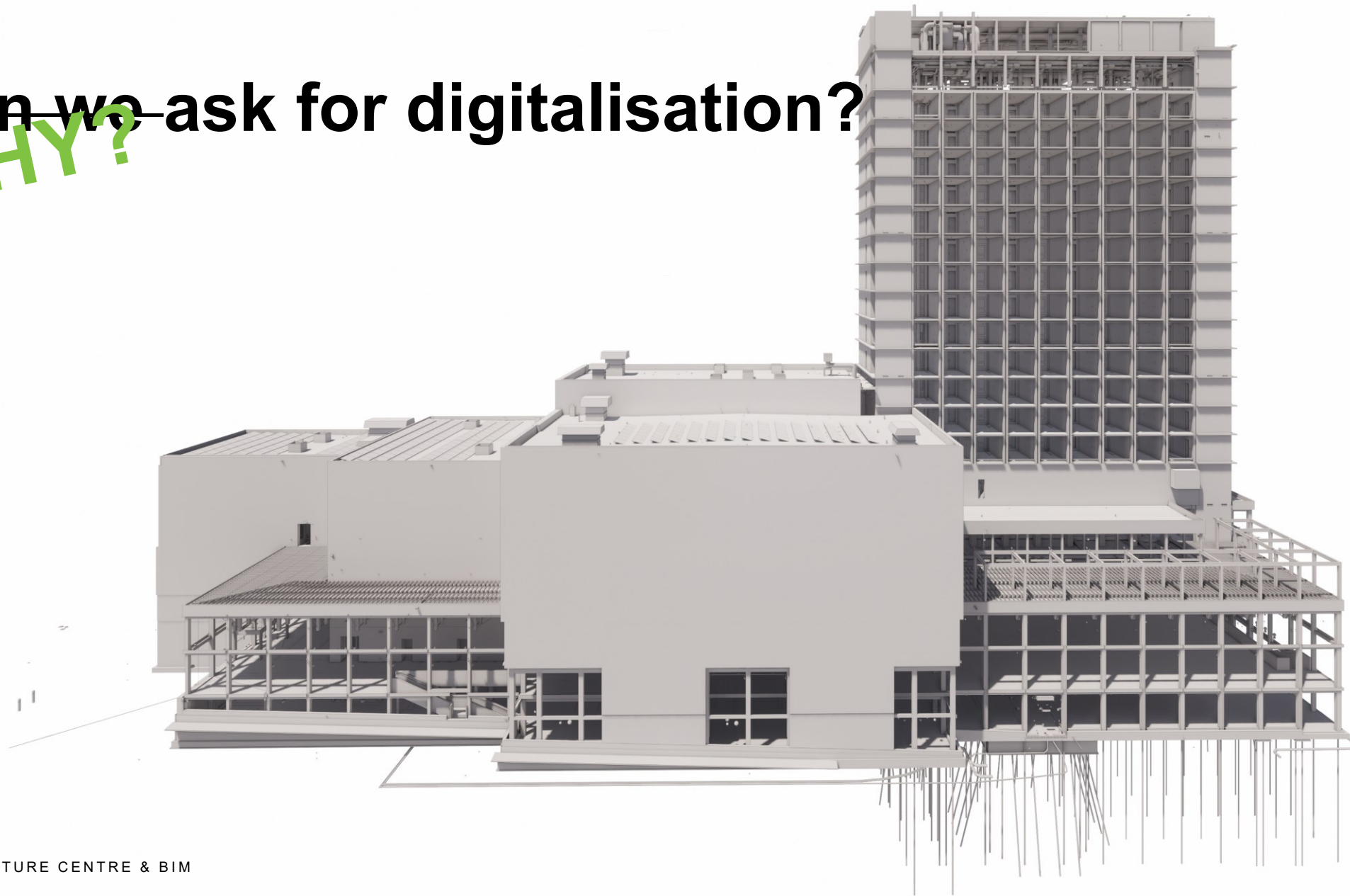
HENT

Demanded and
got delivered



Can we ask for digitalisation?

WHY?



WHY?

Ask for:

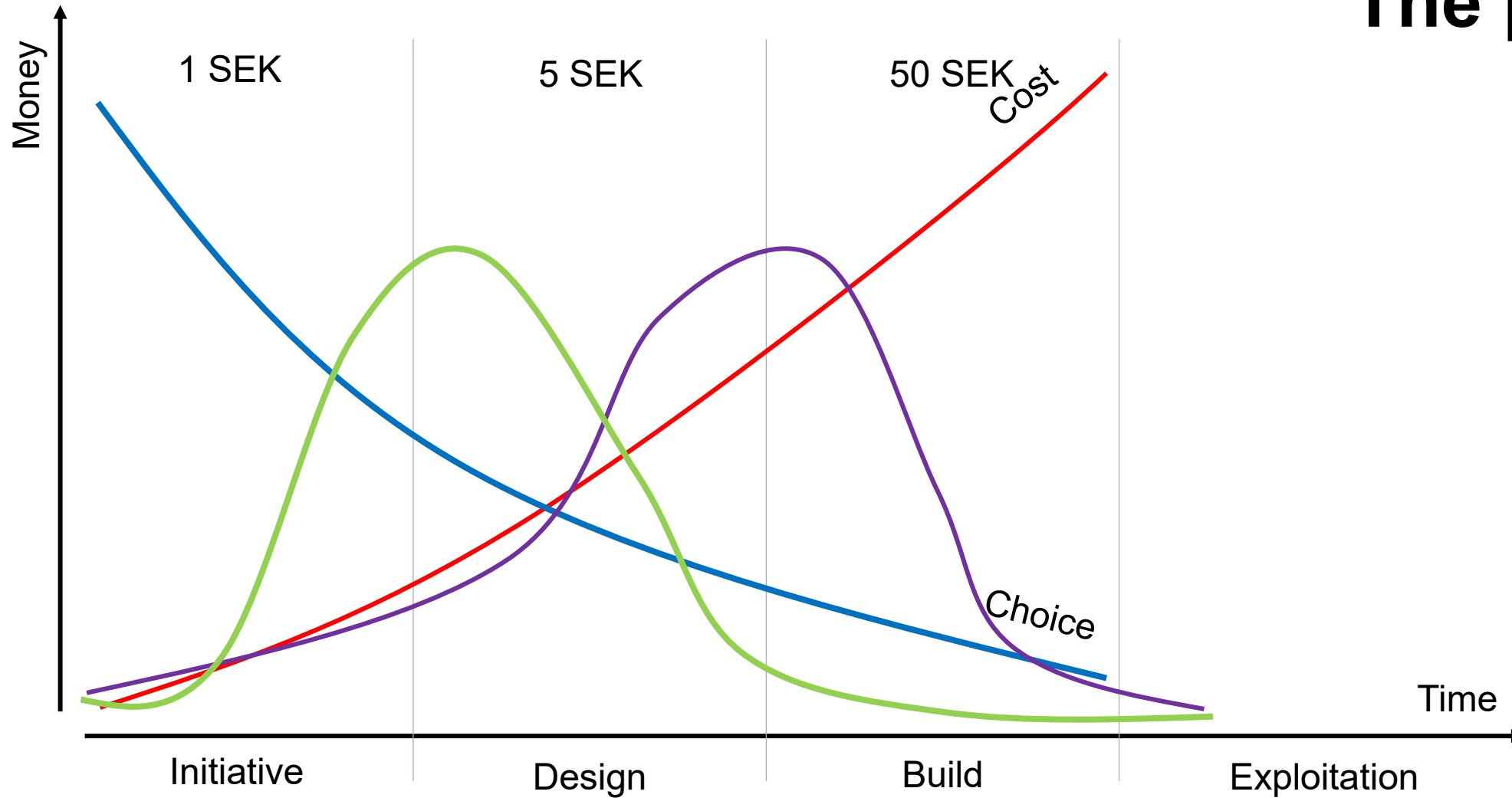
- Organised,
- Managed,
- Controlled,
- Central,
- Digital,

project
information

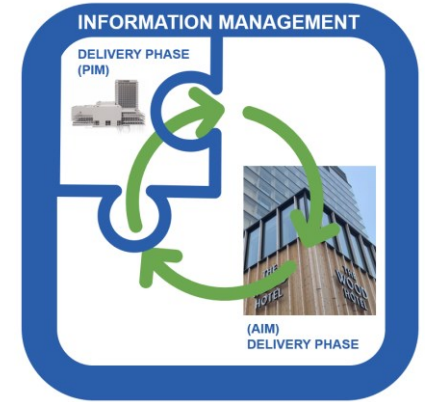
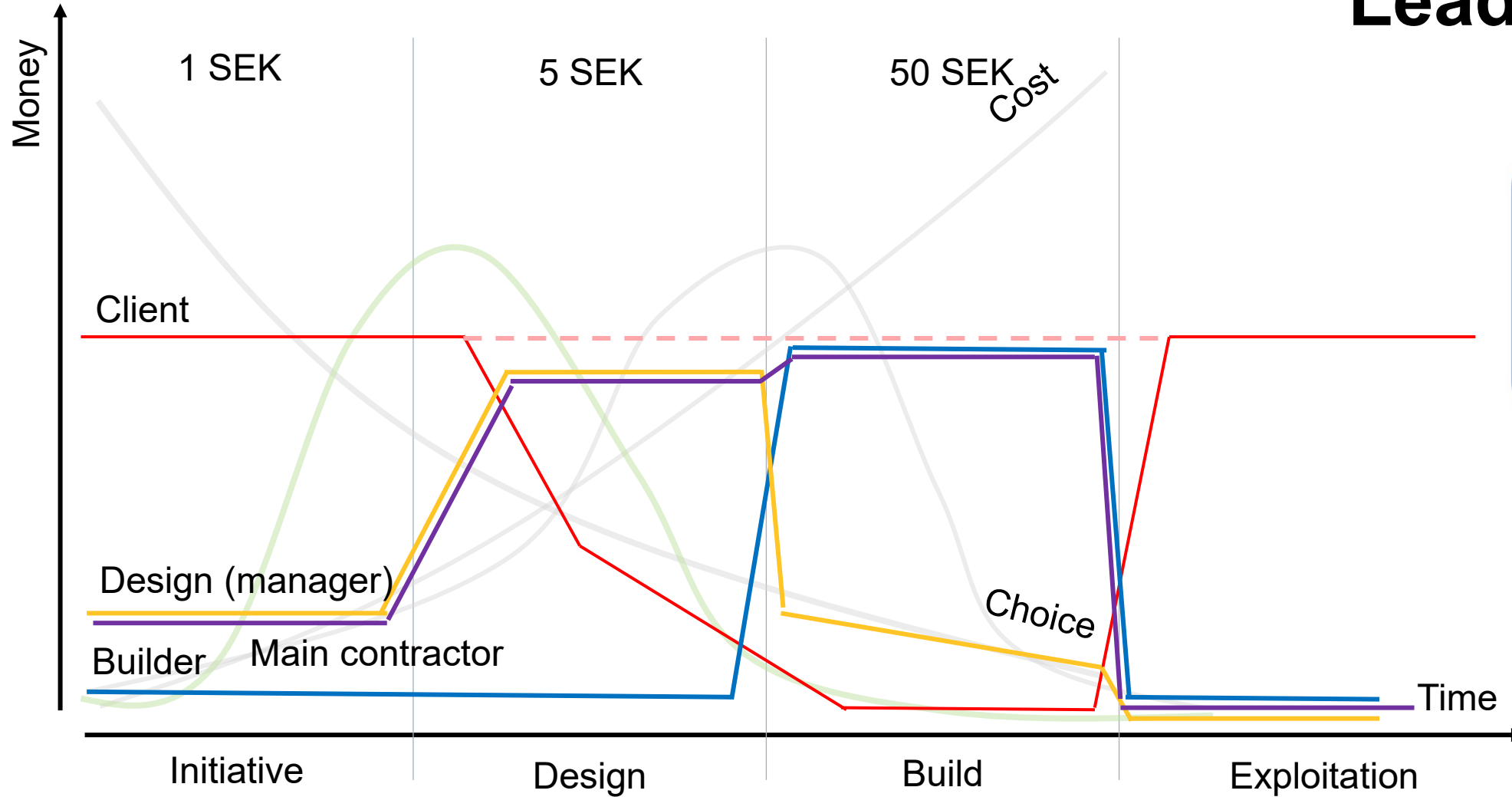


BIM Alliance
SWEDEN

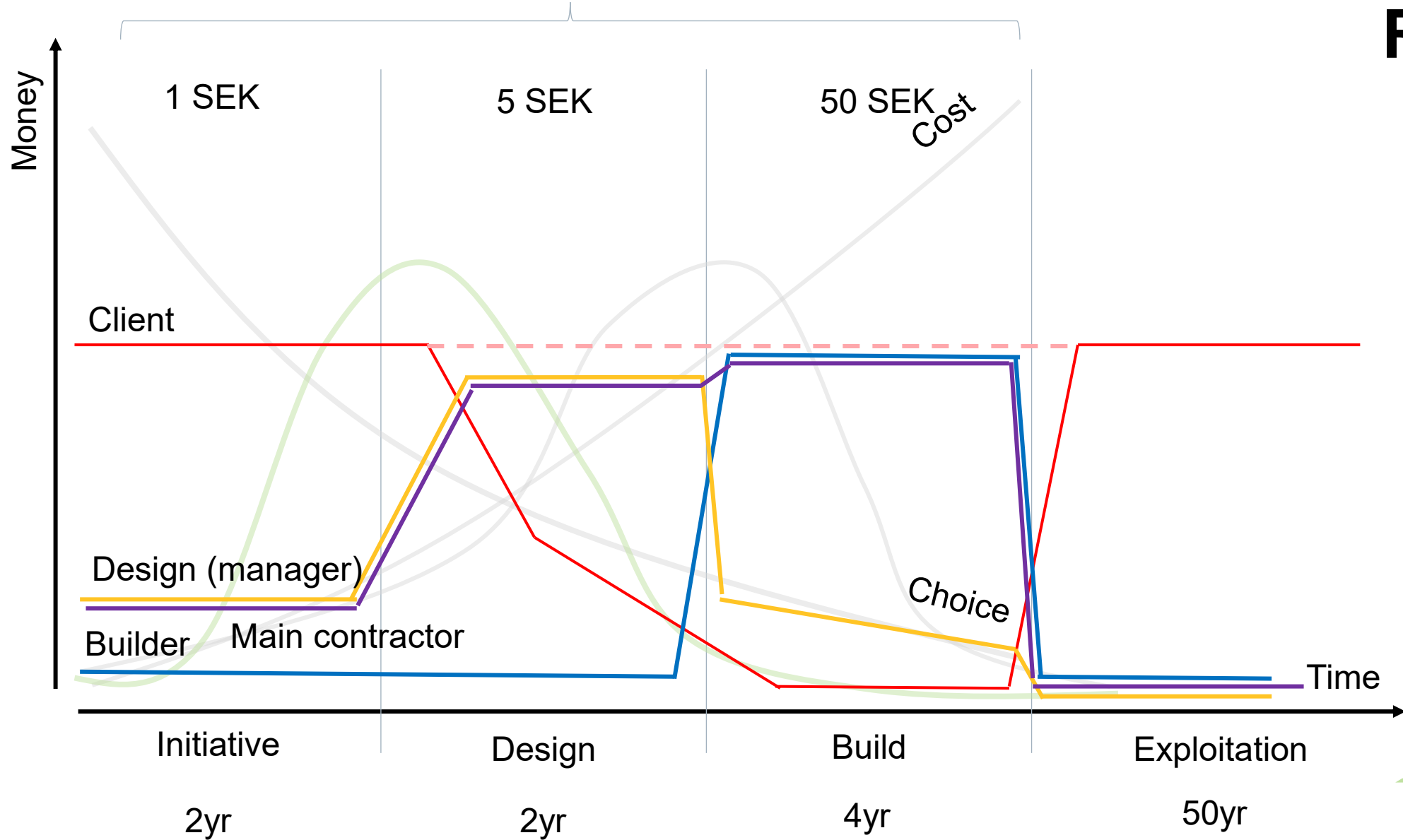
The process



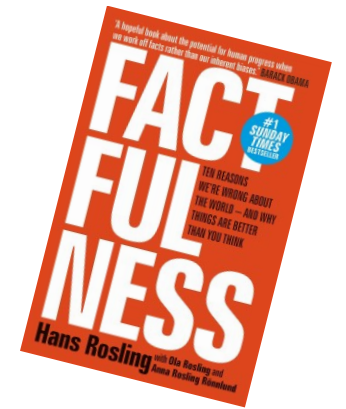
Leadership?



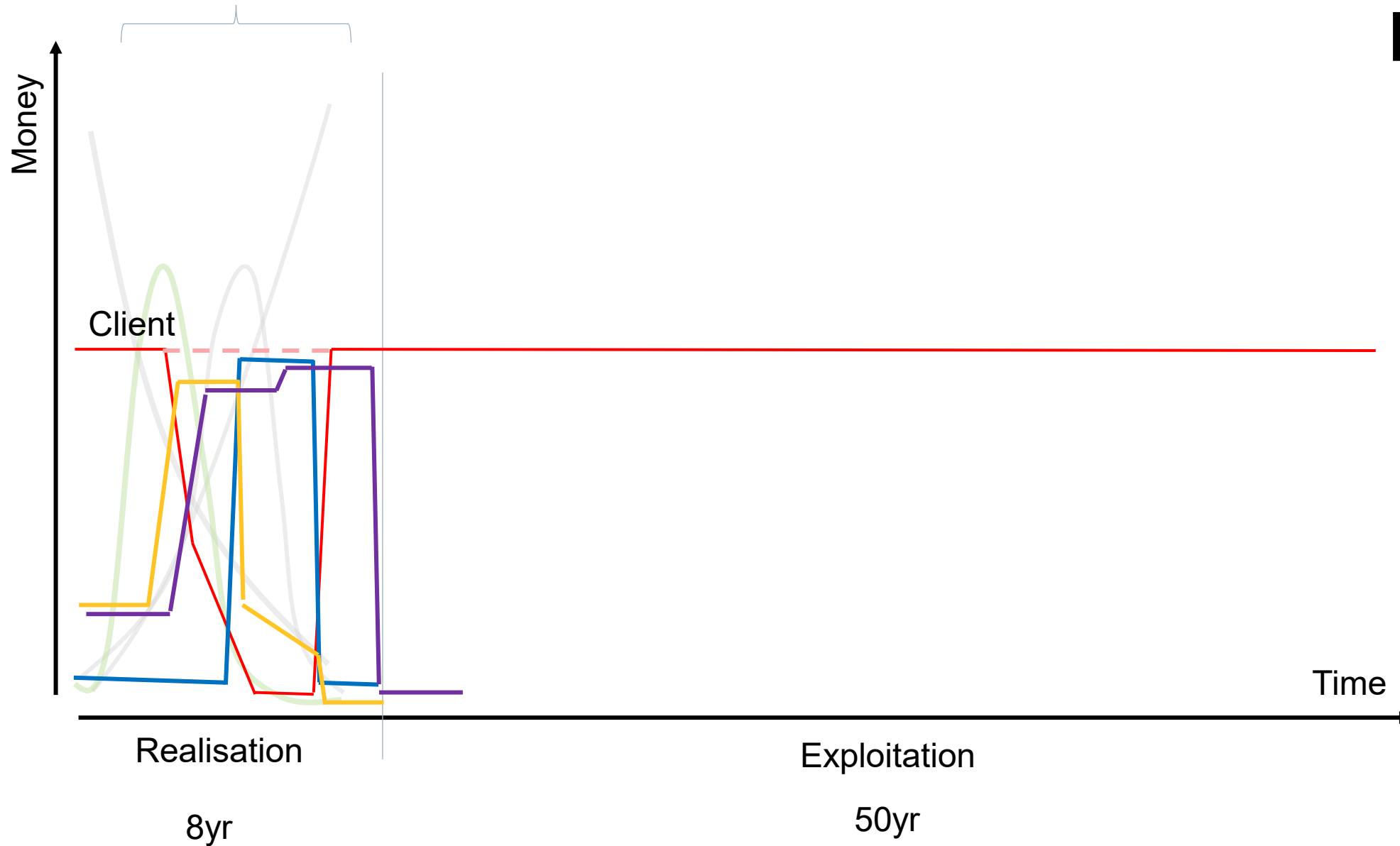
Realisation : Exploitation 1:10



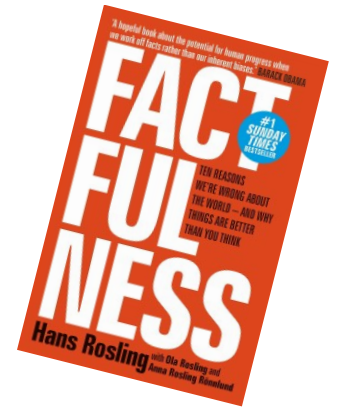
Reality?

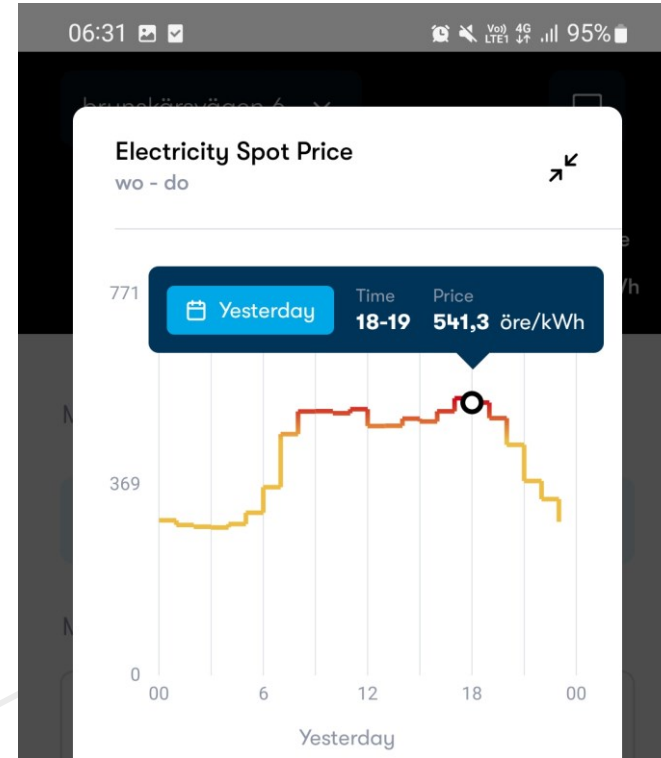
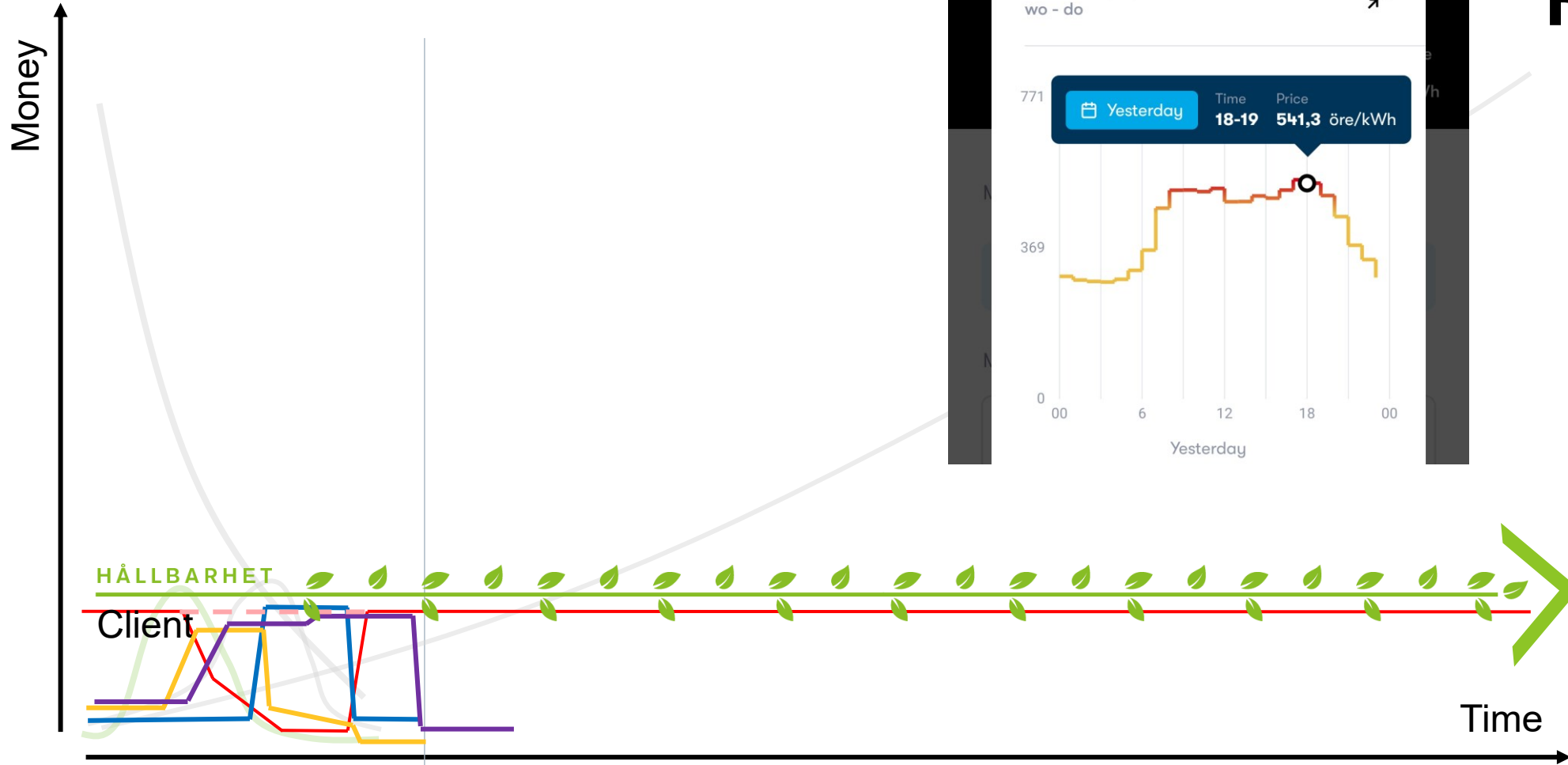


Realisation : Exploitation 1:10

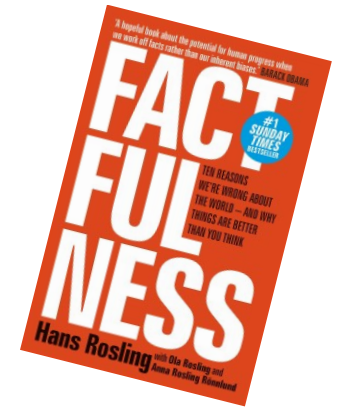


Reality?



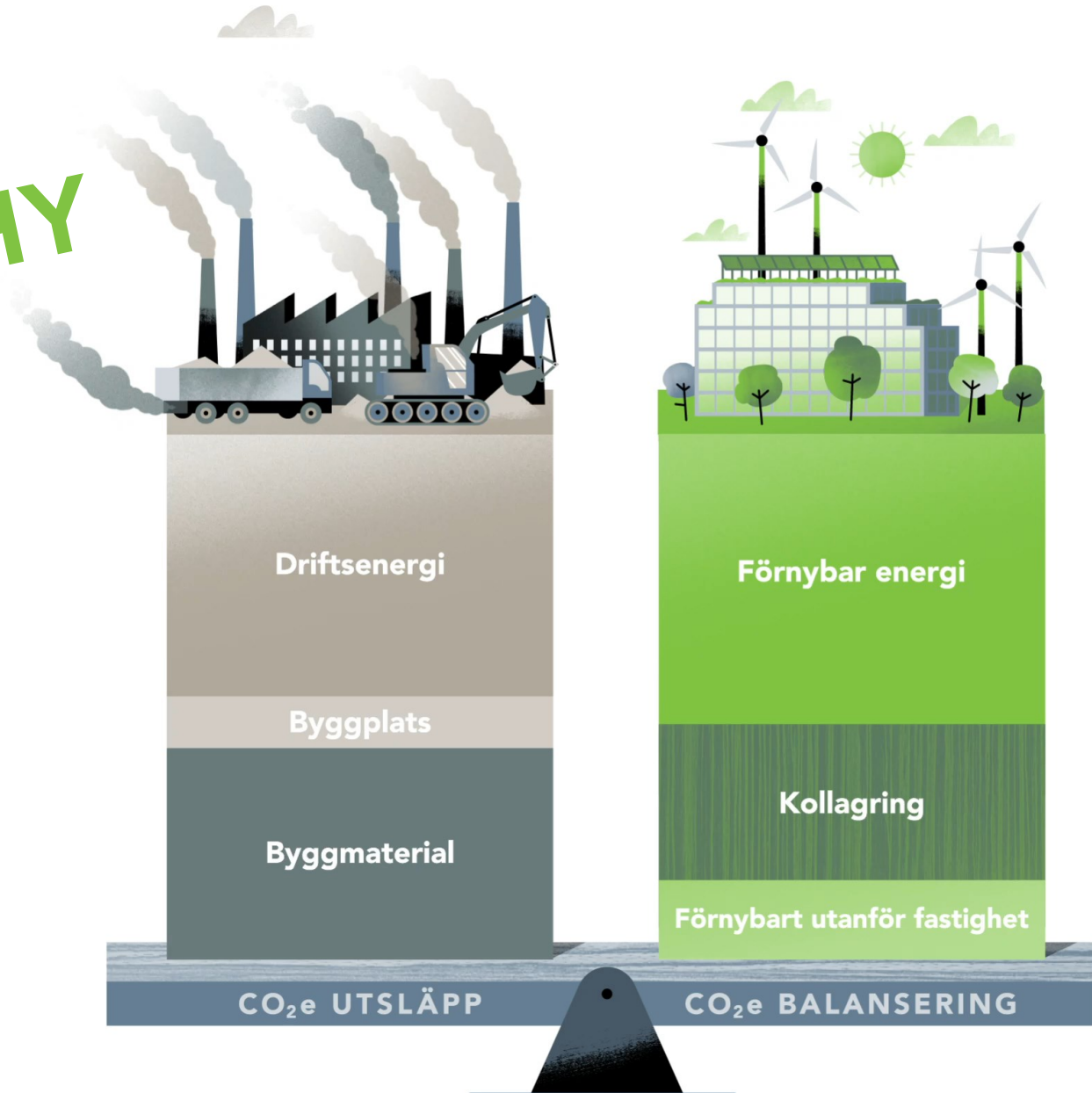



Reality?



THIS IS (a/the) WHY

In a **climate-neutral building**, emissions of greenhouse gases are minimized at all stages, both in the manufacturing process and during operation. Emissions are balanced with climate-positive measures.





DOCUMENTED CLIMATE IMPACT – FROM CO2 BUDGET TO CLIMATE DECLARATION

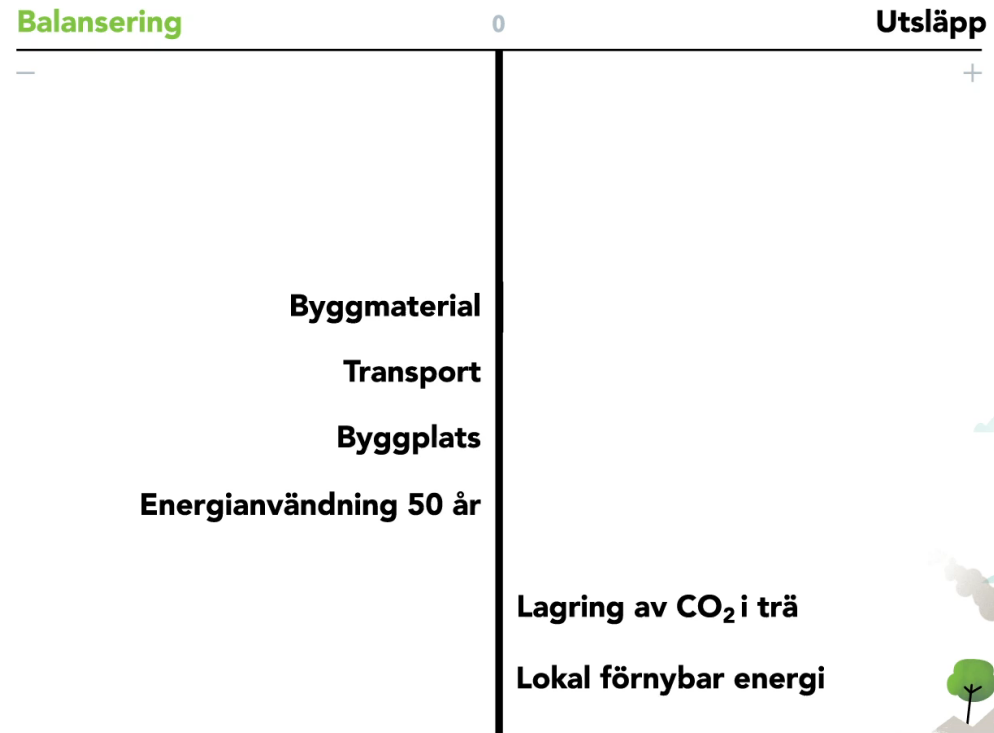
In January 2022, the Housing Authority introduced requirements for **climate declarations. This means that you must report the emissions that occur during the production of materials and during the construction phase.**

Climate-neutral construction means that the carbon dioxide emissions from the manufacture of materials and the energy use in the building are balanced with renewable energy and carbon storage.

By making a climate budget, you put a price on the emissions that affect the climate.

KV TRÄKONTORET

A_{temp} **12 000 m²** | Antal våningar **6** | Area solceller **1100 m²**



SAMMANSTÄLLNING

Totalt utsläpp
 0 kg CO₂ e/m², A_{temp}

Totalt balansering
 0 kg CO₂ e/m², A_{temp}

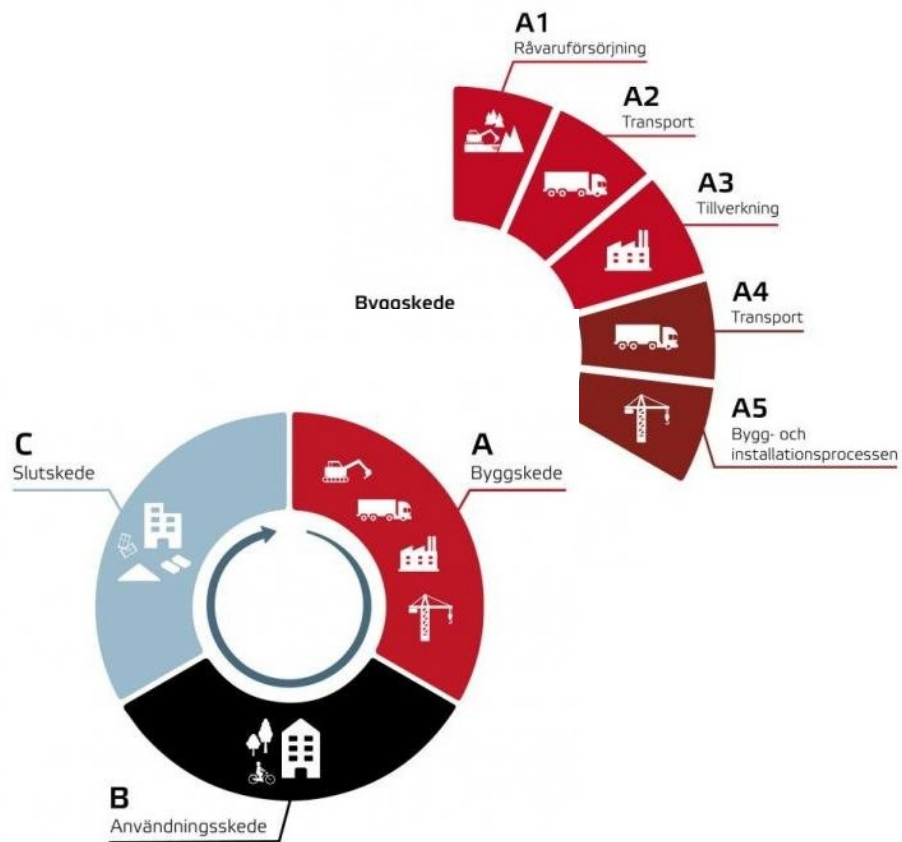
Summa klimatpåverkan
 0 kg CO₂ e/m², A_{temp}



LCA: Life cycle analysis or life-cycle assessment (LCA) is a method for achieving an overall picture of how big the total environmental impact is during a product's life cycle from raw material extraction, via manufacturing processes and operation to waste management, including all transport and all energy consumption. LCA according to EN15804 (construction products) and EN15978 (buildings)

Livscykelinformation byggnad															Återvinning – sammans- bedömning	
A 1-5 Byggskedet					B 1-7 Användningsskedet					C 1-4 Slutskedet					D Övrig miljöinfo	
A 1-3 Produktskedet			A 4-5 Byggprodukt- tionsskedet													
A1 – Råvaruförskning	A2 - Transport	A3 - Tillverkning	A4 - Transport	A5 – Bygg- och installationsprocessen	B1 - Användning	B2 - Underhåll	B3 - Reparation	B4 - Utbyte	B5 – Ombyggnad	B6 - Driftsenergi	B7 – Driftens vattenanvändning	C1 – Demotering, rivning	C2 - Transport	C3 - Restprodukthandtering	C4 - Bortskaffning	Återanvändnings-, Återvinnings- & Materialåtervinningspotential

LCA SYSTEM BOUNDARIES



A BUILDING STAGE					B USAGE STAGE							C FINISHING STAGE			
A1-3: PRODUCT STAGE			A4-5: BUILDING PRODUCT STAGE												
Raw material resources	Transportation	Manufacturing	Transportation	Building and installation process	Usage	Maintenance	Reparation	Exchange	Rebuilding	Operating energy use	Operating water use	Dismantling, demolition	Transportation	Handling residual product	Disposal
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4



- Construction site
- Renovation and transformation

Branschsamarbetet i Malmö visar vägen



Tillsammans med ca 200 anslutna, varav 46 byggherrar, har LFM30 gemensamt tagit fram en metod för att beräkna klimatneutralitet och skapat hjälpmedel för att minska klimatpåverkan från byggprocessen



LFM30 har tagit fram målgränsvärden för maximal klimatpåverkan för byggnader under byggskedet. [...]

Frostaliden

Skövde



1. FÖRSLAG

Brf Trädgårn
Brf Sänglärkan
Frostaliden 2/8
Postnummer/ort: Skövde
Kontaktperson: Ulf Runmarker
Mobil: +46 708-52 51 30
E-post: ulf@rfab.se

2. BYGGÅR
2018

3. TYP AV BYGGPROJEKT
Nybyggnad / massivträ

4. BYGGNADSKATEGORI
Flerbostadshus

white

CASE FROSTALIDEN 243 KG CO₂/M² LJUS BTA

243
kgCO₂/m²

Bärande



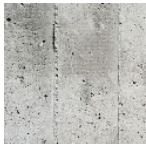
Tak:
METAL DECK



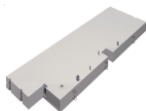
Terrass:
TIMBER DECK



Väggar, golv och balkonger:
CLT



Kärna:
Reinforced concrete



Källarvägg:
PRECAST CONCRETE



Bjälklag mot mark och grundläggning:
REINFORCED CONCRETE

Icke bärande



Takisolering:
GLASS FIBRE



Isolering terrass:
MINERAL WOOL



Fasadisolering:
MINERAL WOOL



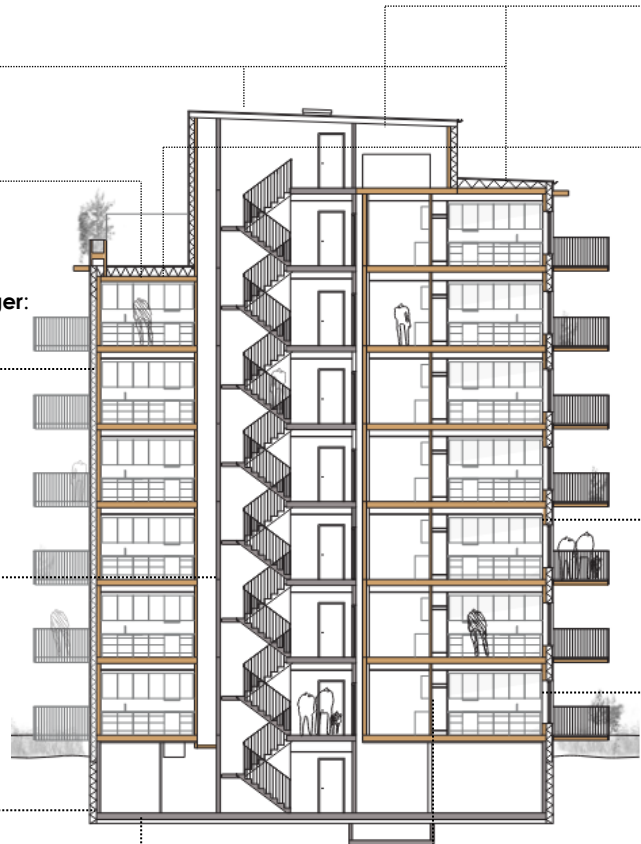
Våning 2-7 beklädnig:
TIMBER



Fönster:
TRIPLE GLAZING
COMPOSITE FRAME
(wood+aluminium)



Innerväggar:
Two layers of PLASTERBOARD,
with STEEL studs and mineral
wool insulation



CASE FROSTALIDEN LFM30 MÅLGRÄNSVÄRDE 216 KG CO2/M2 LJUS BTA

216
kgCO2/m2

Bärande



Tak:
TIMBER DECK



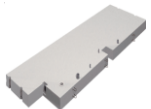
Terrass:
TIMBER DECK



Väggar, golv och balkonger:
CLT



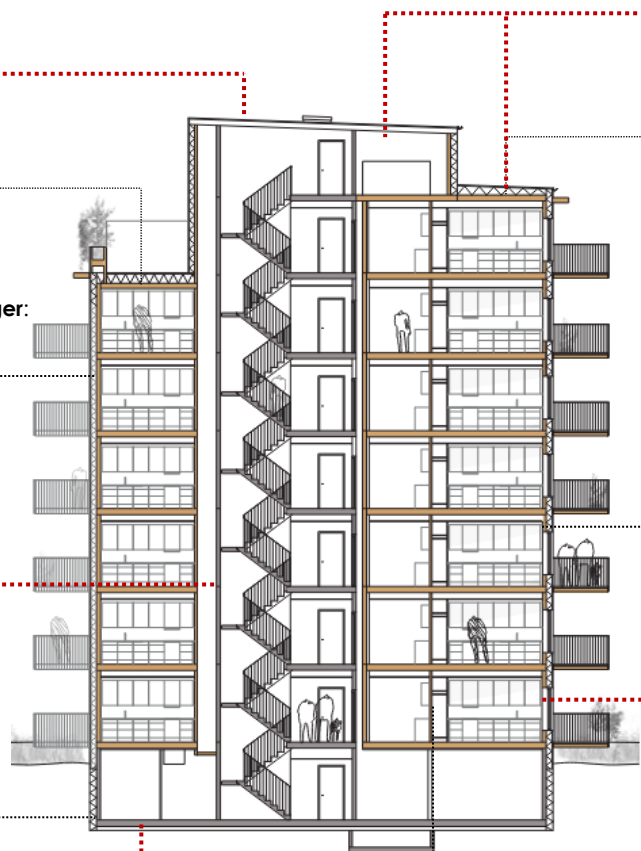
Kärna:
CLT



Källarvägg:
PRECAST CONCRETE



Bjälklag mot mark och grundläggning:
LOW ARBON REINFORCED CONCRETE



Icke bärande



Takisolering:
MINERAL WOOL



Isolering terrass:
MINERAL WOOL



Fasadisolering:
MINERAL WOOL



Våning 2-7 beklädnig:
TIMBER



Fönster:
TRIPLE GLAZING
TIMBER FRAME



Innerväggar:
Two layers of PLASTERBOARD,
with STEEL studs and mineral
wool insulation

CASE FROSTALIDEN KLIMATOPTIMERAT 195 KG CO2/M2 LJUS BTA

195
kgCO2/m2

Bärande



Tak:
TIMBER DECK



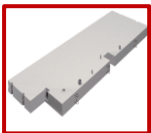
Terrass:
TIMBER DECK



Väggar, golv och balkonger:
LOCALLY SOURCED CLT



Kärna:
LOCALLY SOURCED CLT



Kjällarvägg:
LOCALLY SOURCED
PRECAST CONCRETE



Bjälklag mot mark och grundläggning:
LOW CARBON
REINFORCED CONCRETE

Icke bärande



Takisolering:
MINERAL WOOL



Isolering terrass:
MINERAL WOOL



Fasadisolering:
CELLULOSE FIBRE



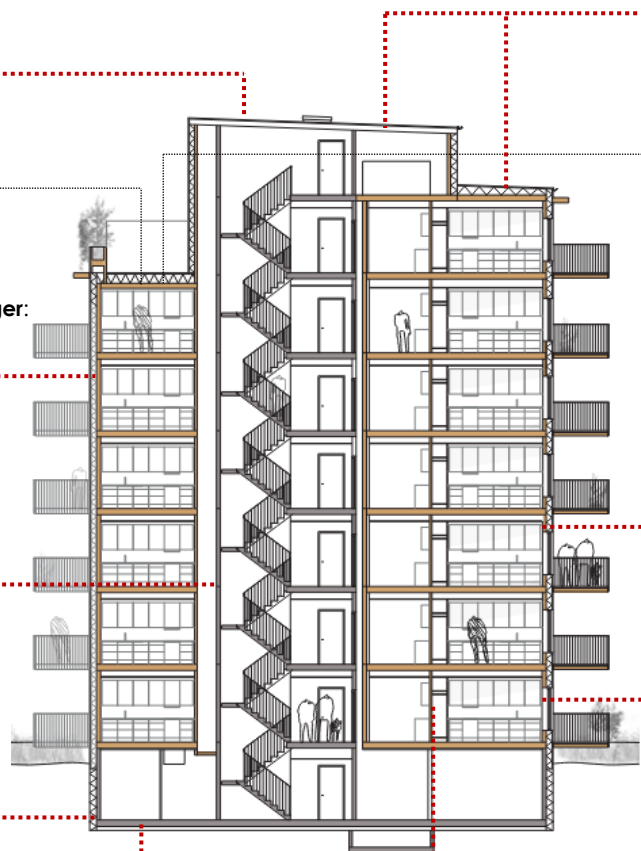
Våning 2-7 beklädnig:
TIMBER



Fönster:
TRIPLE GLAZING
TIMBER FRAME

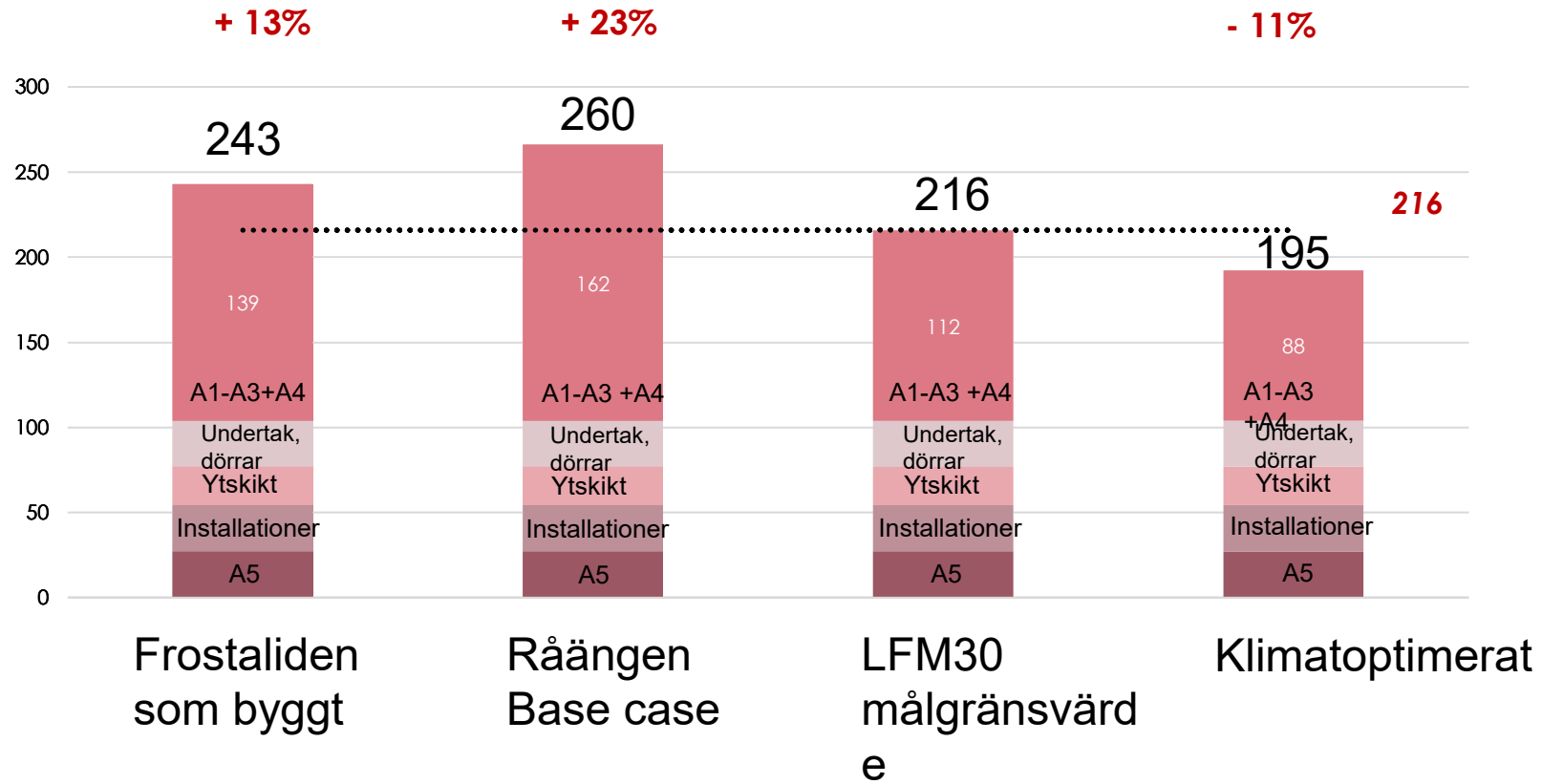


Innerväggar:
One layer of
PLASTERBOARD, one layer
of **PLYWOOD** with **TIMBER**
studs and mineral wool
insulation



CASE FROSTALIDEN

kgCO₂e/m² BTA



KLÖVERVALLENS FÖRSKOLA

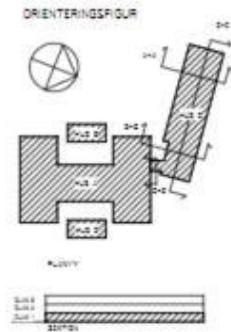


VY FRÅN NORR



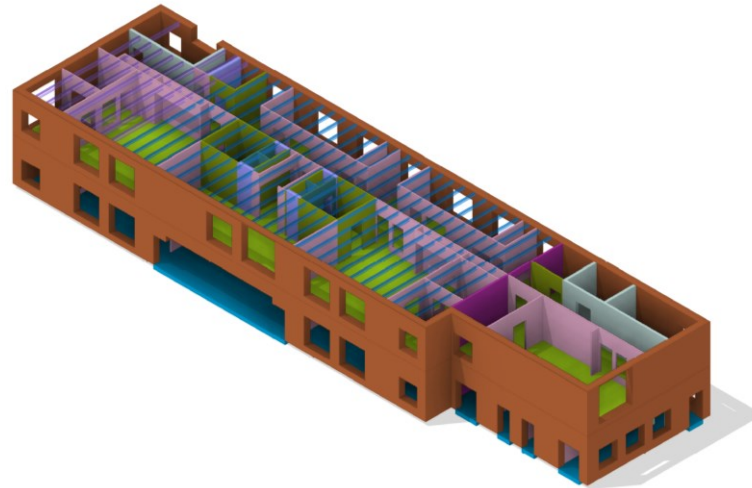
«Basecase»
Boverkets typiska
värden
Klimatpåverkan A1-A5

157
kgCO₂e/m² BTA



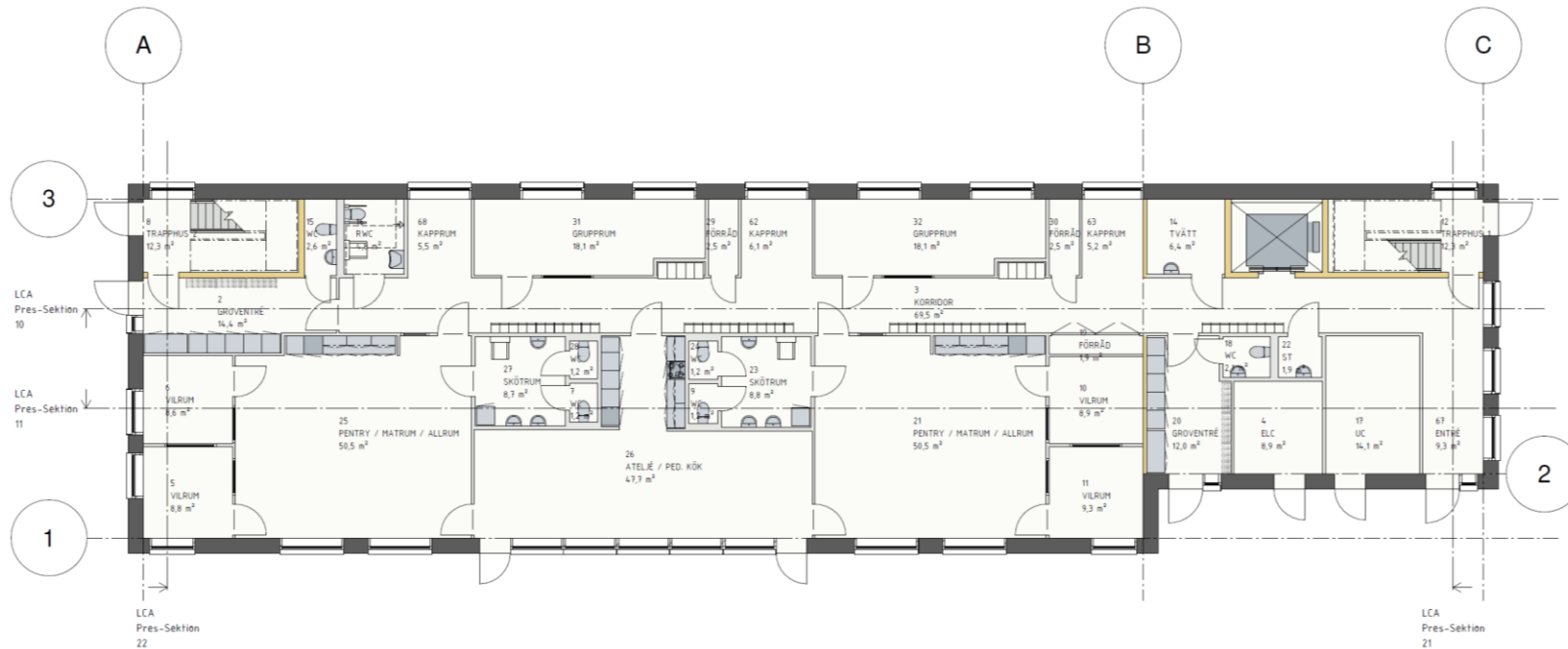
BYGGLOVSHANDLING	
Klövervallens Förskola	
TILLYGGNAVD AV FÖRSKOLA	
white	
Projekterad av: [Blank]	Byggherrens namn: [Blank]
Byggherrens namn: [Blank]	Byggherrens adress: [Blank]
Byggherrens adress: [Blank]	Byggherrens telefon: [Blank]
Byggherrens telefon: [Blank]	Byggherrens e-post: [Blank]
Byggherrens e-post: [Blank]	Byggherrens signatur: [Blank]
Byggherrens signatur: [Blank]	Byggherrens datum: [Blank]
GRUNDPROJEKT I ILLUSTRATIONSLIDER 99-0 ÖVRST	
Skala: 1:100	Blad: 99-0
A-99-1	

KLÖVERVALLENS FÖRSKOLA



Type

- IV20-Gipsvägg-95 mm
- BJK-10-KL med överbygg. trä regler-289 mm
- BJK-14-KL med flytspackel utan balkar-220 mm
- BJK-30-Platsbetong-300 mm
- YV20-KL med skiffer-500 mm
- IV10-KL båda sidor synliga-120 mm
- IV12-KL båda sidor synliga-200 mm
- IV30-Badrumsvägg 1 sida kakel-127 mm
- IV31-Badrumsvägg 2 sidor kakel-134 mm
- IV34-Badumsvägg-WC-stol fixtur i WC-262 mm
- YT30 - KL + Skiffer-500 mm
- BB-08-Balk under bjälklag-400/90
- BB-05-Balk under bjälklag-300/90
- BYT-01-Yttertak-240/39



Type Mark	Typ namn	Tjocklek (mm)
IV20	IV20-KL med skiffer-95 mm	95
IV10	IV10-KL båda sidor synliga-120 mm	120
IV12	IV12-KL båda sidor synliga-200 mm	200

Type Mark	Typ namn	Tjocklek (mm)
YV20	YV20-Gipsvägg 95 mm	95
IV30	IV30-Badrumsvägg 1 sida kakel-127 mm	127
IV31	IV31-Badrumsvägg 2 sidor kakel-134 mm	134
IV34	IV34-Badrumsvägg WC-stol fixtur i WC-262 mm	262

~~Role~~ of the client? Responsibility

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white



Tack!

JASPER DE MINK

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