

Unlimited growth in Energy Demand.

The High Performance Building in the alpine region on its way to a general standard

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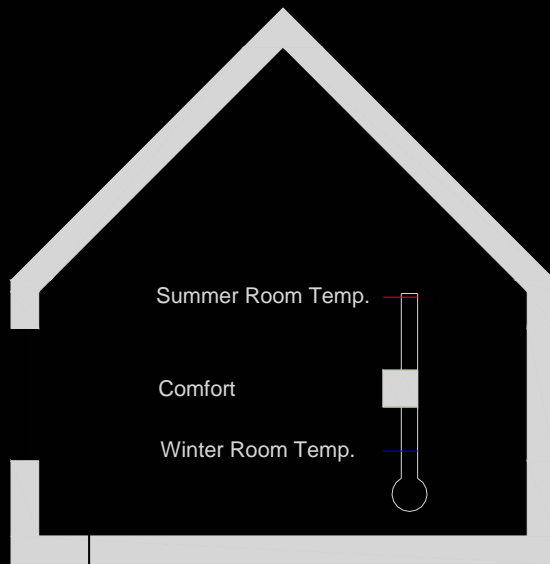
# Introduction to High Performance Buildings

## High Performance Buildings and Growth

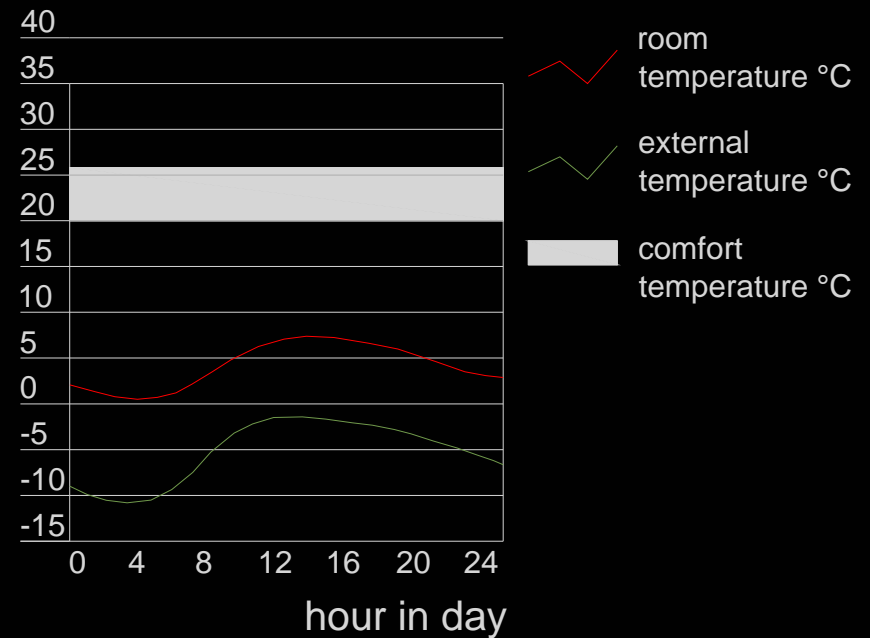


# High Performance Building / Initial not improved Building

Climate (outside Condition)

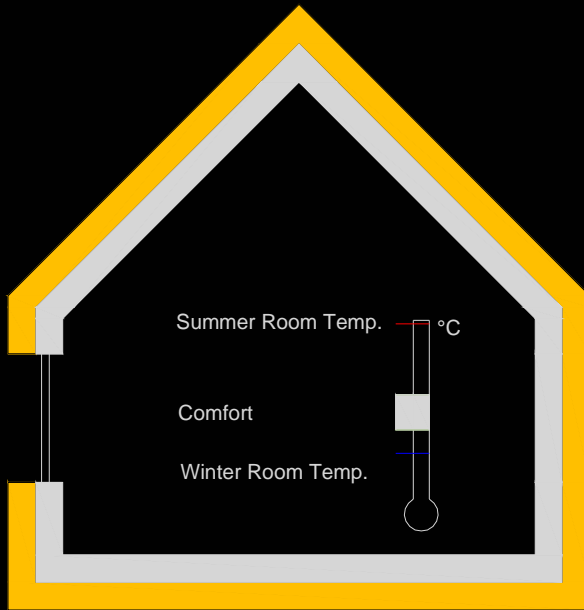


temperature °C

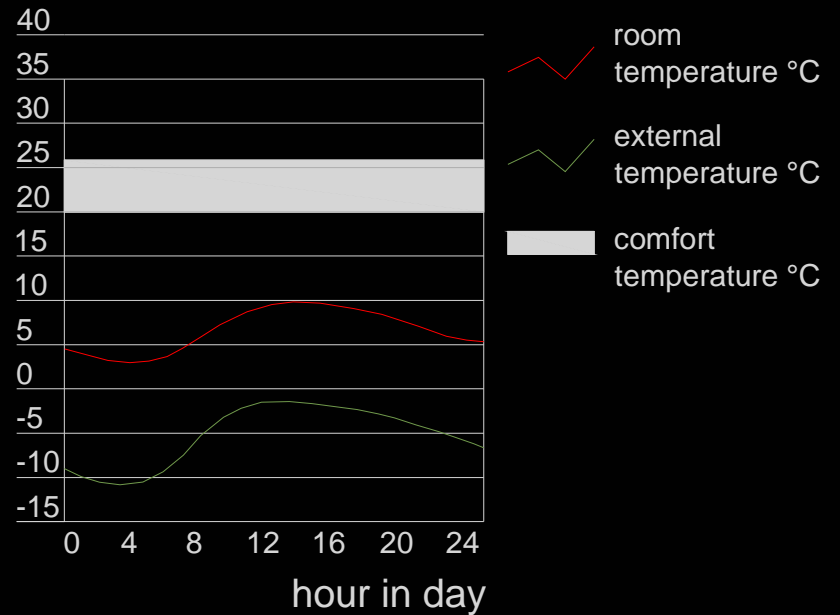


# High Performance Building / Improvement of Insulation

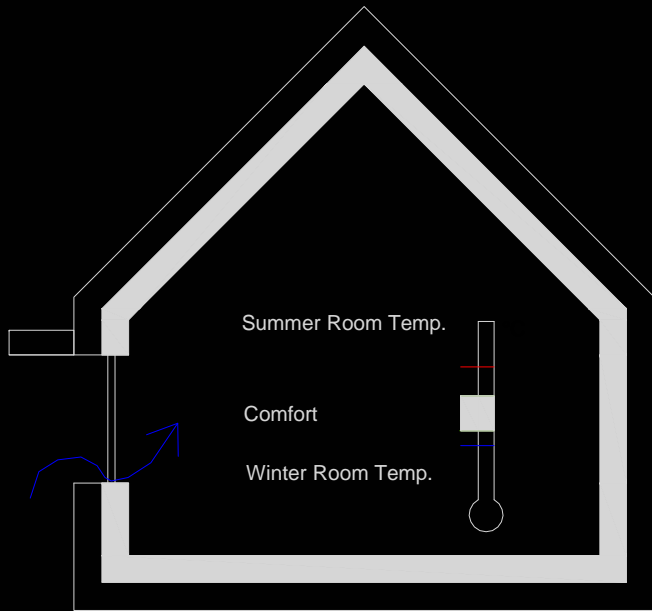
Improvement of building envelope  
Insulation



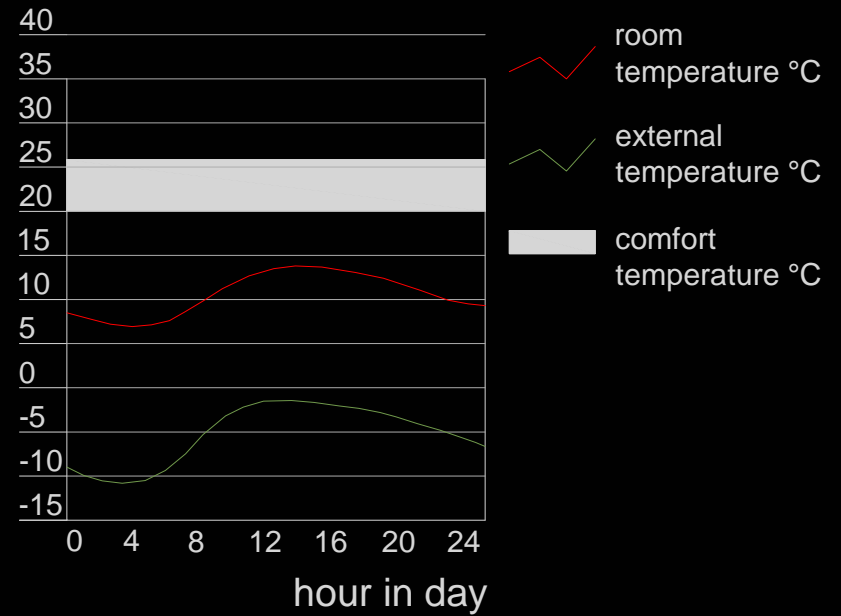
temperature °C



# High Performance Building / Facade air tightness

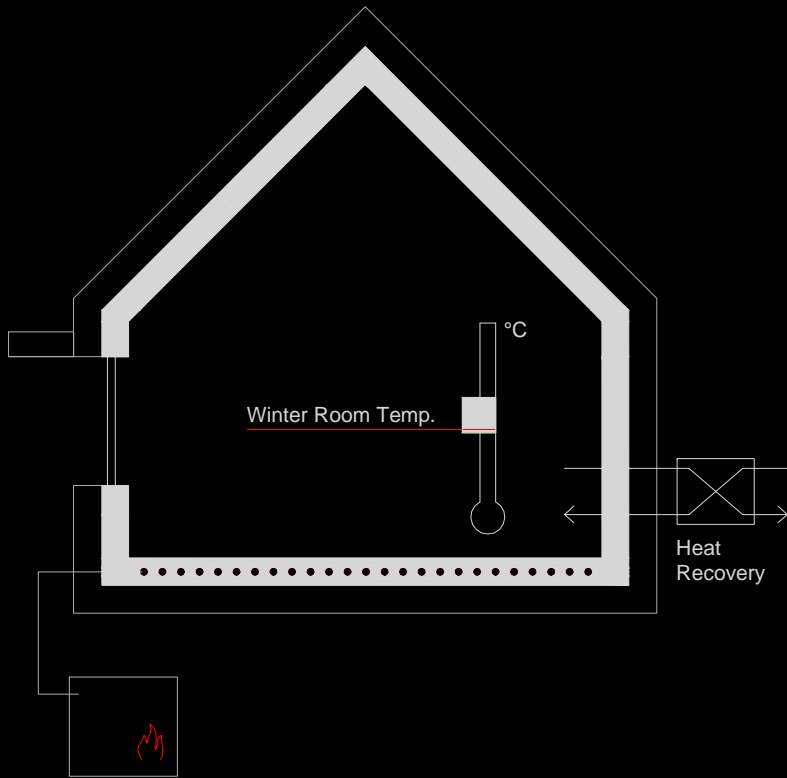


temperature °C

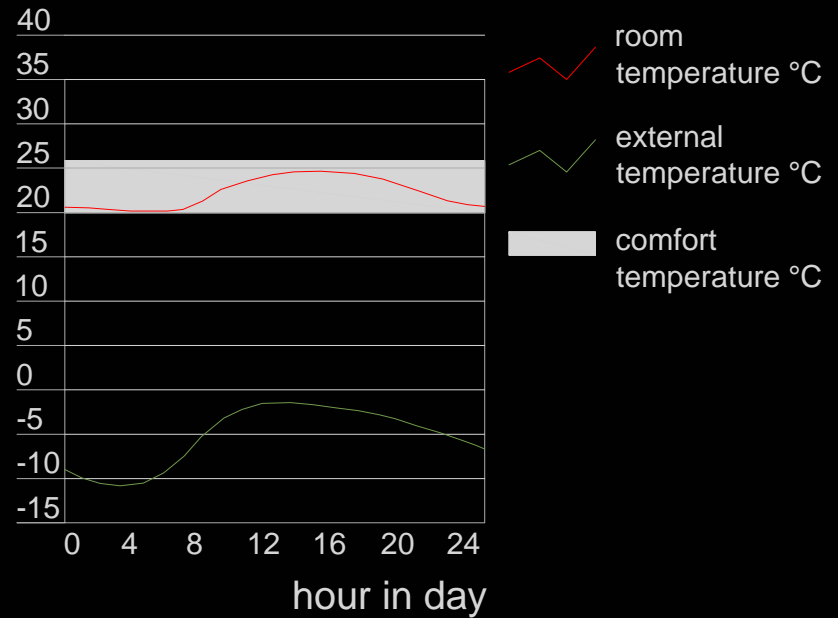


# High Performance Building / Technical systems

## Winter Energy Conversion (Heat source)



temperature °C



# Features of the High Performance Building

Use of Solar Gains

High amount of Insulation

Very air tight envelope

Mecanical Ventilation with Heat recovery

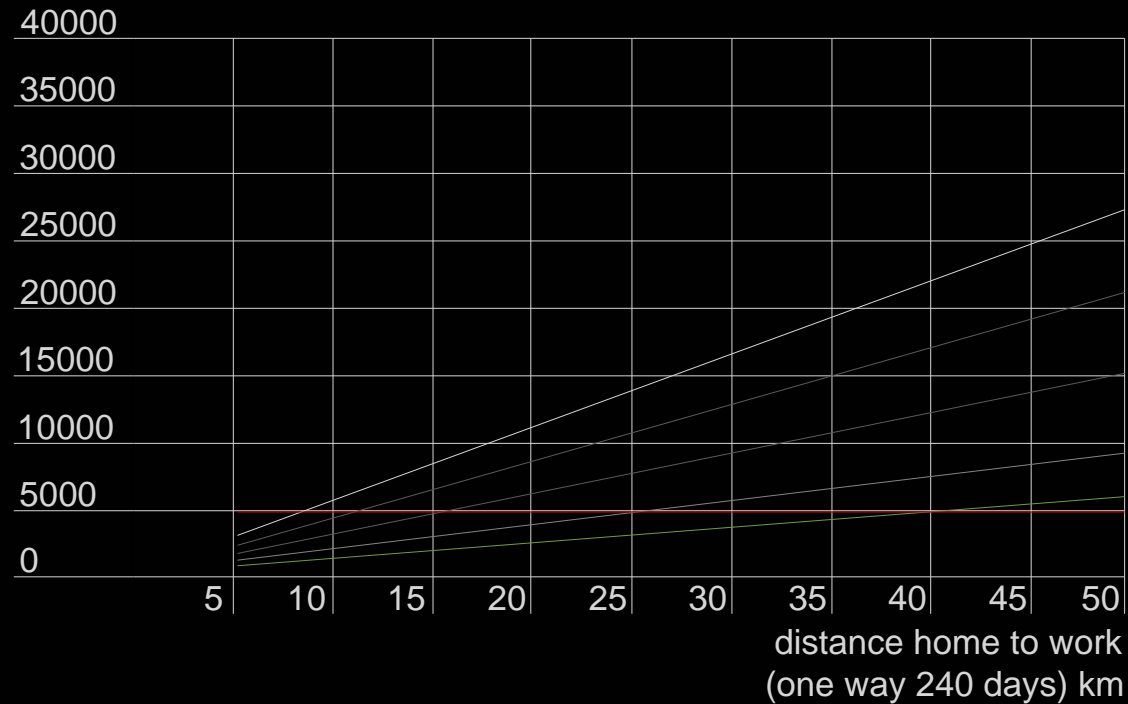
Heating Energy Demand < 15 kWh/m<sup>2</sup>a

Primary Energy demand < 120 kWh/m<sup>2</sup>a

# High Performance Building in relation to commuting transport energy demand

Primary Energy Demand

[kWh/year]



- car 9 l/100 km
- car 7 l/100 km
- car 5 l/100 km
- car 3 l/100 km
- bus
- high performance building (120 kWh/m a)

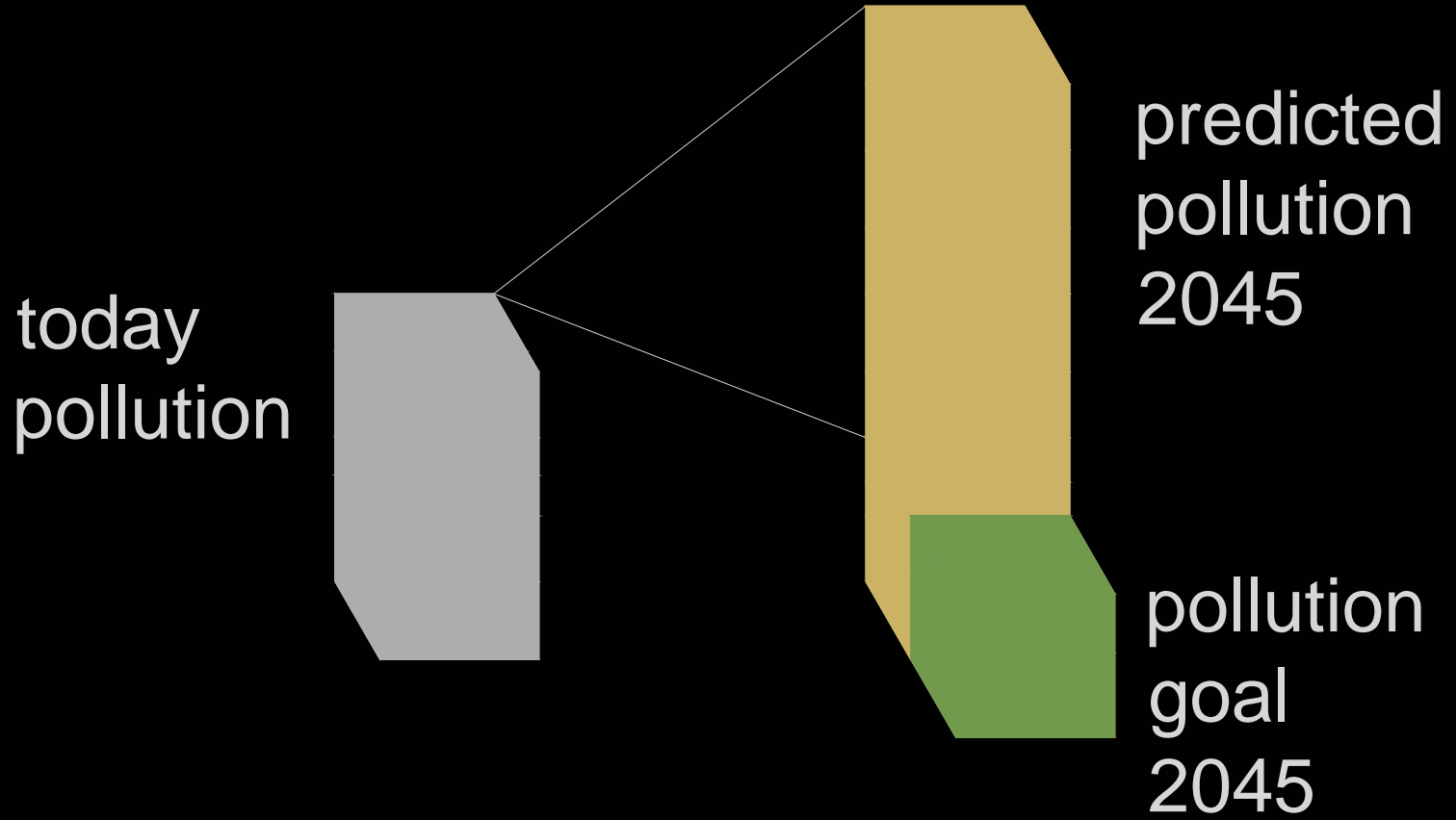


# Energy Demand and economical growth



source: BUWAL

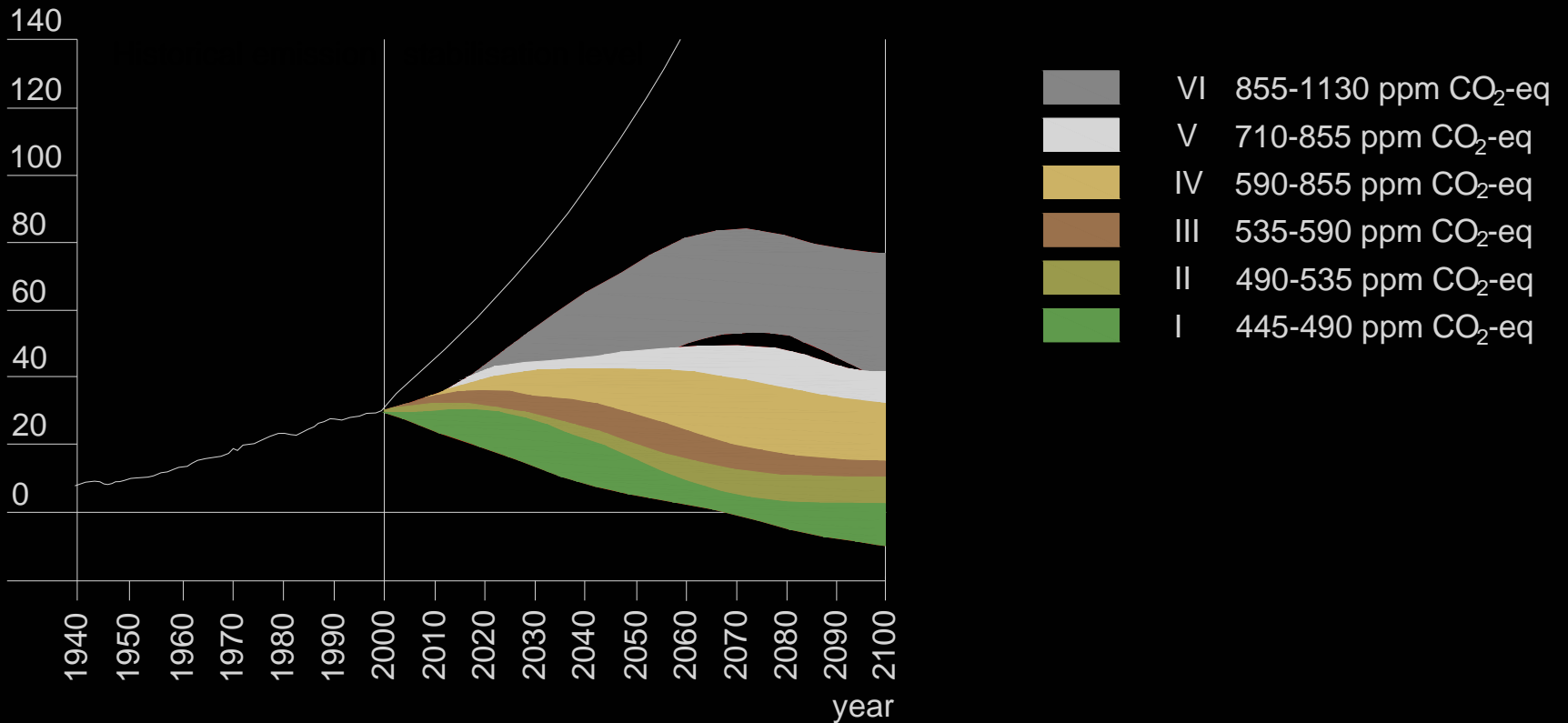
# The factor 4 goal



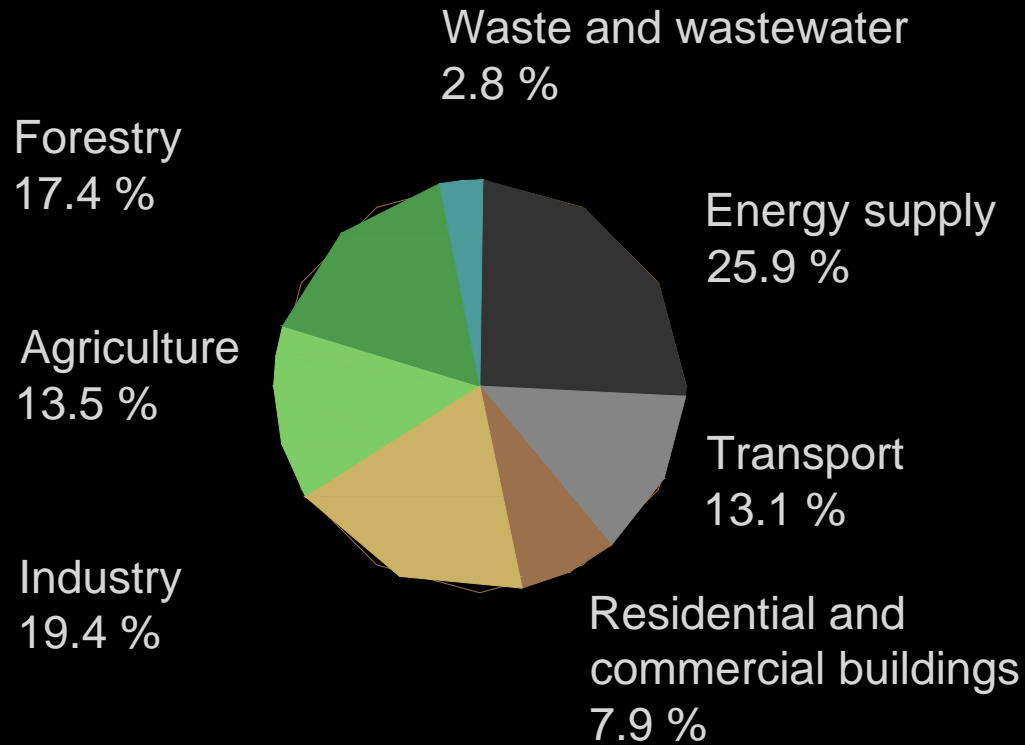
# Predicted CO<sub>2</sub> emission and energy saving potentials by constant economical growth

CO<sub>2</sub> emissions and equilibrium temperature increases for a range of stabilisation levels

World CO<sub>2</sub> emission (Gt CO eq/year)

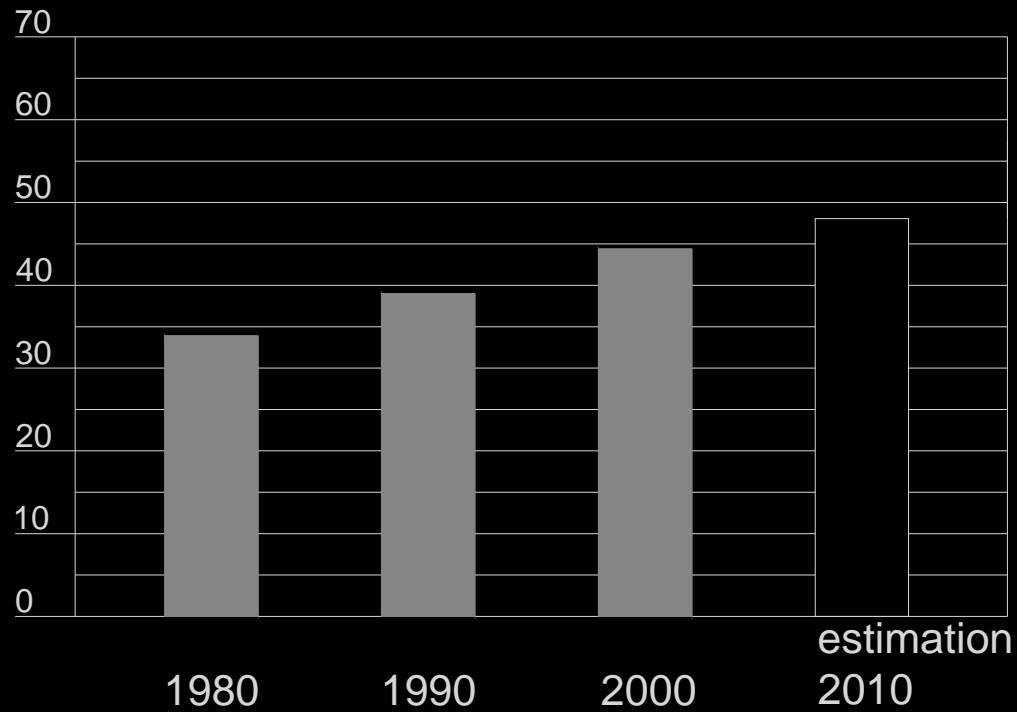


# Pollution sources in percent



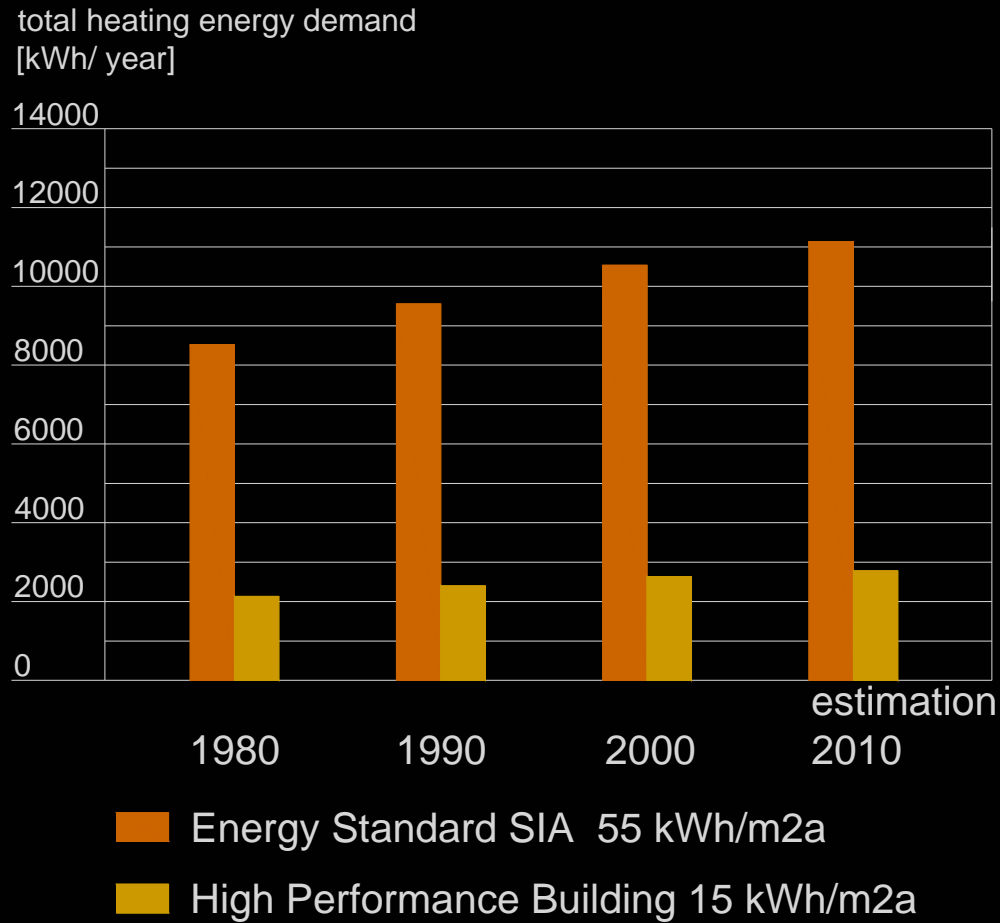
# Rising residence area per capita

Average residence area per capita in Switzerland  
[m<sup>2</sup>]

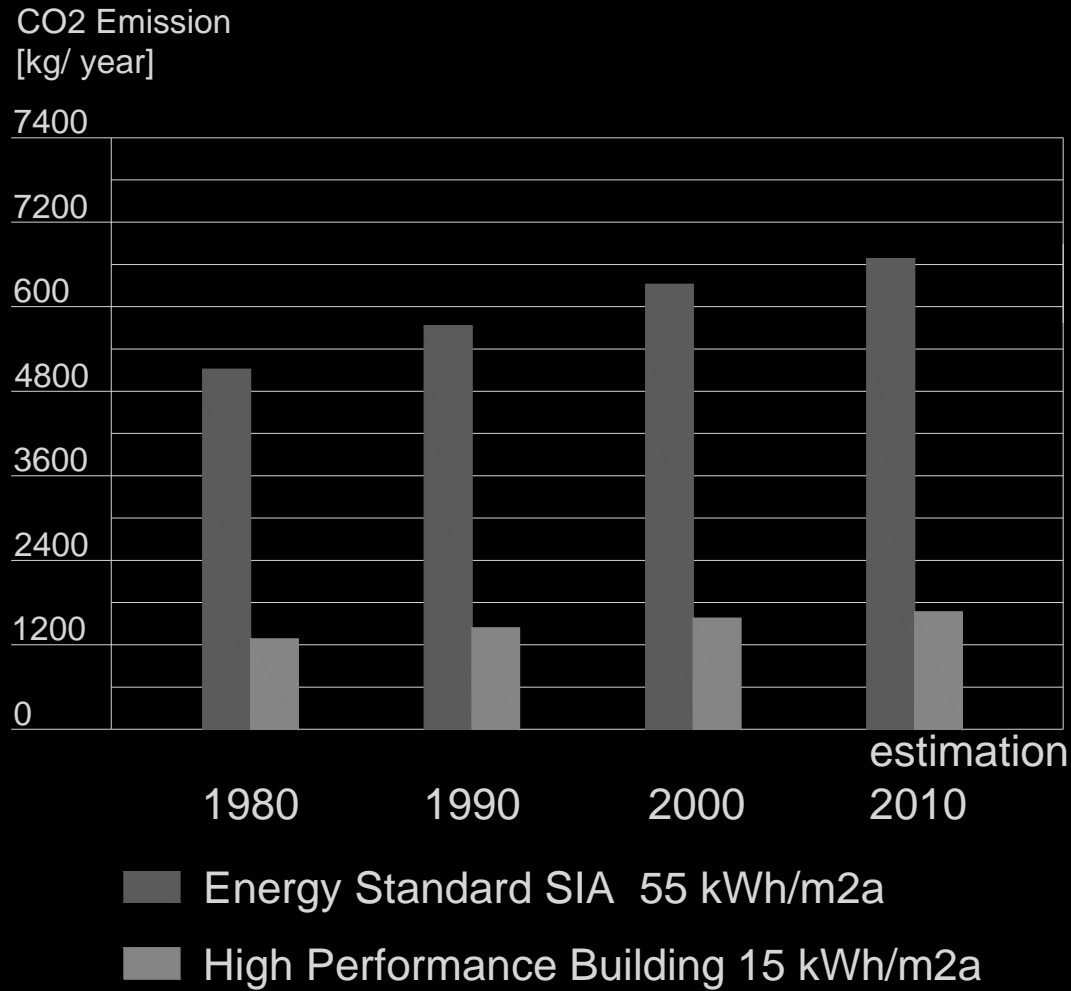


Source: BFS Schweiz

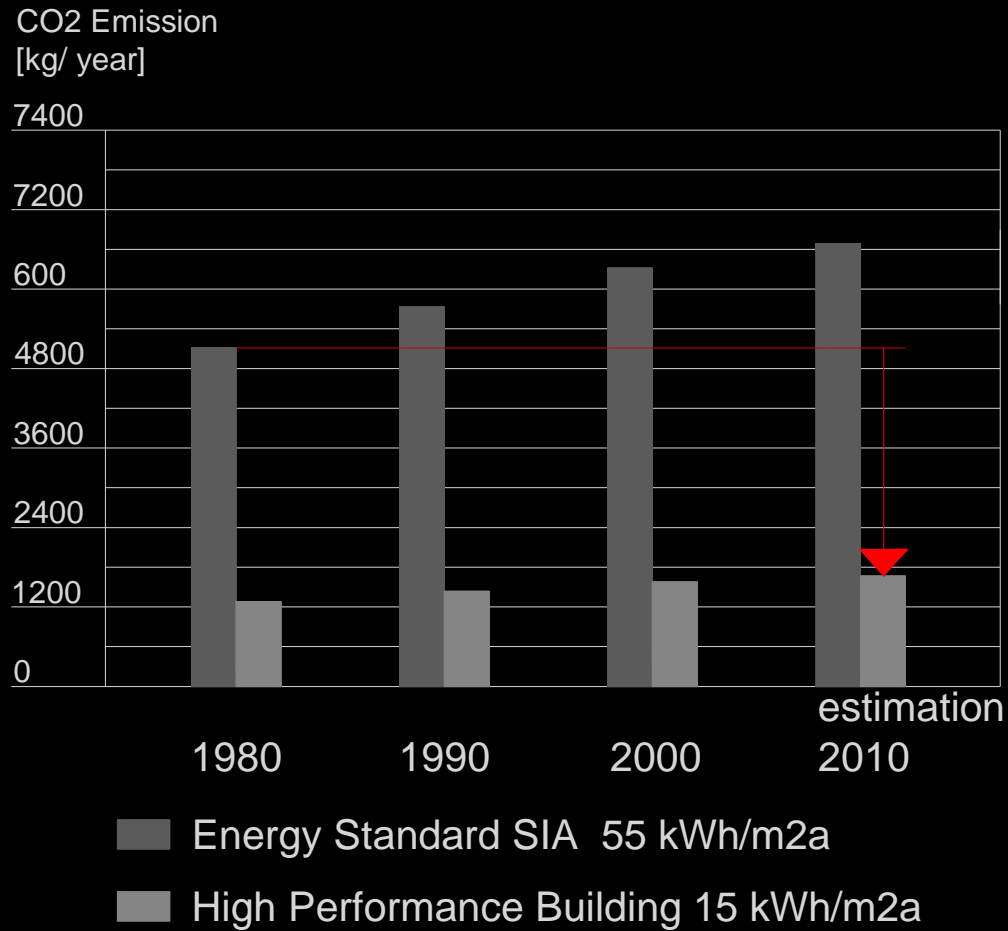
# Energy demand of different residential houses



# CO2 Emission



# Savings in CO2 Emission





Can the High Performance Building standard set as a general regulation solve the ecological problems?

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Is the High Performance Building market a growing market with future?

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Which kind of growth can be limited by the High Performance Building besides the energy demand? The personal room space?