



Asker  
kommune

# Sustainability concept Holmen pool

2022 IAKS Swimming Pool Conference

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Photo: Tove Lauluten



# 2017 Dreams do come true!



Photo: Tove Lauluten







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# Quick facts – Holmen pool

- Primarily a training arena for school children, swimming clubs, seniors, families
- 8-lane main pool (25 m) and therapy pool
- Fitness room, social room, changing rooms, cantina and spectator stands
- Gross building area  $\approx 5.300 \text{ m}^2$  (heated area  $4121 \text{ m}^2$ )

OP-VERKIS

ARKÍS  
arkitektar



TRIO  
ENTREPRENØR



Photo: G.A. Rybakken Ørslien



# The project is a part of the FutureBuilt program

*Our vision is to show that climate neutral urban areas, based on high quality architecture, are possible*

*There is nothing as contagious as a good example - FutureBuilt uses pilot projects to change the way we develop our buildings and cities.*

Photo: G.A. Rybakken Ørslien

**50 % REDUCTION OF CO<sub>2</sub> EMISSIONS  
FROM ENERGY, MATERIALS AND  
TRANSPORTATION**

**FUTURE  
BUILT**



# URBAN ENVIRONMENT AND ARCHITECTURE



SAFEGUARD GREEN SPACES  
A GOOD MEETING PLACE FOR OUTDOOR RECREATION

# ENERGY



REDUCE ENERGY NEED  
PASSIVE HOUSE BUILDING STANDARD  
COMBINING MANY TECHNICAL SOLUTIONS

# TRANSPORTATION



ENCOURAGE "GREEN TRANSPORTATION"  
REDUCE CAR TRAFFIC IN THE AREA

# CONSTRUCTION AND MATERIALS



ROBUST, LONGLASTING MATERIALS  
LOW-CARBON CONCRETE  
LOW CONTENT OF HAZARDOUS SUBSTANCES



# Transportation

Located near bus routes with frequent departures and good bicycle paths



Bicycle parking nearest the main entrance  
100 spots (30 covered)



Only 26 parking spaces for cars (a part of the building regulation)  
Cooperation with nearby shopping mall for shared parking



# Construction and materials

Embodied footprint was not focus at project start

- Lots of exposed concrete, low carbon, type B.  
Fairly new in 2015, standard today
- Lots of steel

Strict requirements for material documentation

- EPDs for documentation of CO<sub>2</sub> emissions
- Environmental labels to avoid hazardous substances

*Would we have thought differently about the construction and materials today knowing more about embodied footprint in materials?*





## Passive house building

### Local, renewable energy (thermal & solar)

- ✓ 15 geothermal wells and 1 water-water heat pump used for heating and free cooling in the summer
- ✓ 650 m<sup>2</sup> photovoltaic panels on roof and façade for electricity
- ✓ Solar collectors under asphalt – charging of wells & snow melting

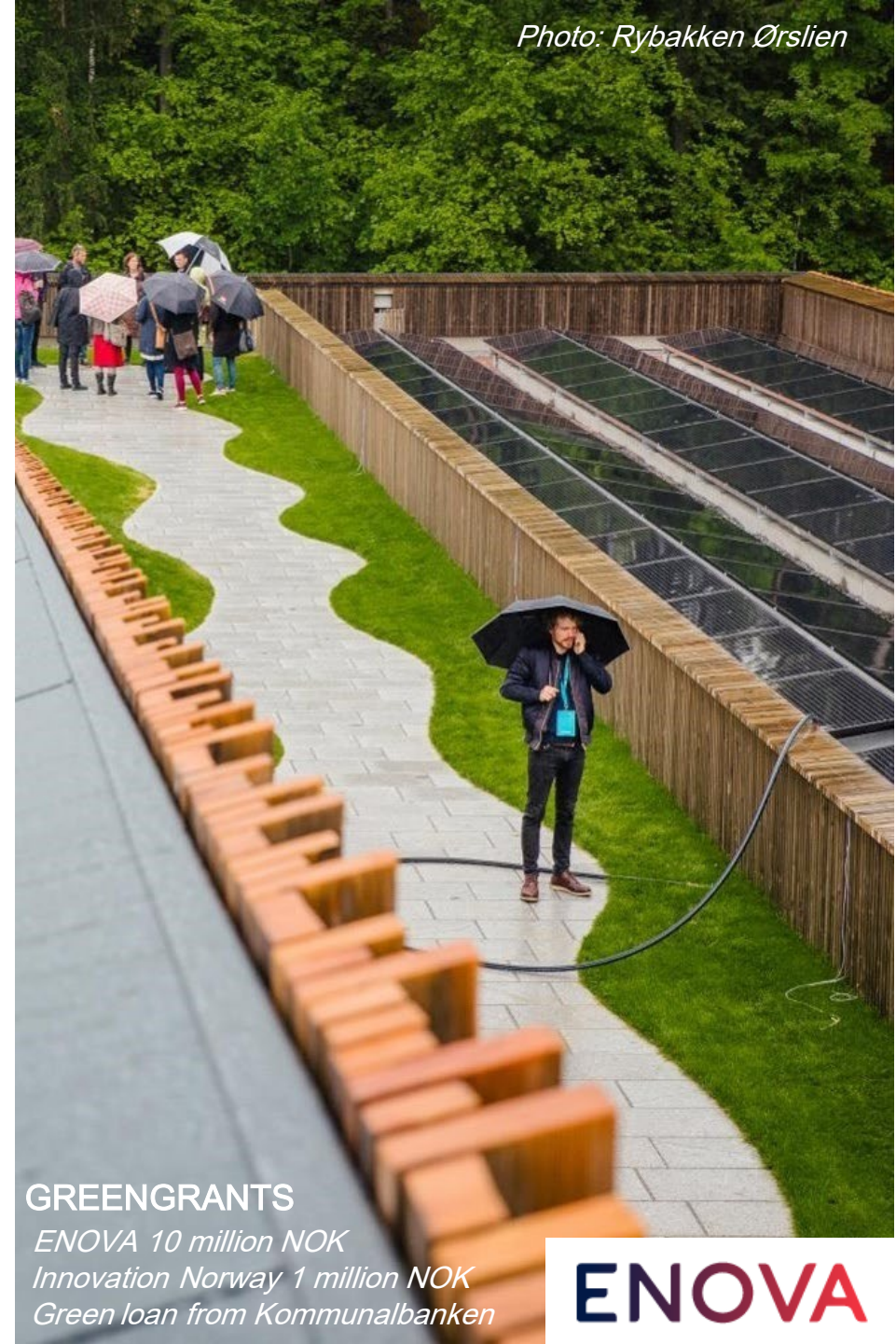
### Energy recycling

- ✓ 3 heat pumps recycle energy from the ventilation system to the air, pool and tap water
- ✓ 1 heat pump ensures recycling of heat from water used in the showers

Adjustable floors in the therapy pool and in parts of the main pool can be raised to reduce evaporation and need for heating

*Energy calculations estimated 45 % lower energy need (heat & electricity) than building regulations (TEK 10)*

Photo: Rybakken Ørslien



REENGRANTS

ENOVA 10 million NOK

Innovation Norway 1 million NOK

Green loan from Kommunalbanken

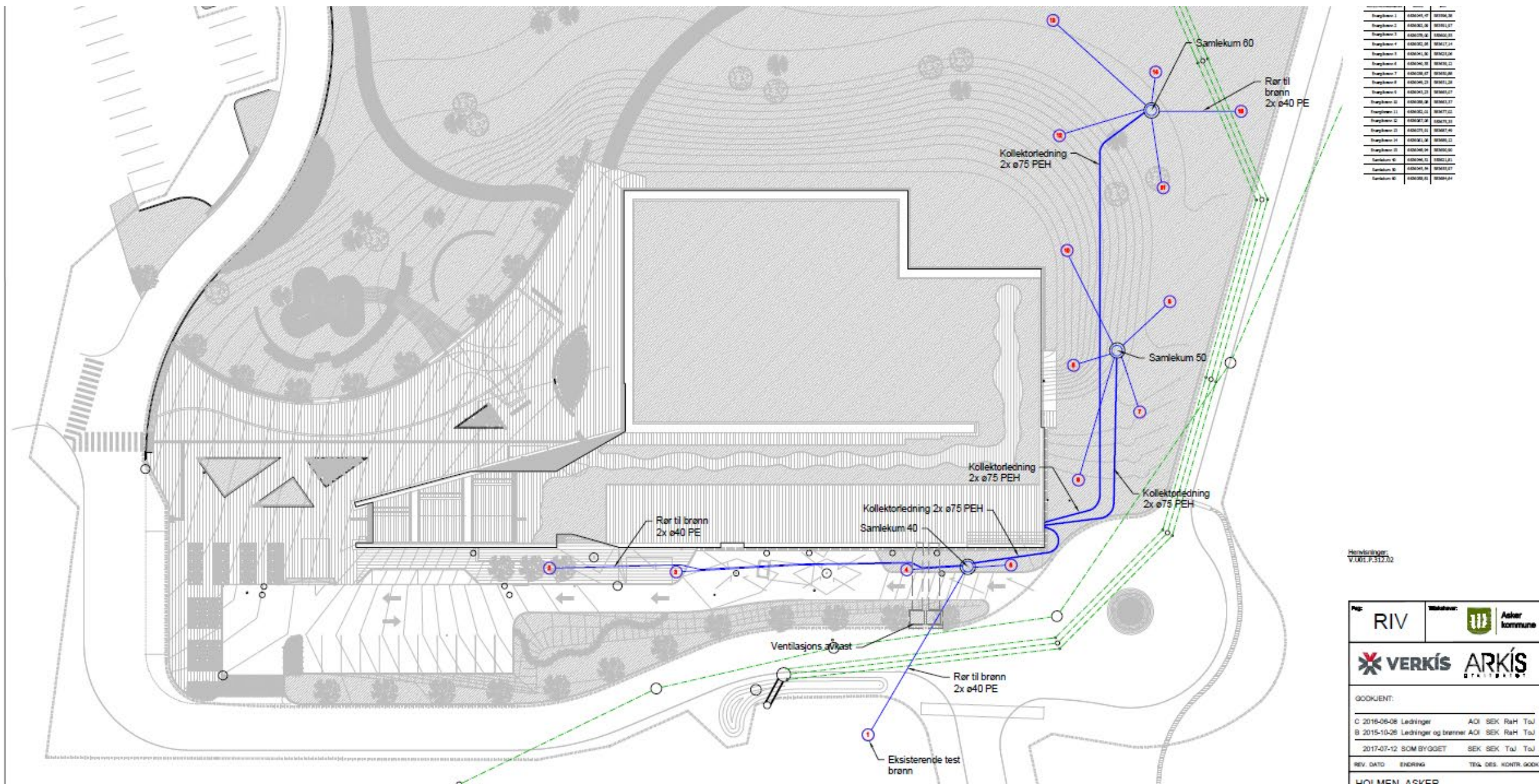
**ENOVA**



# Solar collectors / snow melting









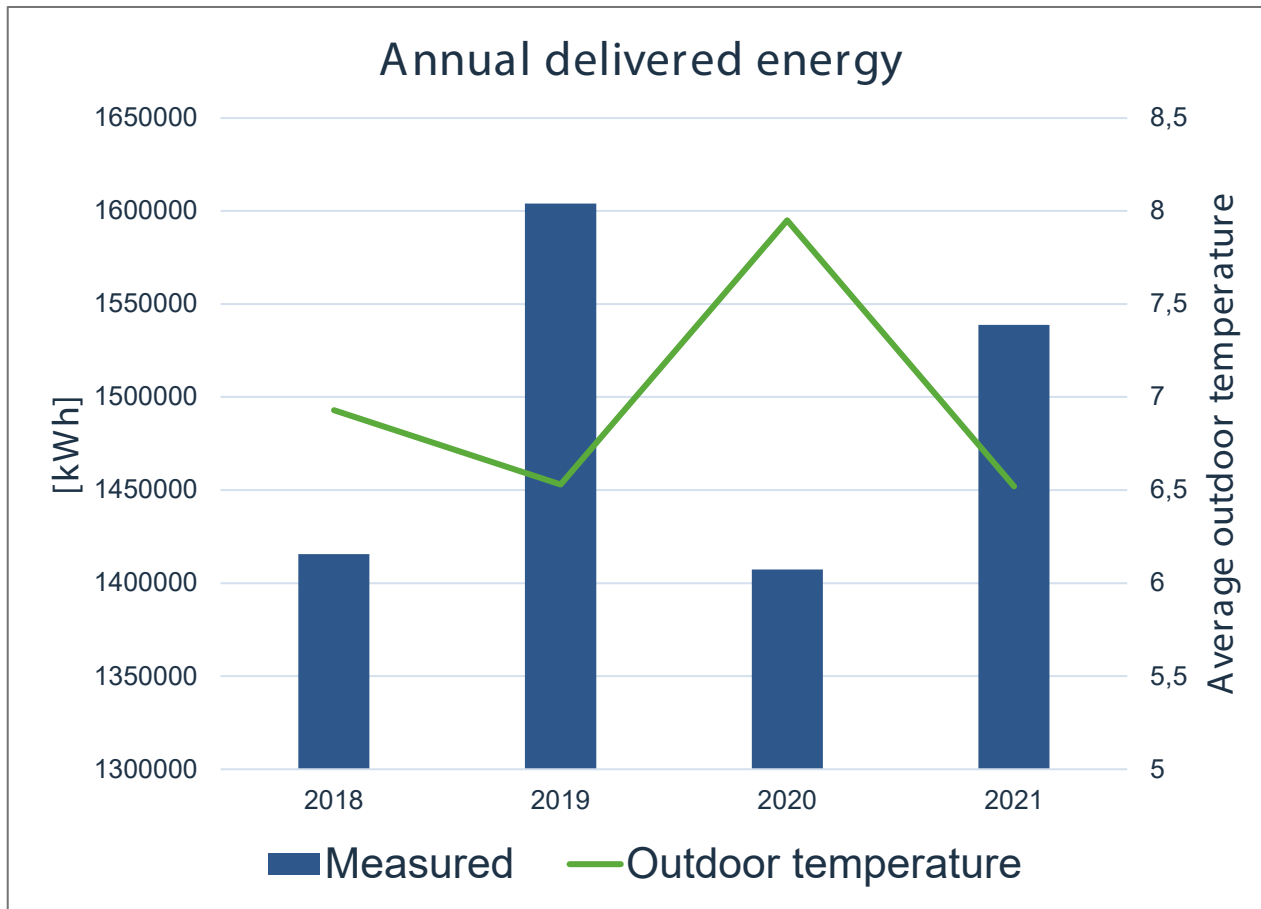
# Photovoltaic panels south facade



*Photo: Tove Lauluten*



# Energy performance so far



2018: Normal operation, few problems

2019: Problems with main heat pump, electric boiler compensated for long periods. Challenges with water treatment

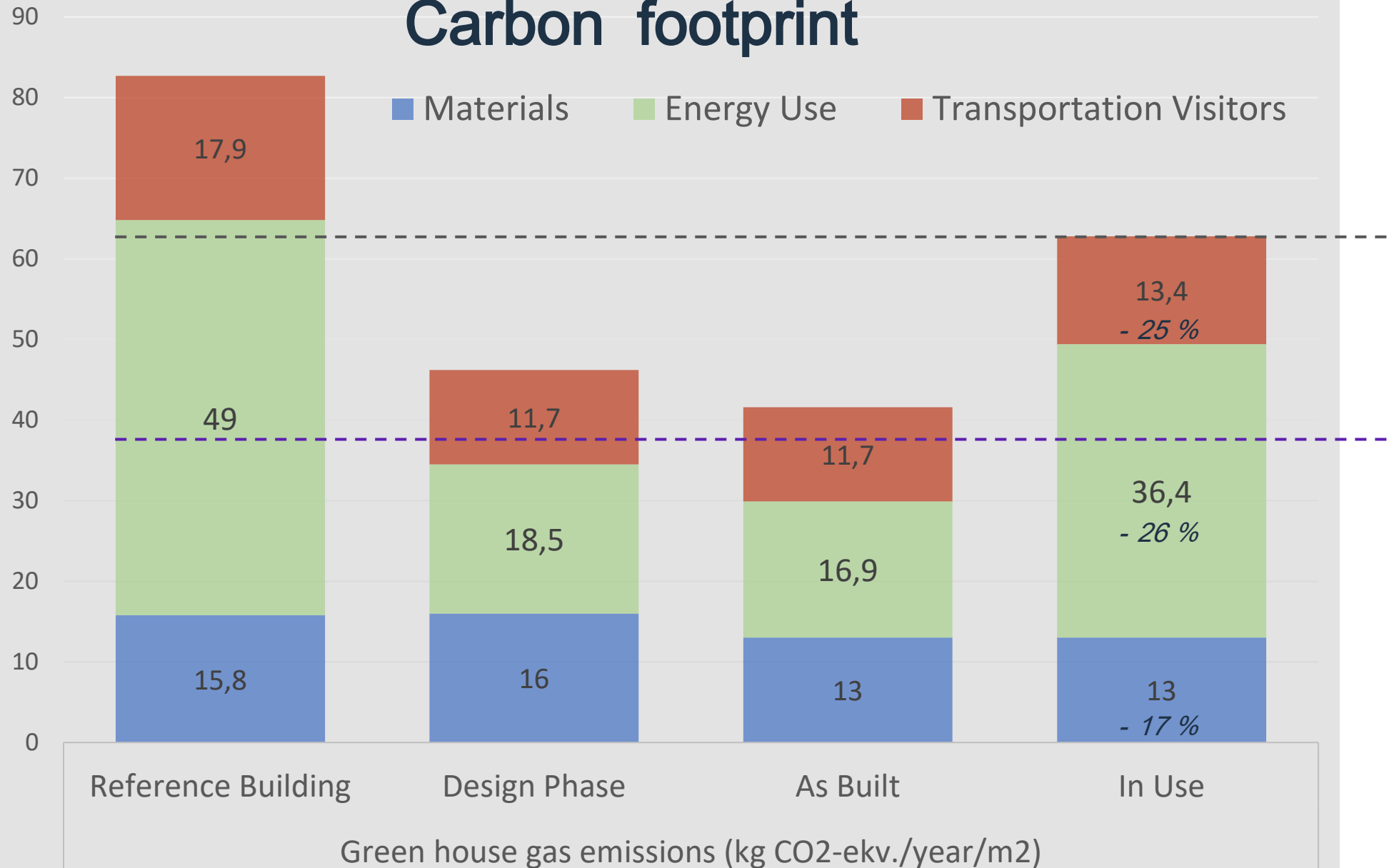
2020: Abnormal operation with long periods of shutdown due to covid

2021: Problems with leakage in 1 geothermal well. Also reduced the capacity of nearby wells in same circuit



# Carbon footprint

Materials Energy Use Transportation Visitors



CURRENT  
ACHIEVEMENT:  
26 % REDUCTION  
(average 2018-2020)

GOAL:  
50 % REDUCTION



# Upsides

**A good place to meet - very popular**

Competition arena, swimming lessons, recreation

**No major traffic jams in spite of few parking spots!**

Large meets require good planning

**Great architecture - very inviting to visitors in - and outdoors**

**Good design of the technical system**

Potential for much lower energy use when failures/problems are fixed and management improves (2018 shows this)

**Indoor air quality is very good in the pool area**

**The ventilation system works well**

**Adjustable pool floor is great for swimming lessons**





# Potential for improvement

## Longer overlap between energy advisors and operational staff from Asker

- support to understand, optimise and evaluate energy performance
- are energy calculations generally too optimistic?!

## Better energy monitoring and daily operations

- proper function of energy meters
- energy monitoring system: planned goals versus actual energy use
- more energy expertise and resources in Asker communes daily operation

## Better performance of ceramic filters

- have not worked well - are being changed to sand filters
- have not led to less use of water and chemicals as planned

## Leakage in energy well

## We need stable, good performance of main heat pump

## There have been some challenging processes with guarantees and repairs





# More information is found here

[Brosjyre\\_Holmen\\_sv\\_\\_mmehall \(3\).pdf](#)

