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IST  
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sustain



MORETTI  
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AEE INTEC

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# Life cycle cost reduction and market acceleration for nearly zero-energy buildings

FOR ARCHITECTS AND ENGINEERS



Co-funded by the Horizon 2020  
Framework Programme of the  
European Union

# CRAVEzero: Lessons learned from 18 Nearly zero energy buildings



Source: [cravezero.eu](http://cravezero.eu)



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# CONVENTIONAL DESIGN STRATEGY?

AEE INTEC

Hybrid  
Ventilation

RENEWABLES

EFFICIENT  
HVAC

WATER  
SAVING  
FITTINGS

GOLD  
CERTIFICATION

# FOUR PRINCIPLES FOR NEARLY ZERO-ENERGY BUILDINGS

01

## Principle I

Consider the whole life cycle of a building

02

## Principle II

Aim for high-comfort, low-energy goals

03

## Principle III

Use renewable energy and consider environmental impacts

04

## Principle IV

Rethink existing processes and focus on added-values

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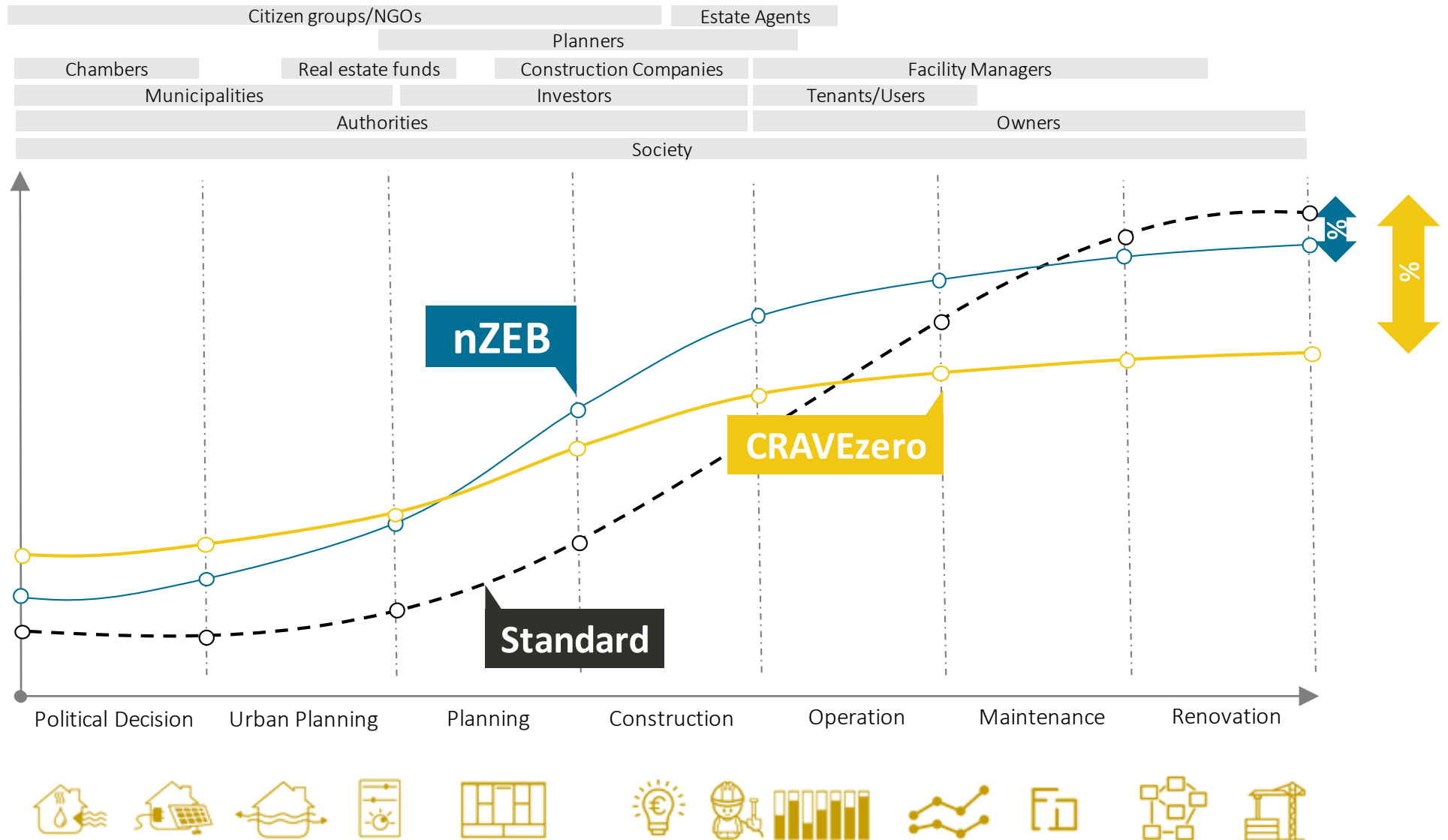
## Principle IV

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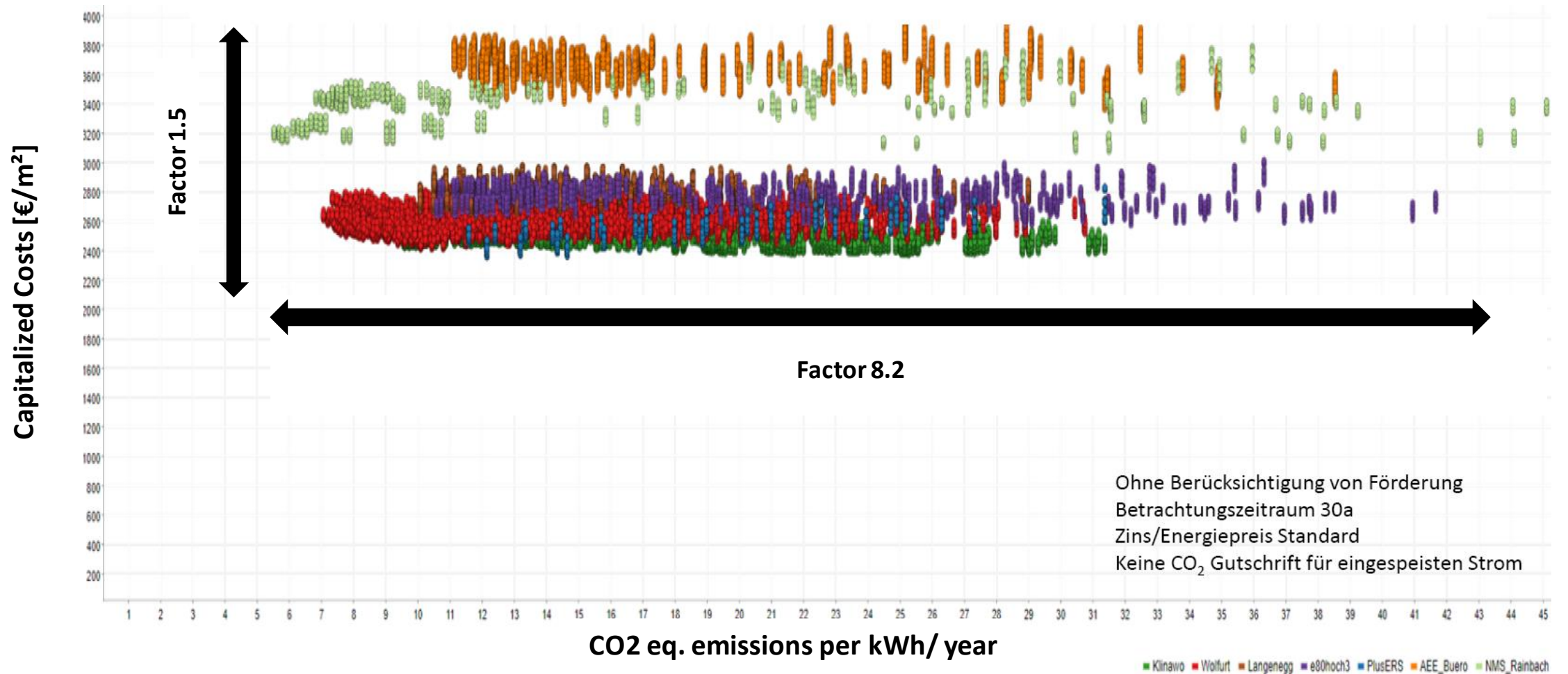
01

# Consider the whole life cycle of a building

KEY ACTORS  
COSTS / ENERGY  
ACTIONS



# Consider the whole life cycle of a building



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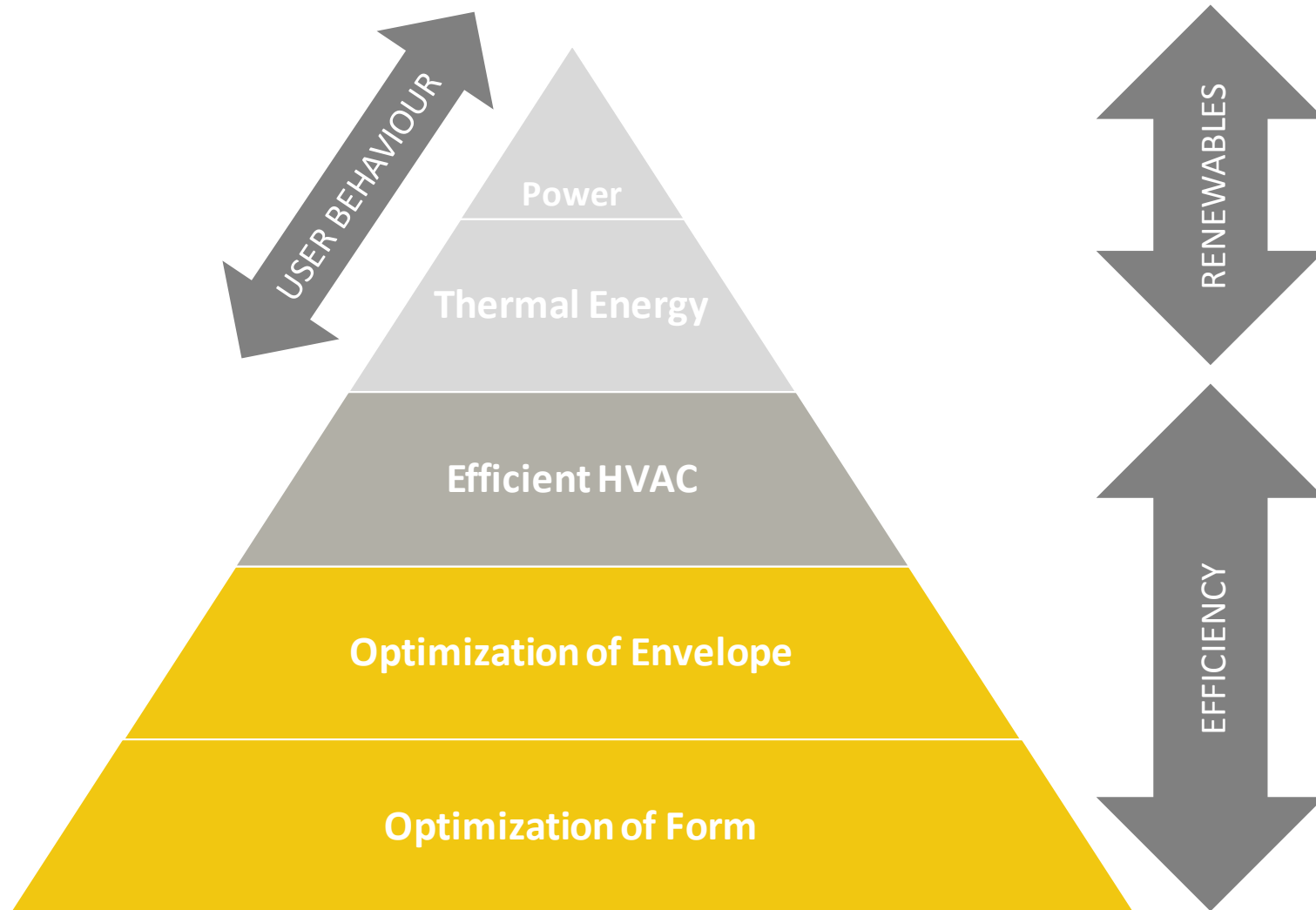
Use renewable energy and consider environmental impacts

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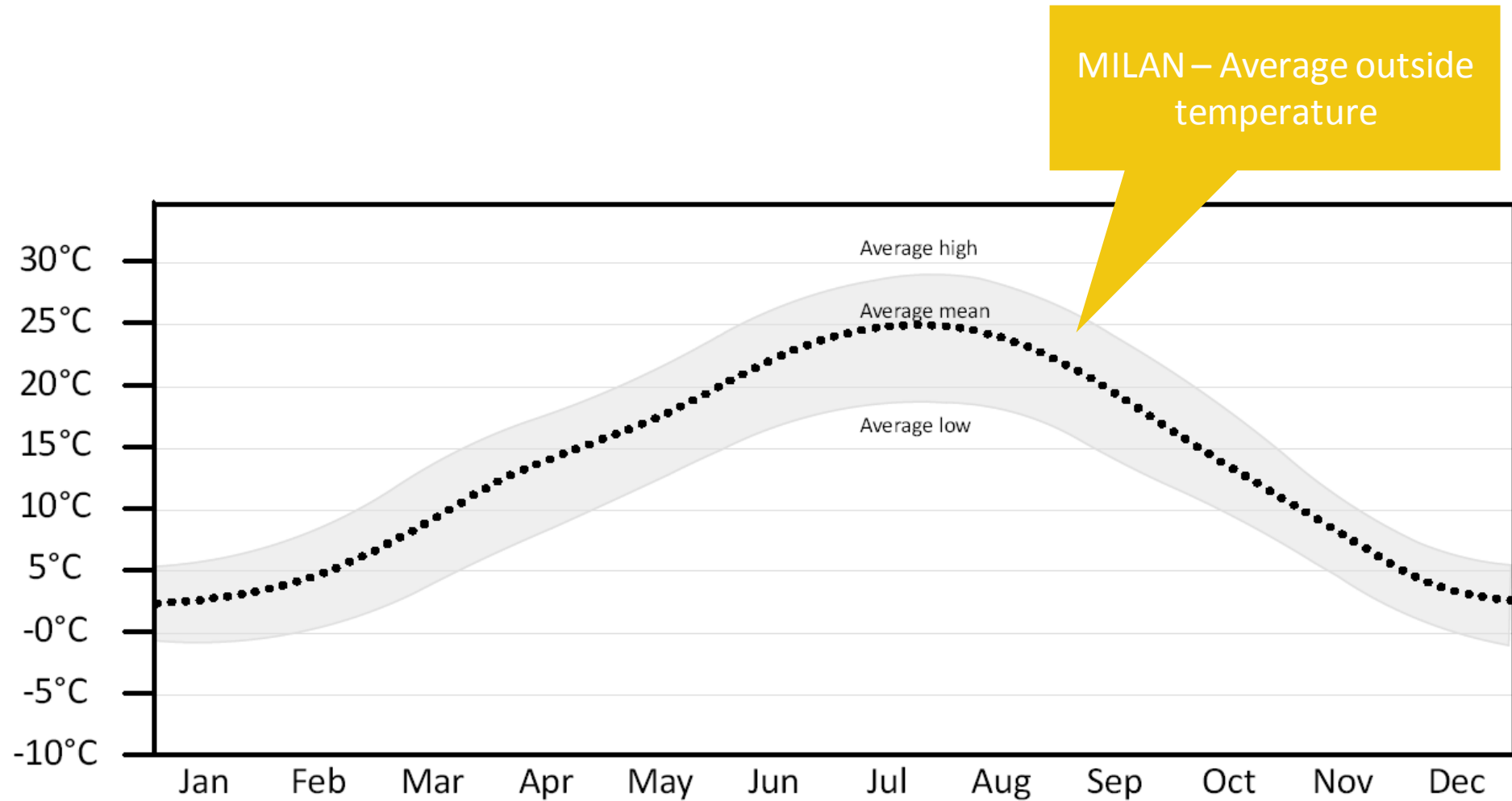
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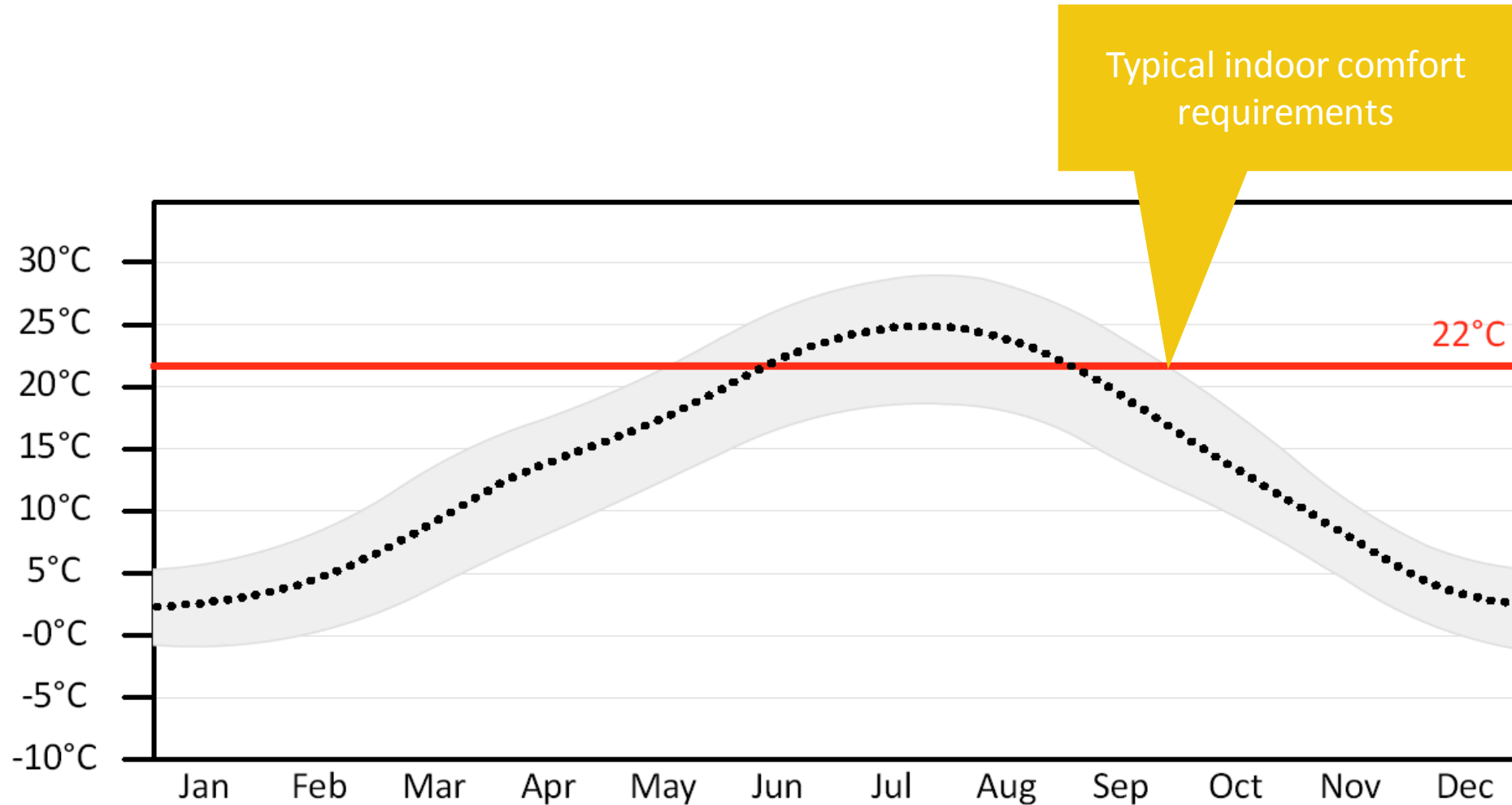
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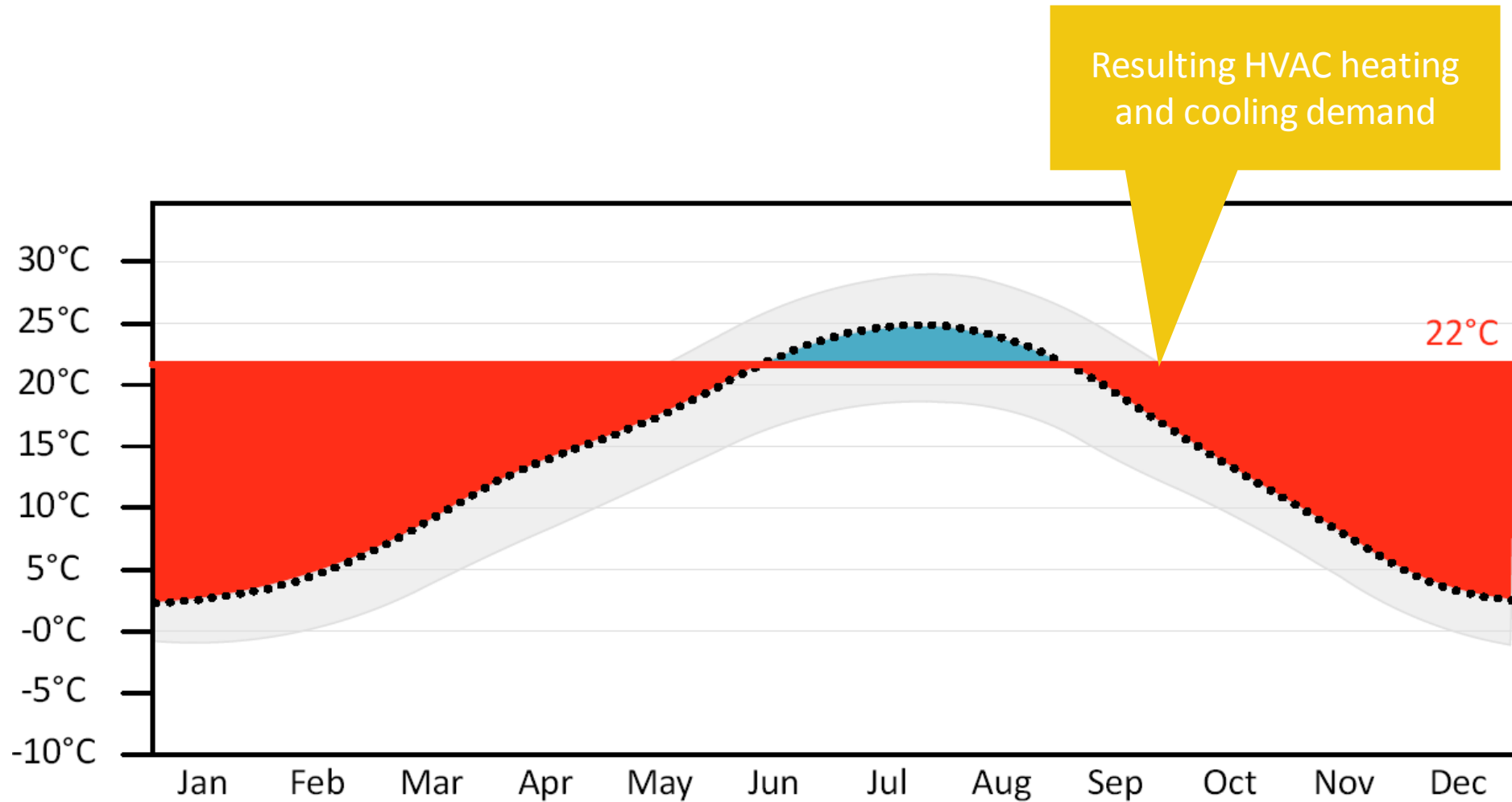


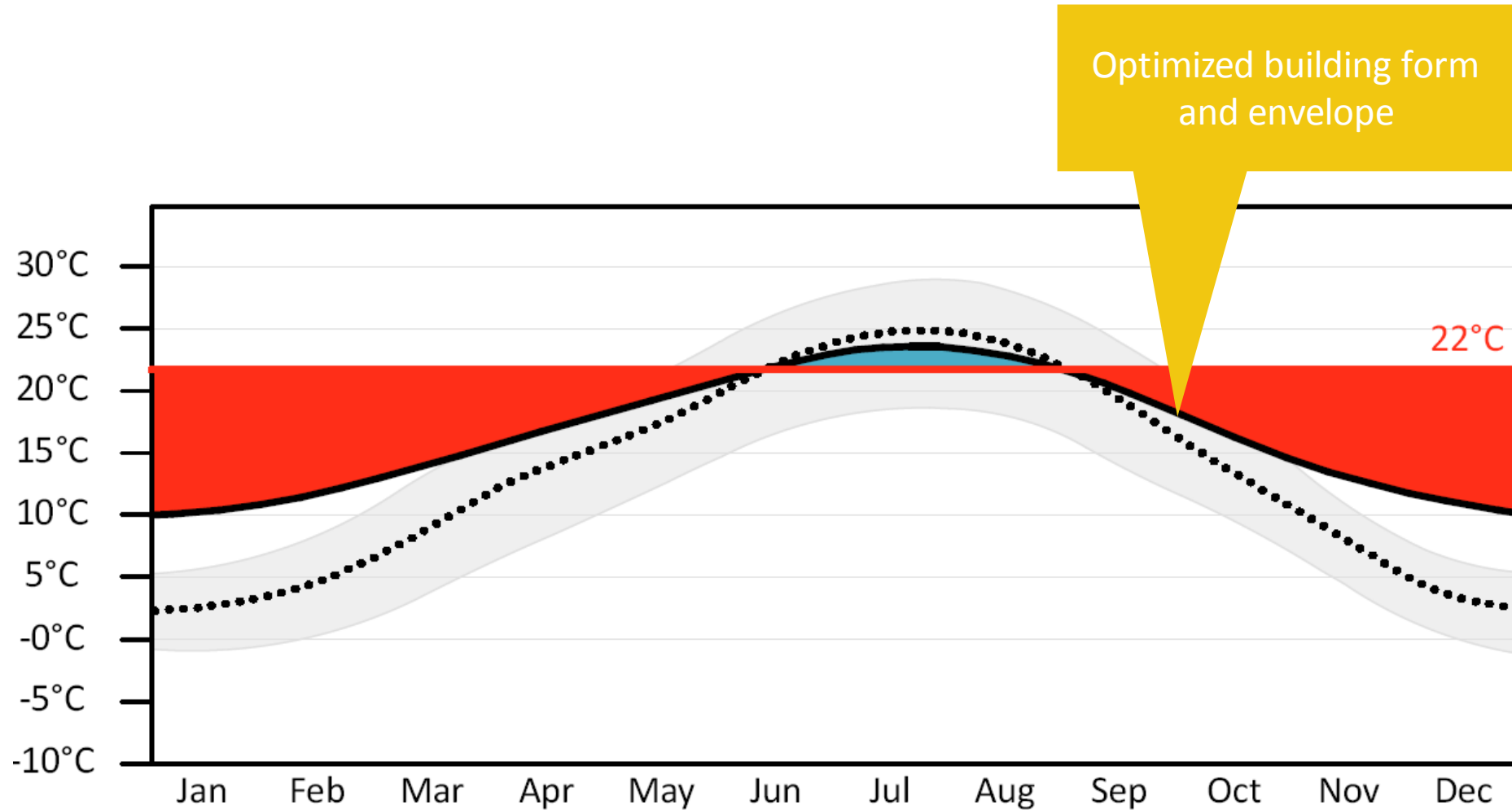


Source: Tobias Weiß AEE INTEC – IEA Task 40 Annex 60

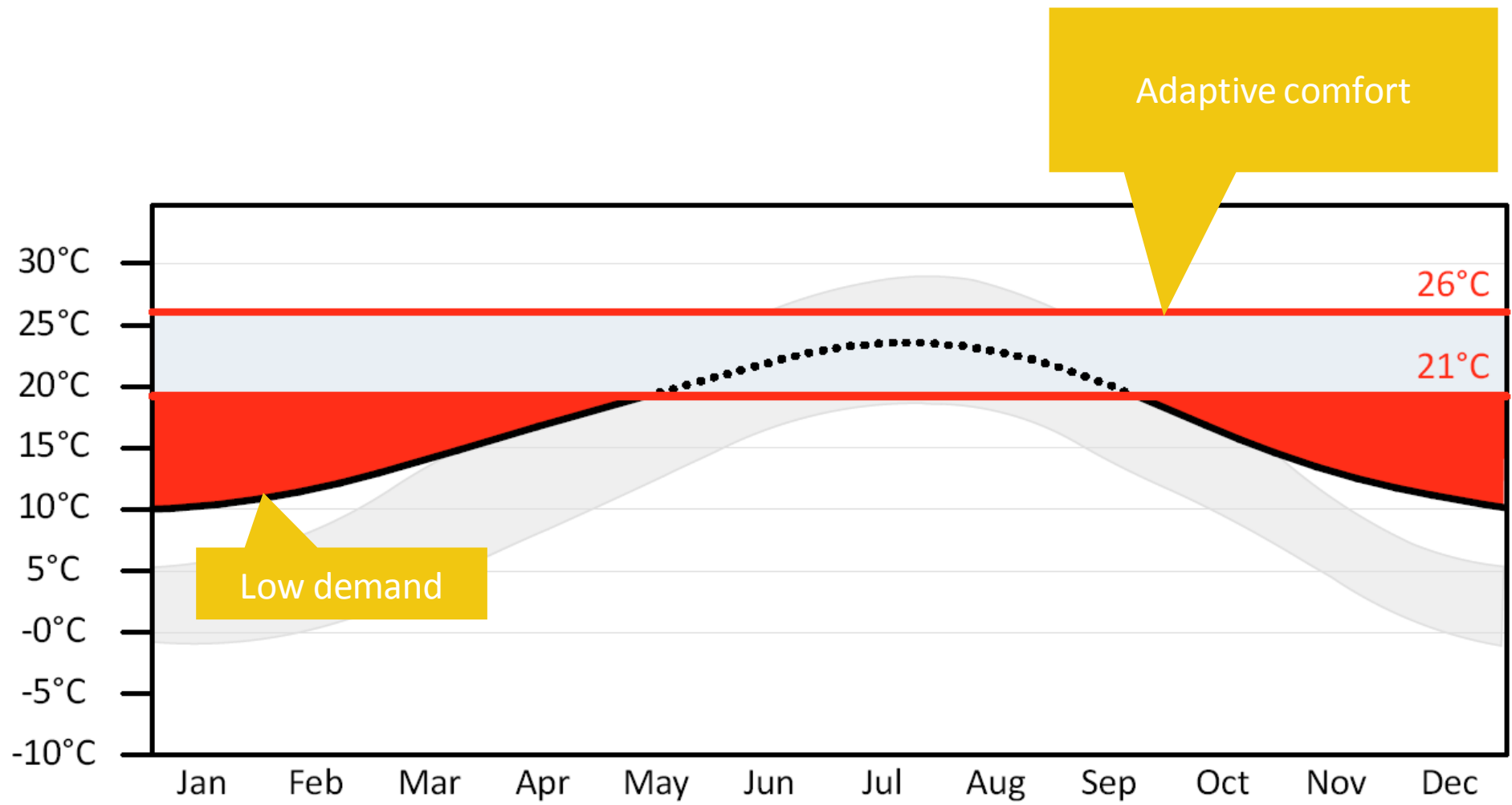








# AIM FOR HIGH-COMFORT, LOW-ENERGY GOALS



# FOUR PRINCIPLES FOR NEARLY ZERO-ENERGY BUILDINGS

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**Principle I**

Consider the whole life cycle of a building

02

**Principle II**

Optimize building envelope, HVAC and renewable supply

03

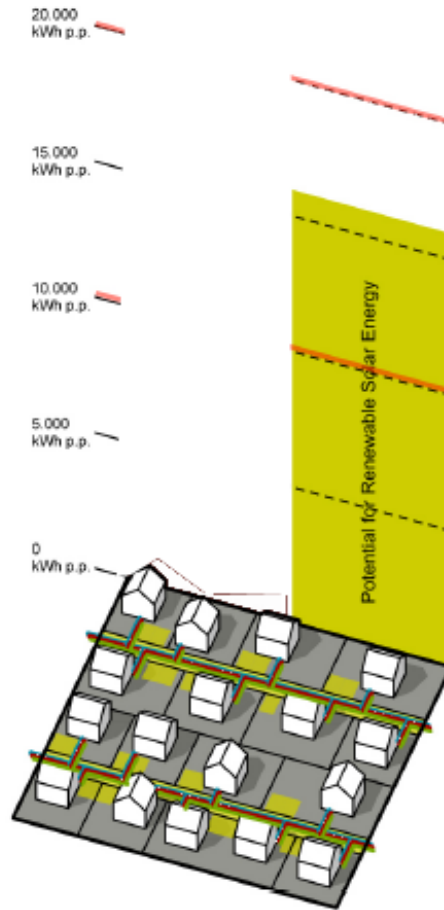
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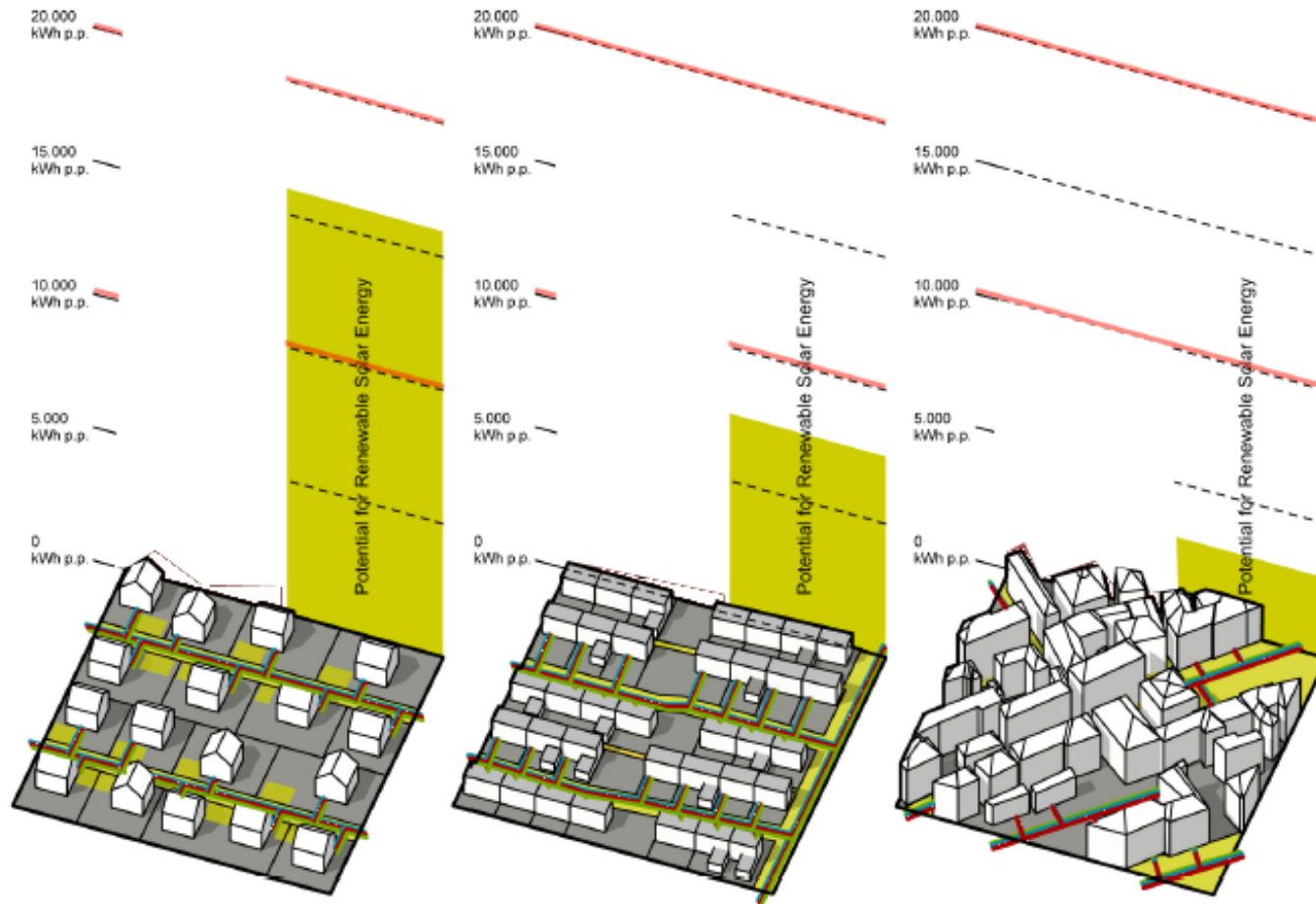
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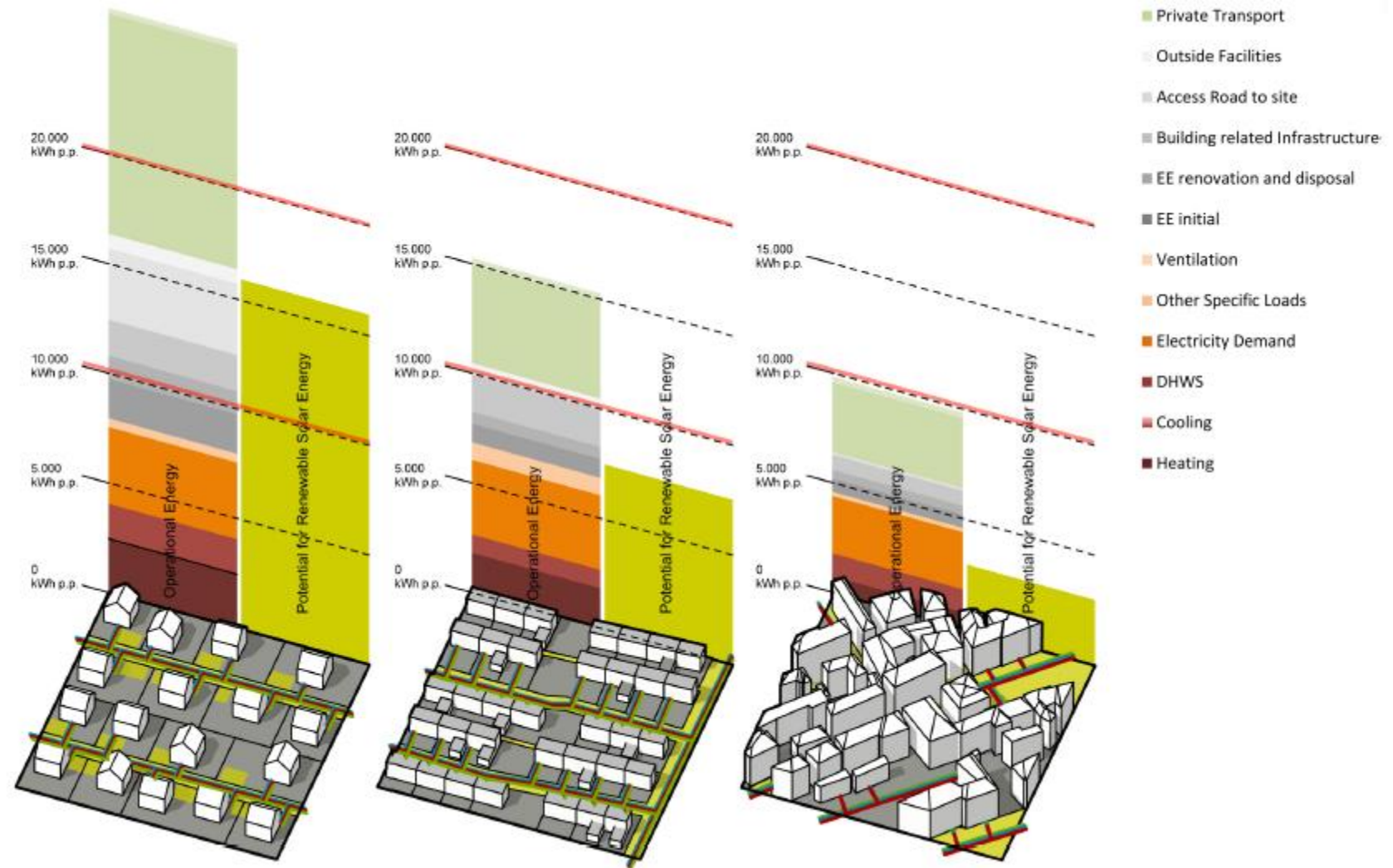


Source: Tobias Weiß – AEE INTEC





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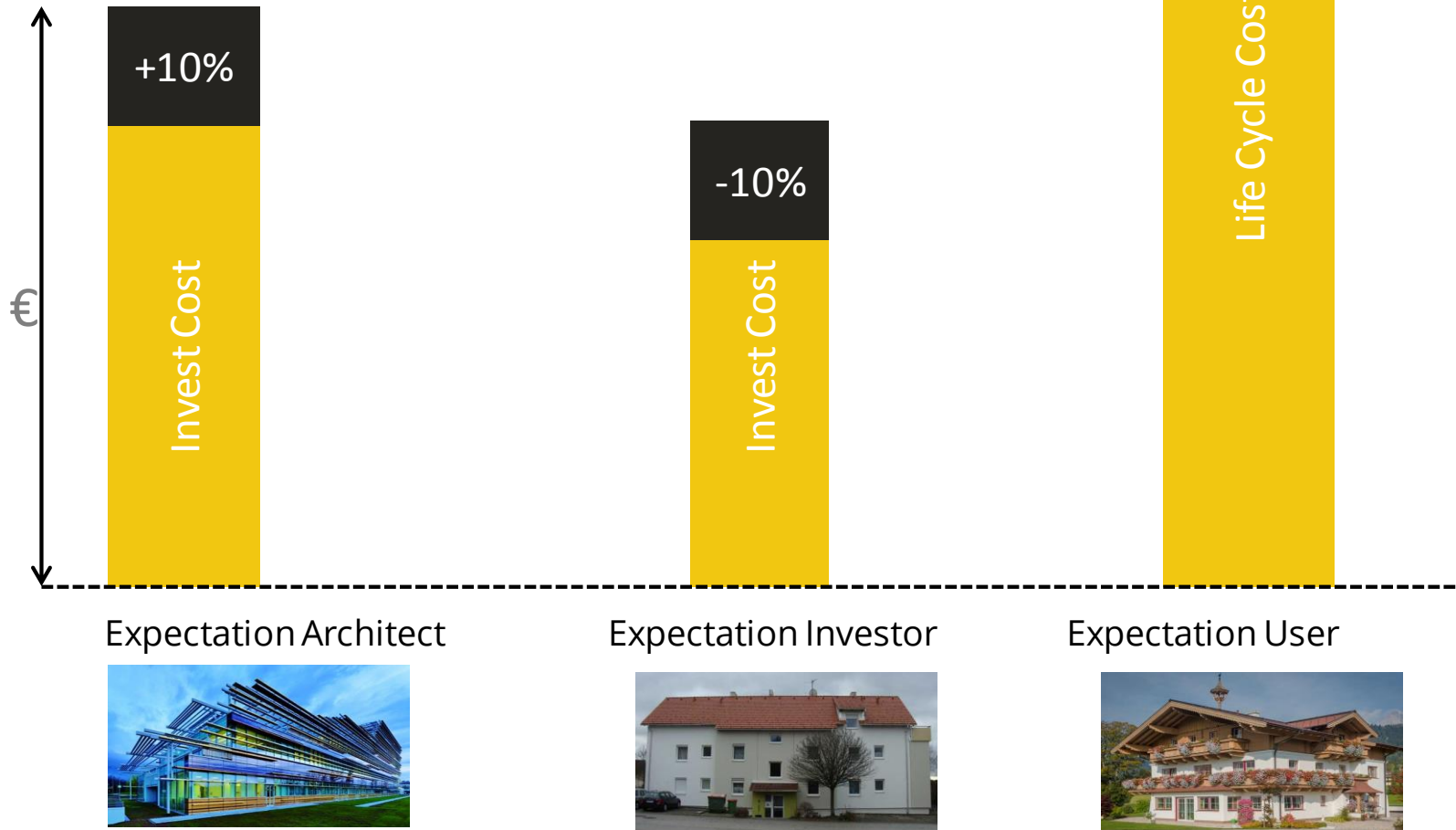
## Principle III










Aim for high-comfort, low-energy goals

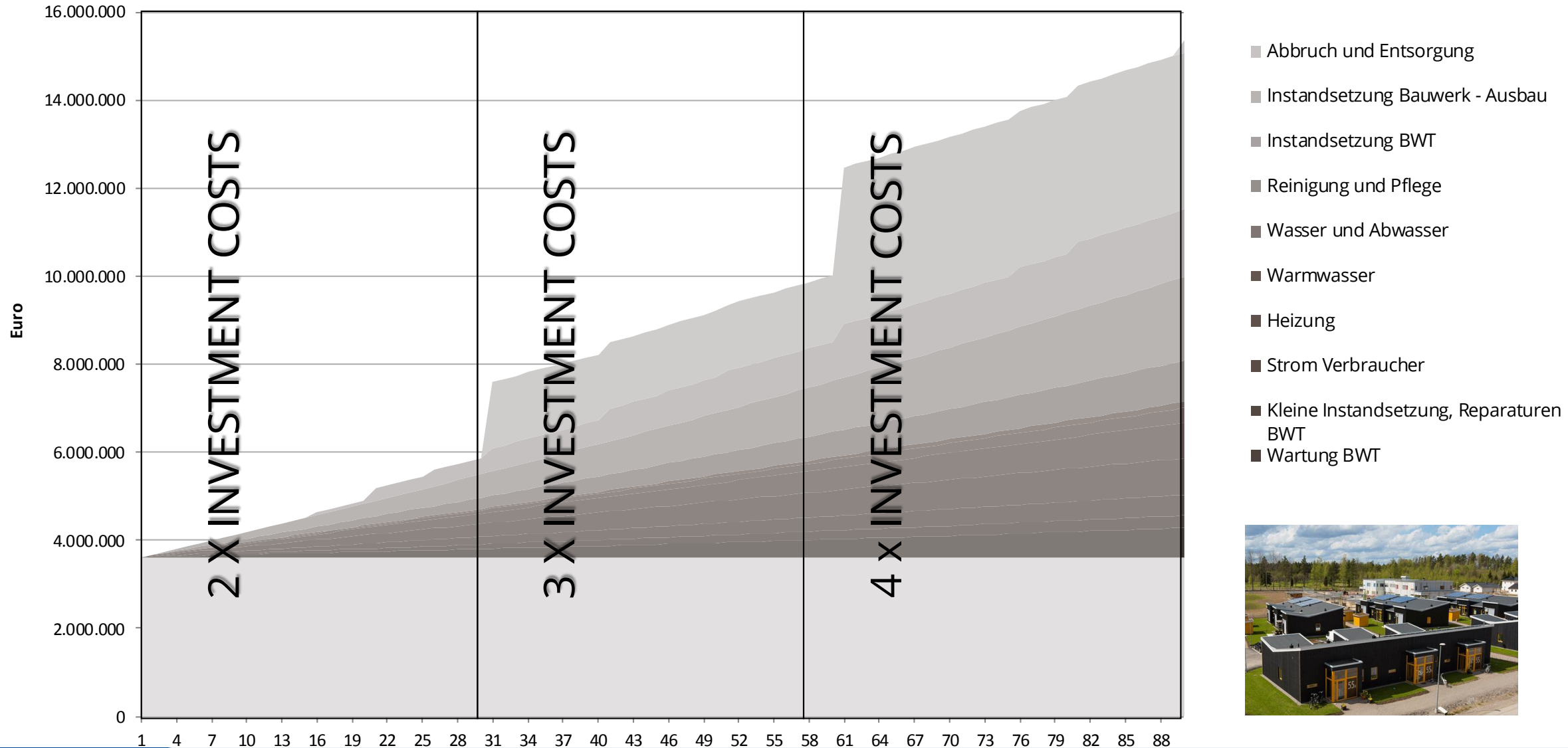
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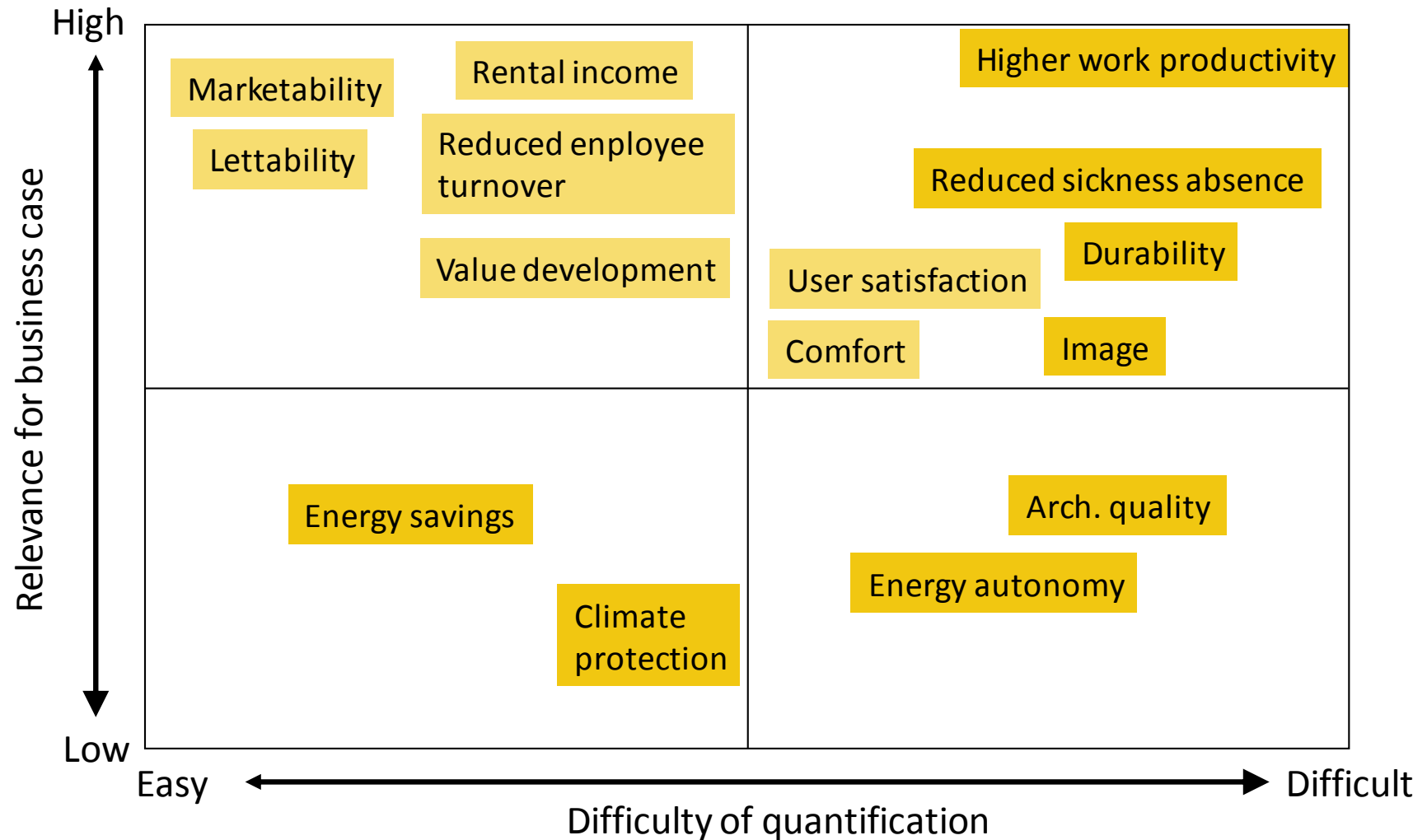
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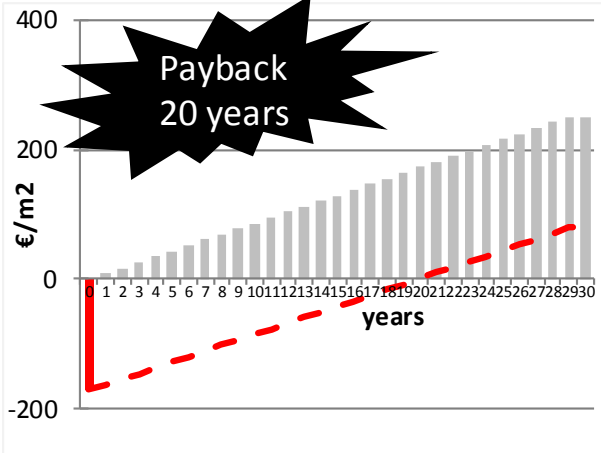
	Time expectancy	
<b>Stakeholders</b>		
Tenant / user	3 – 30 years	
Real estate agents	1 – 2 years	
Construction company	1 – 5 years (Guarantee)	
Planner	1 years	
Property management	1 – 50 years (Contract duration)	
Investor	1 – 5 years	
Building owner / landlord	20 - 50 years	
Building owner (public)	50 – 100 years	
Society	> 100 years	



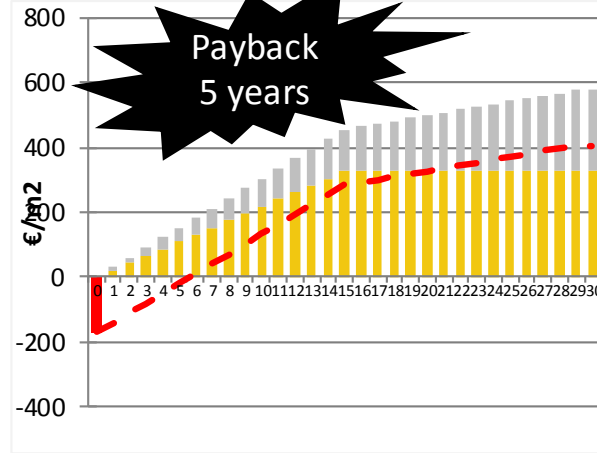




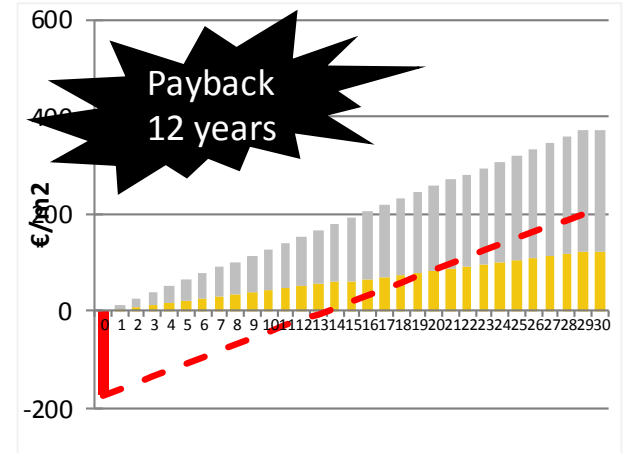
**Base Case: Energy Payback**



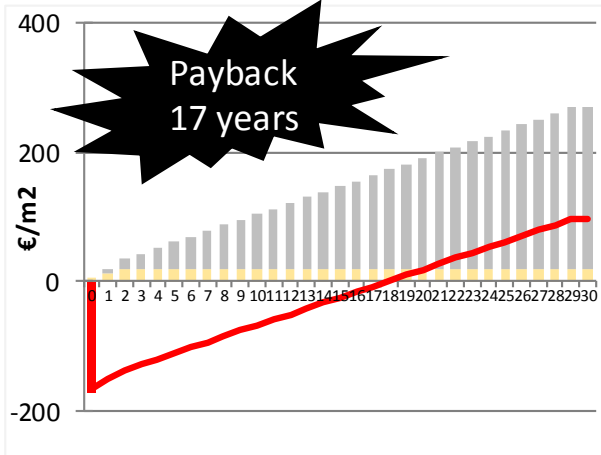
**Productivity Employees (+1%)**



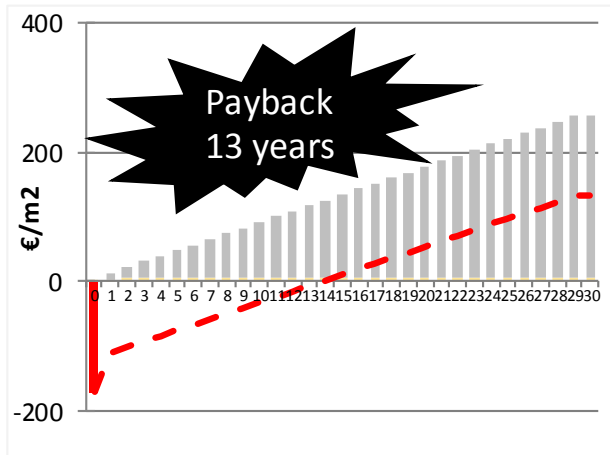
**Higher Rent (+3%)**



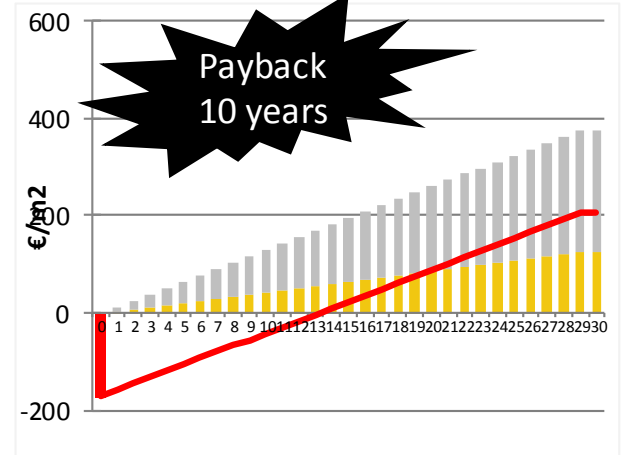
**Publicity Value (10 press clip.)**



**Faster Rental (+5 months)**



**Reduced Sick Leaves (-10%)**







Coordinator



Sensitivität ● hoch ● niedrig ● ohne ● standard

2800

Kapitalwert [€/m]

2500

2400

# What is the optimum nZEB out of half a million variants?



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Find out more on: [www.Cravezero.eu](http://www.Cravezero.eu)

