

COLDWELLS
BUILD

PASSIVHAUS MADE SIMPLE

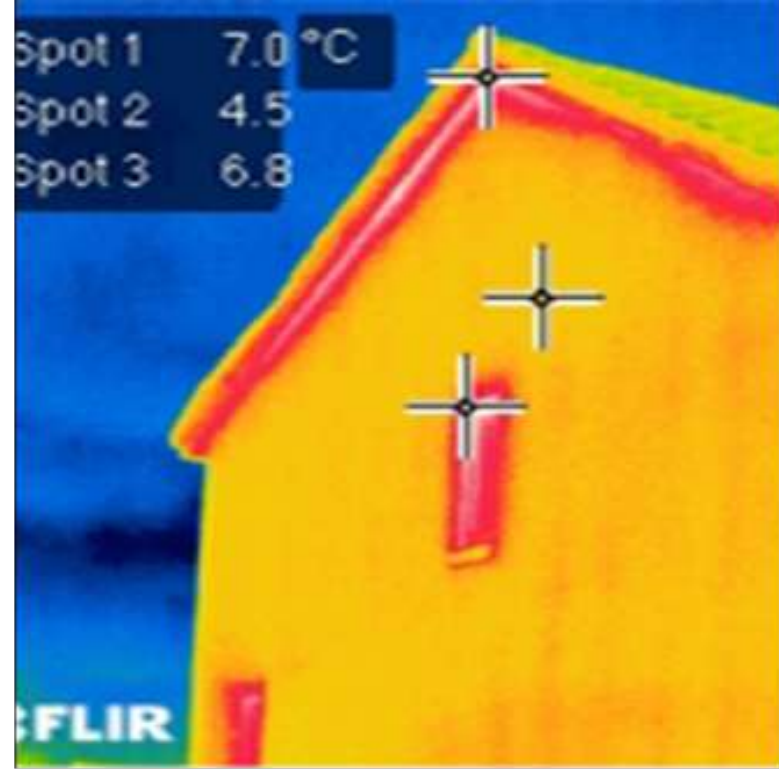
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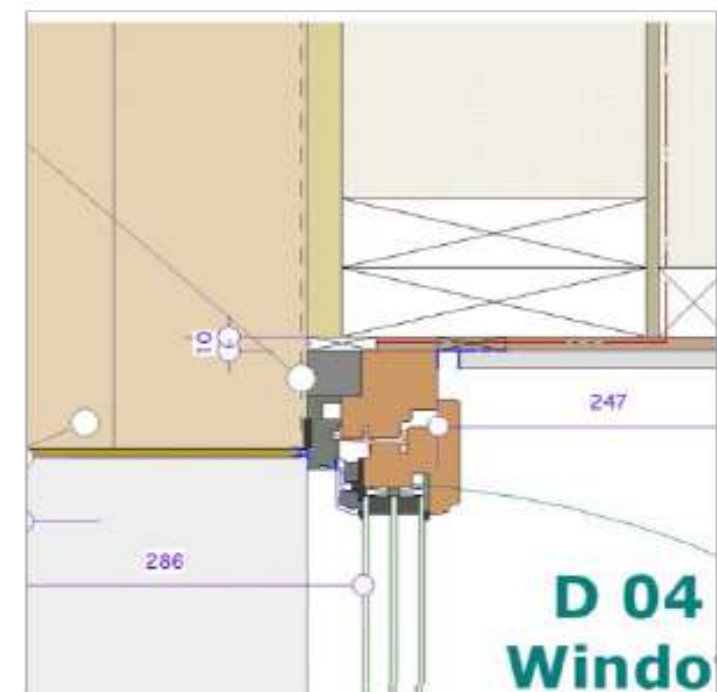
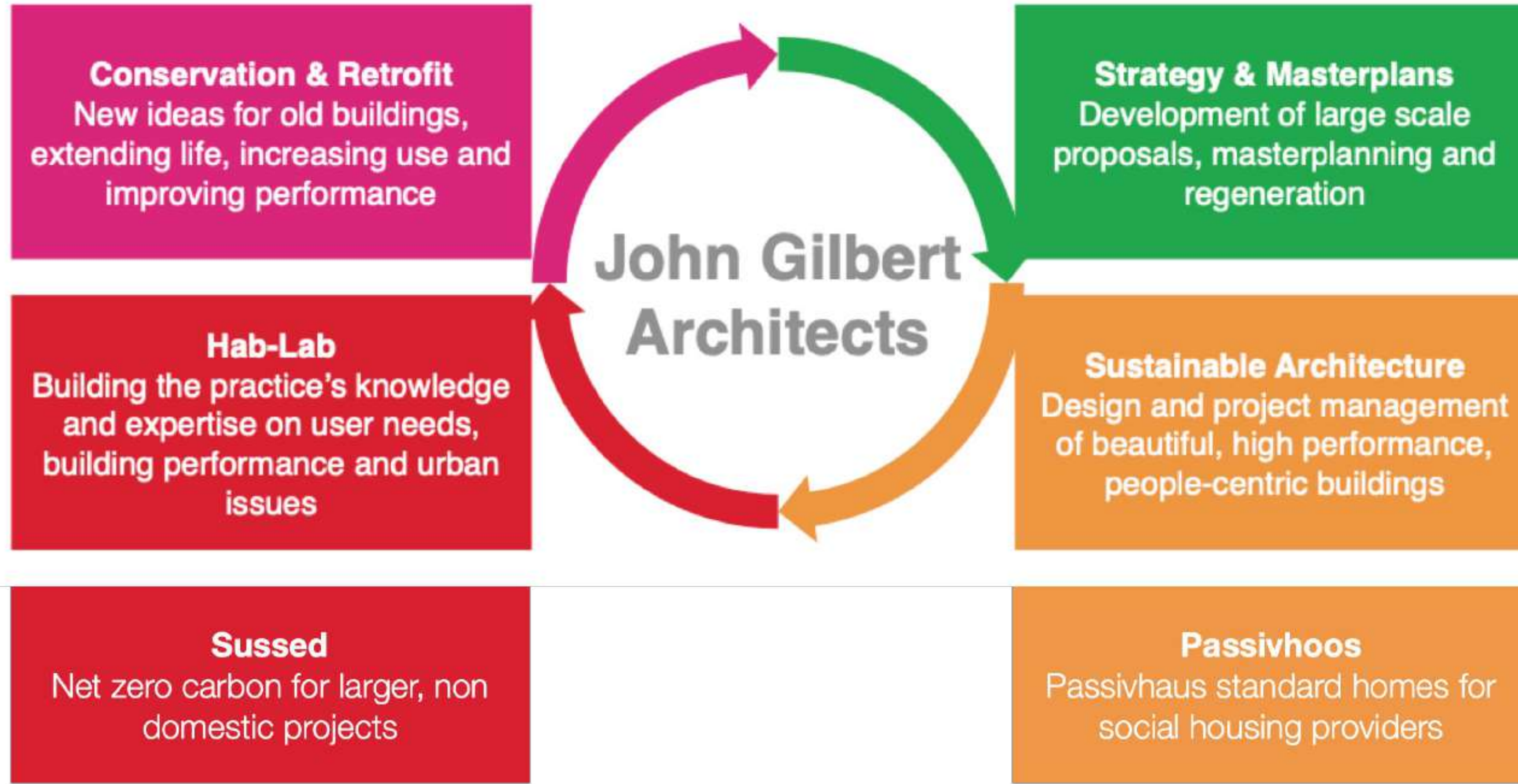
PASSIVHAUS MADE SIMPLE

WHAT IS PASSIVHAUS?

RUPERT DALY, JOHN GILBERT ARCHITECTS

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The UK Passive House Organisation



Built
Environment
—
Smarter
Transformation



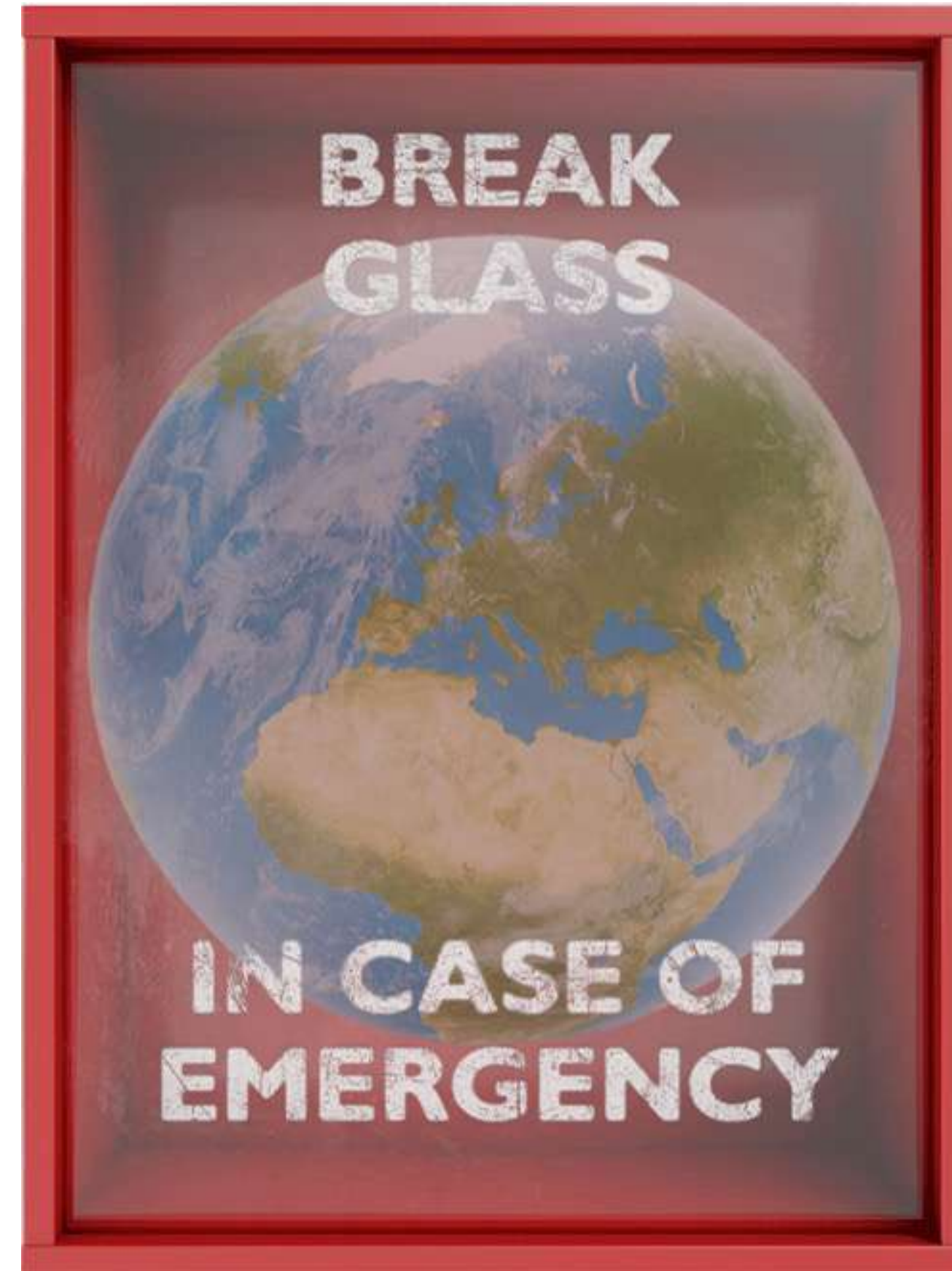
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Context

2008 Climate Act

“The 2008 Climate Act committed the UK to reducing its greenhouse gas emissions by 80% by 2050 compared to 1990 levels, formed the Committee on Climate Change, and established UK carbon budgets.”

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Credit: Naomi Klein?

2019 Net Zero

"The 'net zero target' refers to a government commitment to ensure the UK reduces its greenhouse gas emissions by 100% from 1990 levels by 2050 (2045 in Scotland). If met, this would mean the amount of greenhouse gas emissions produced by the UK would be equal to or less than the emissions removed by the UK from the environment."

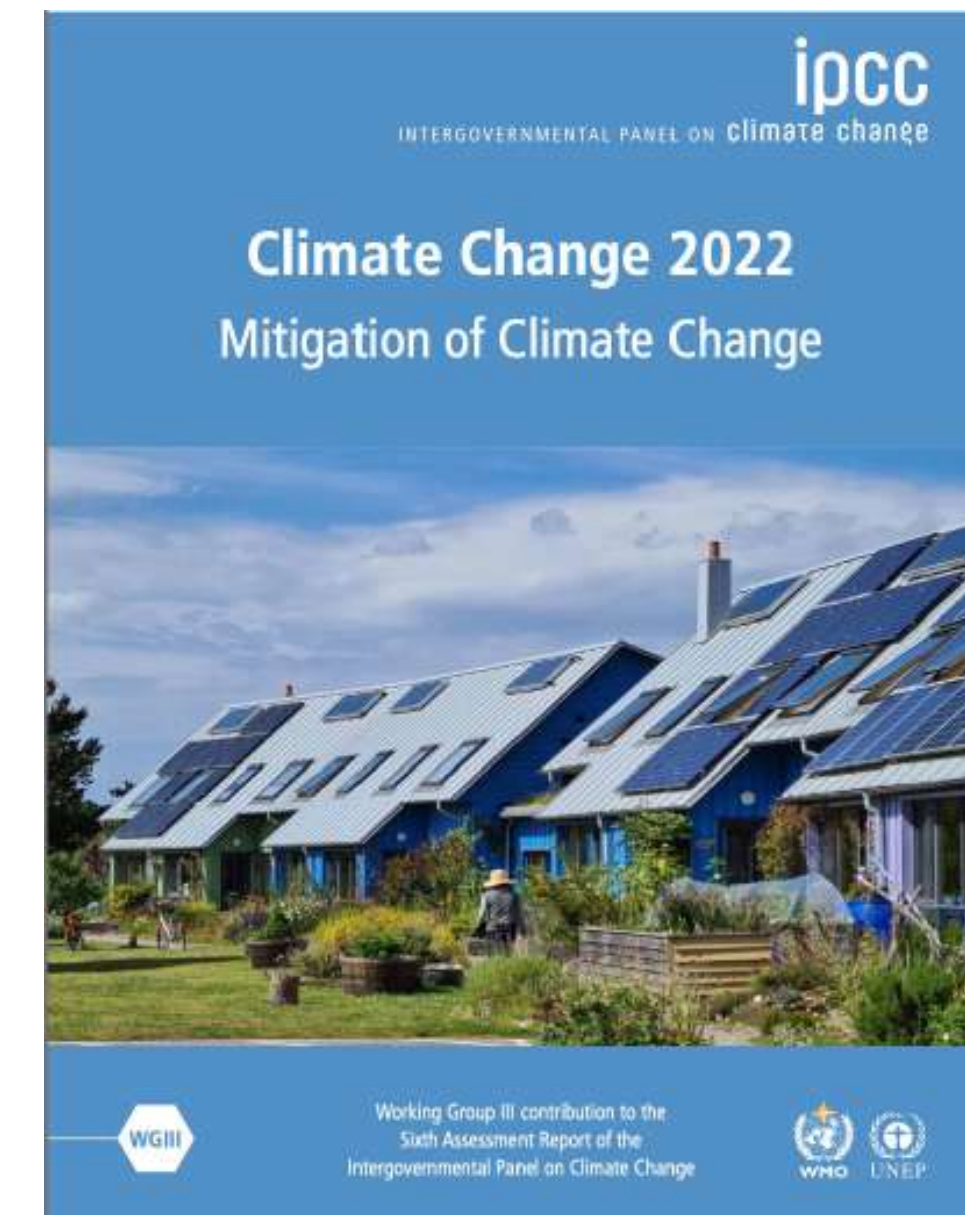
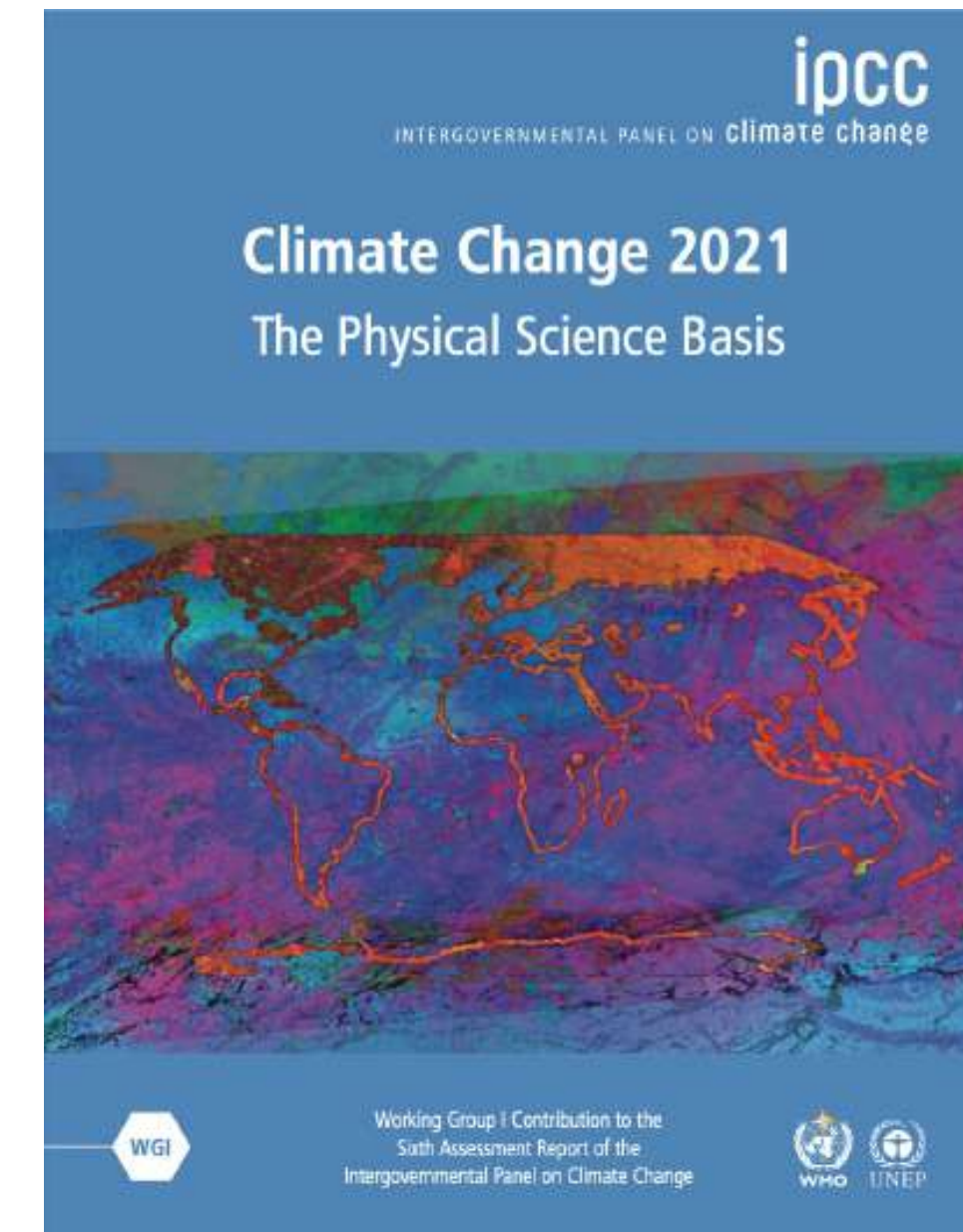
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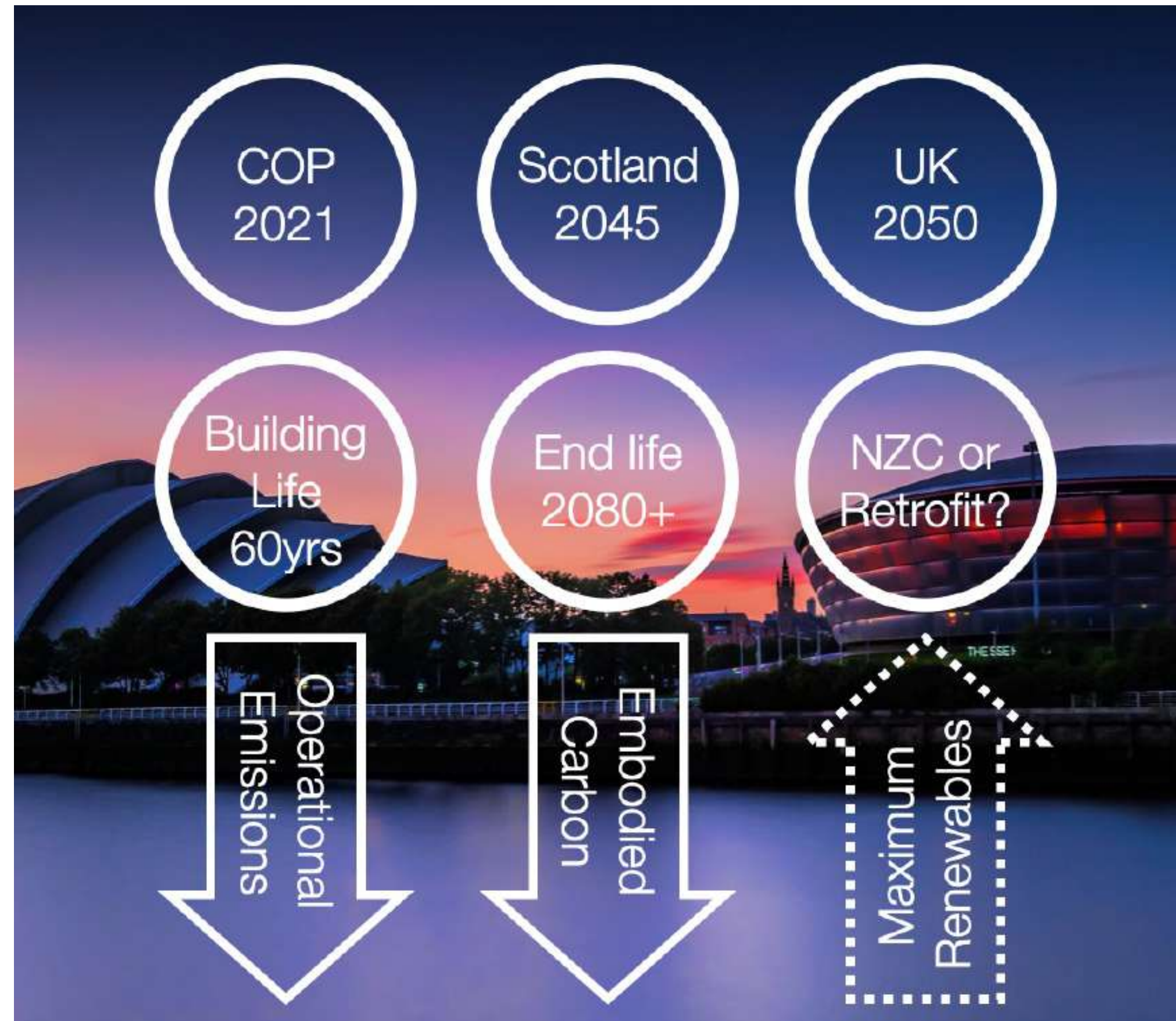
2021 – Global momentum



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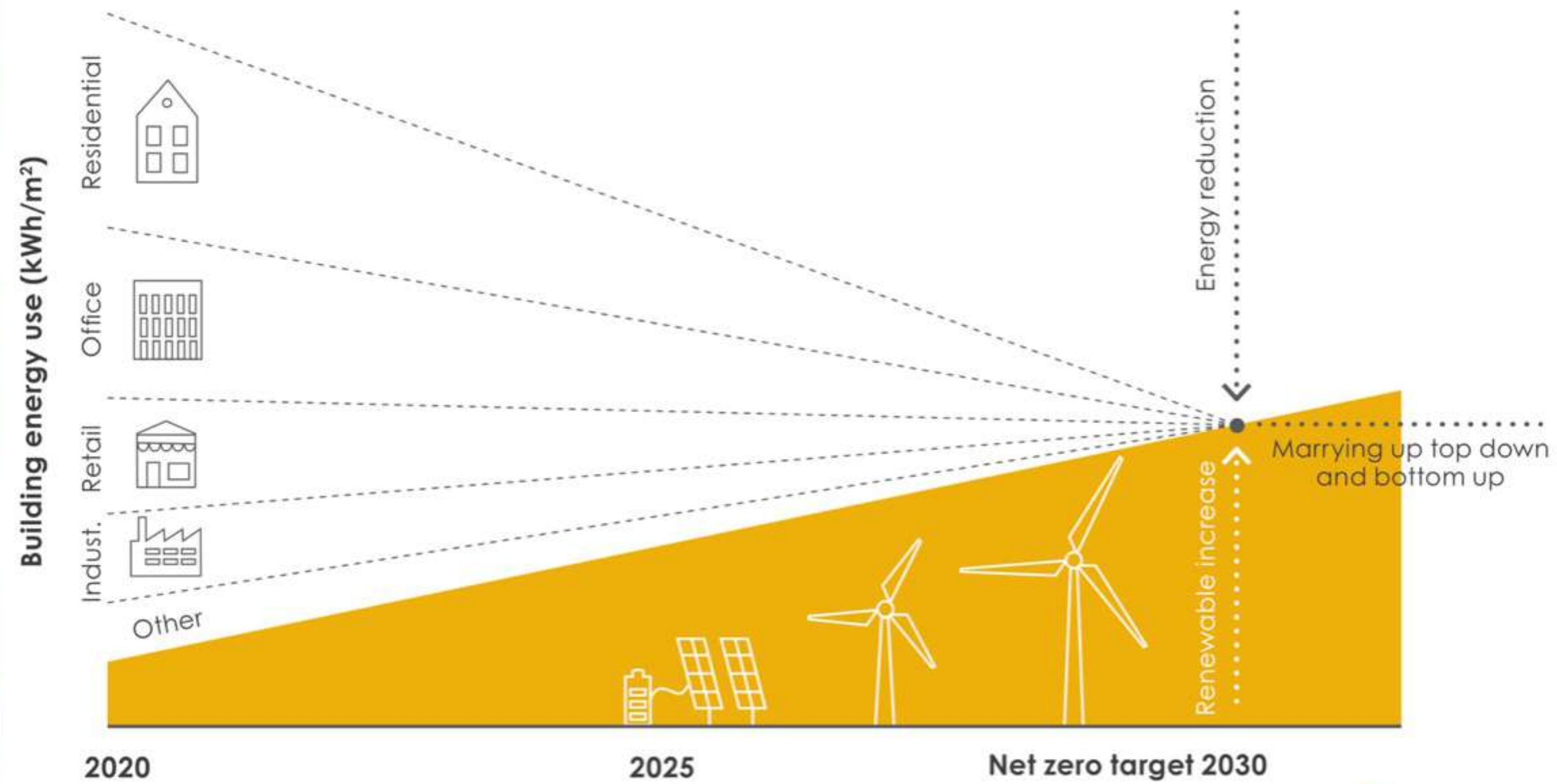
2021 – Policy



2022 – Scenarios



Active measures



Passive measures

2024 – Progress?

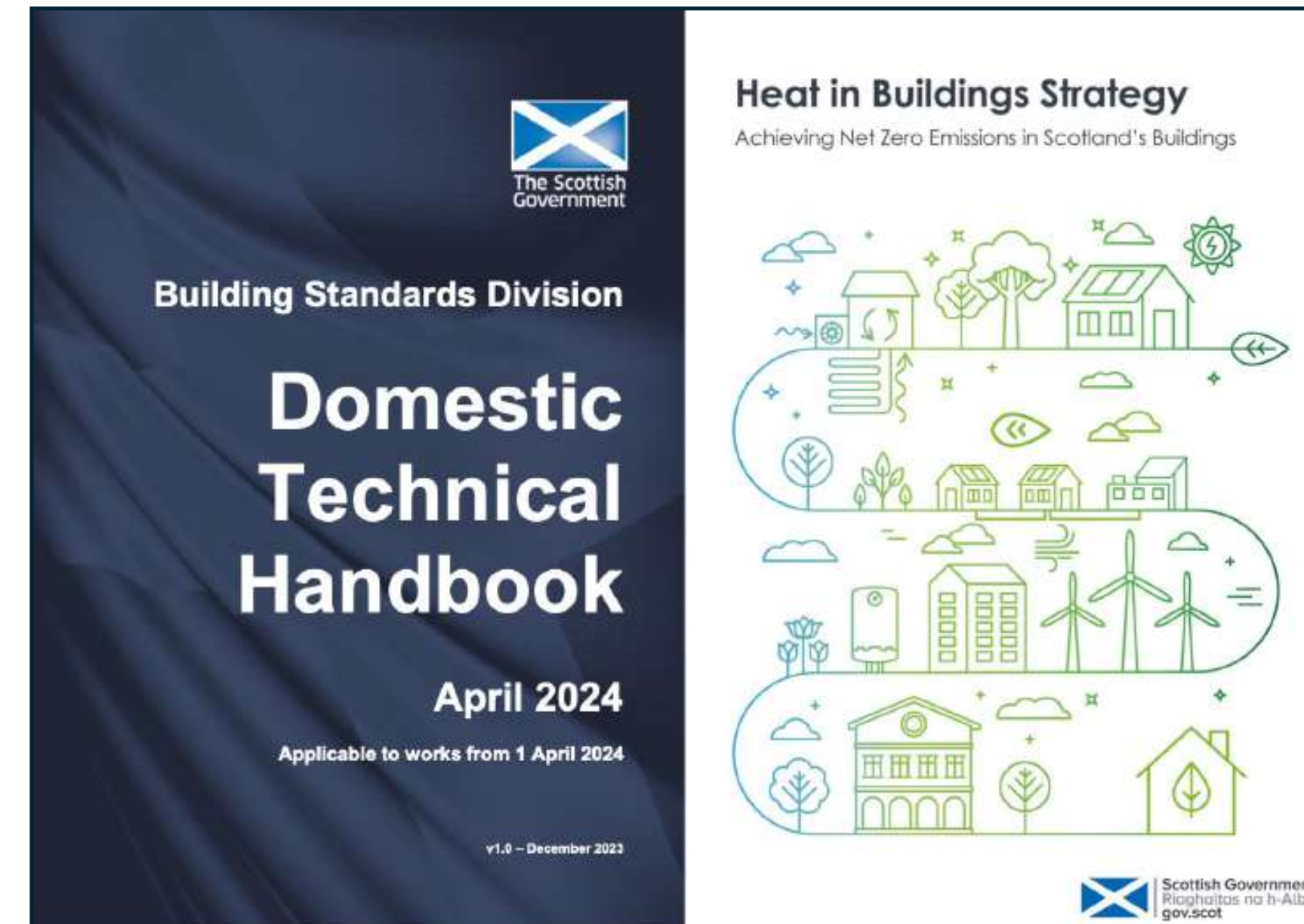
“The Climate Change Committee’s assessment is that only a third of the emissions reductions required to achieve the country’s 2030 target are currently covered by credible plans.”



Climate
Change
Committee

2024 –Heat in Buildings Strategy

‘From 1 April 2024, all new buildings will no longer be heated with ‘direct emission heating systems’.



2024 – Scottish Equivalent to Passivhaus

“to introduce new minimum environmental design standards for all new build housing to meet a Scottish equivalent to the Passivhaus standard, in order to improve energy efficiency and thermal performance”.

*Stage 1 consultation – July 2024
Stage 2 consultation – Summer 2025*

*Currently proposed to be voluntary by 2026 and
Mandatory by 2028*

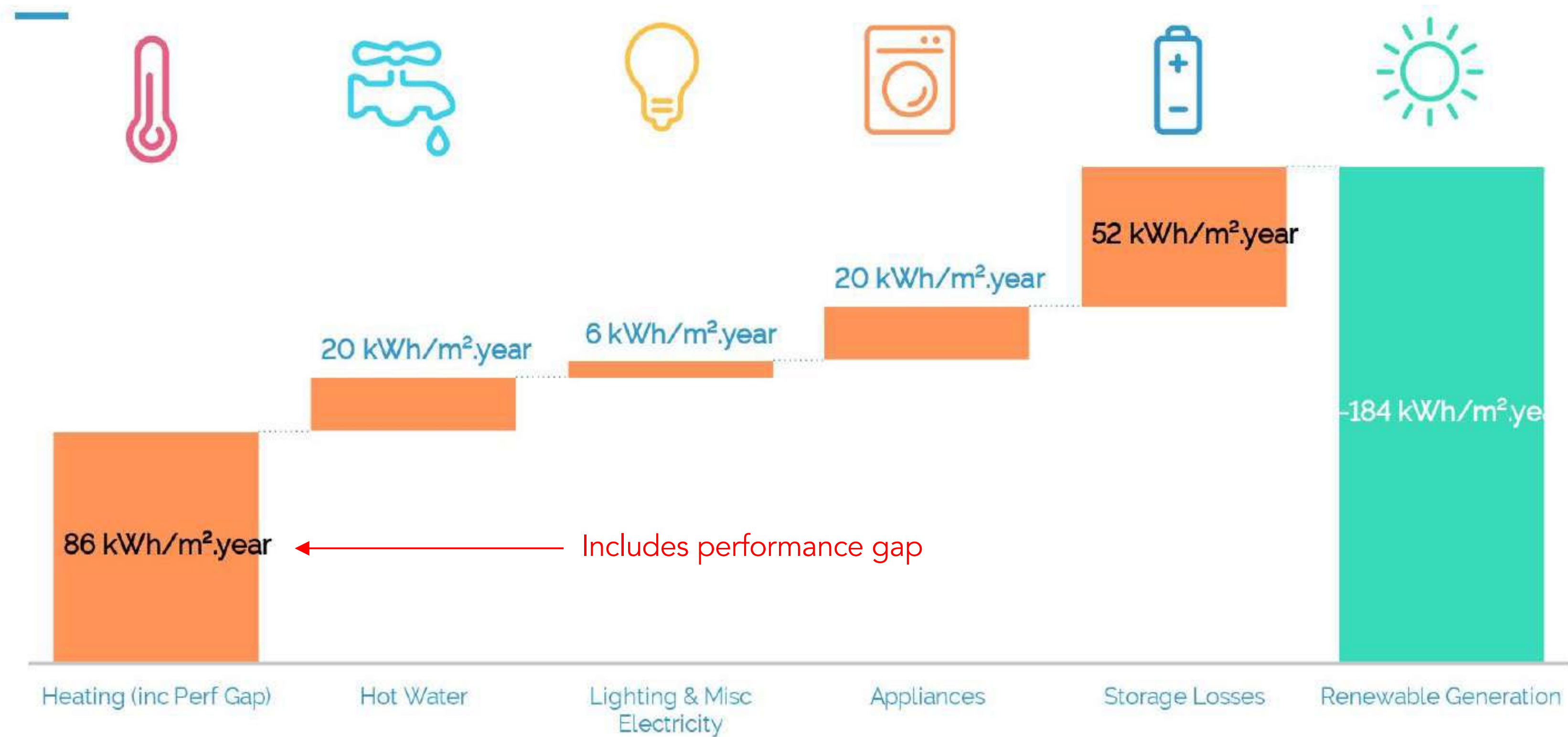
2024

Legislation, Policy, Regulation takes time.....We are running out of time.

Why wait?

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Net Zero?



Why Passivhaus? The Performance Gap

"I was working as a physicist. I read that the construction industry had experimented with adding insulation to new buildings and that energy consumption had failed to reduce.

This offended me – it was counter to the basic laws of physics. I knew that they must be doing something wrong. So I made it my mission to find out what, and to establish what was needed to do it right."

Prof. Dr. Wolfgang Feist (who developed the Passivhaus standard)



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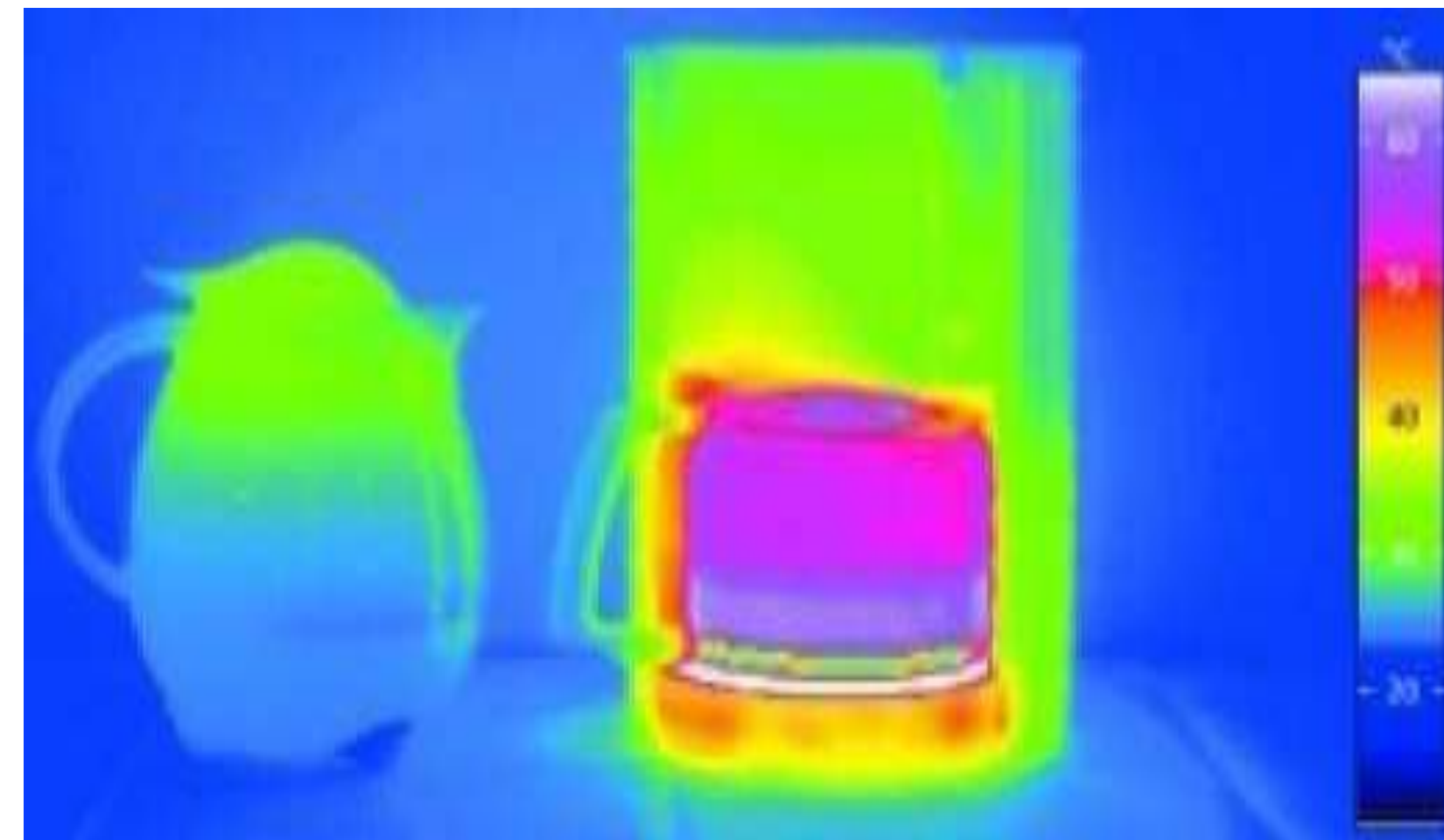
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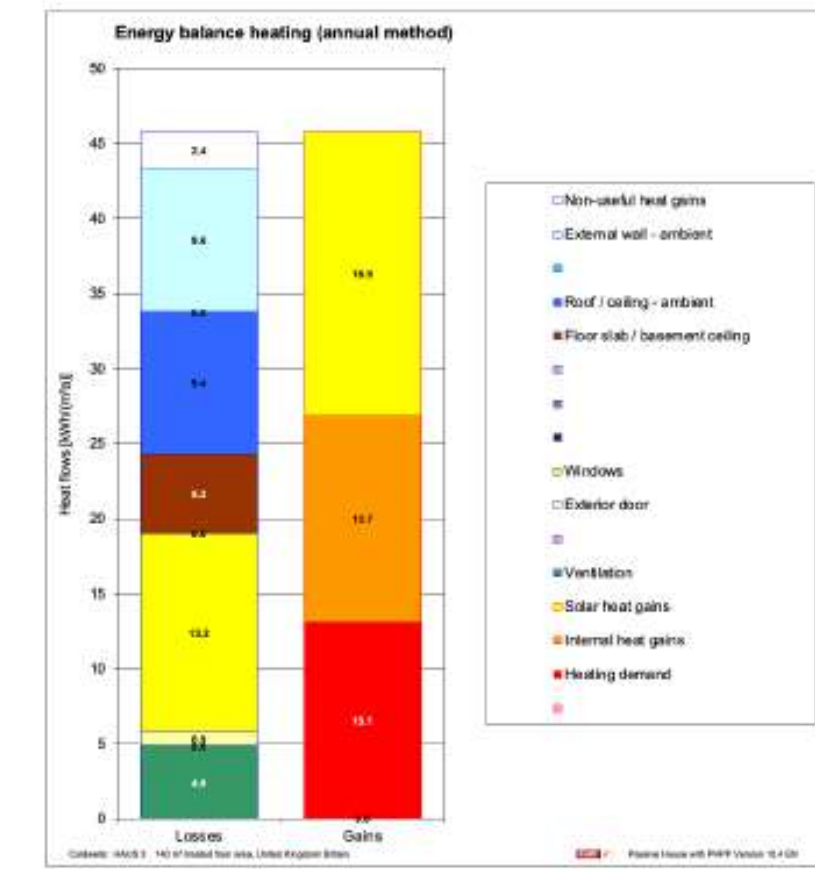
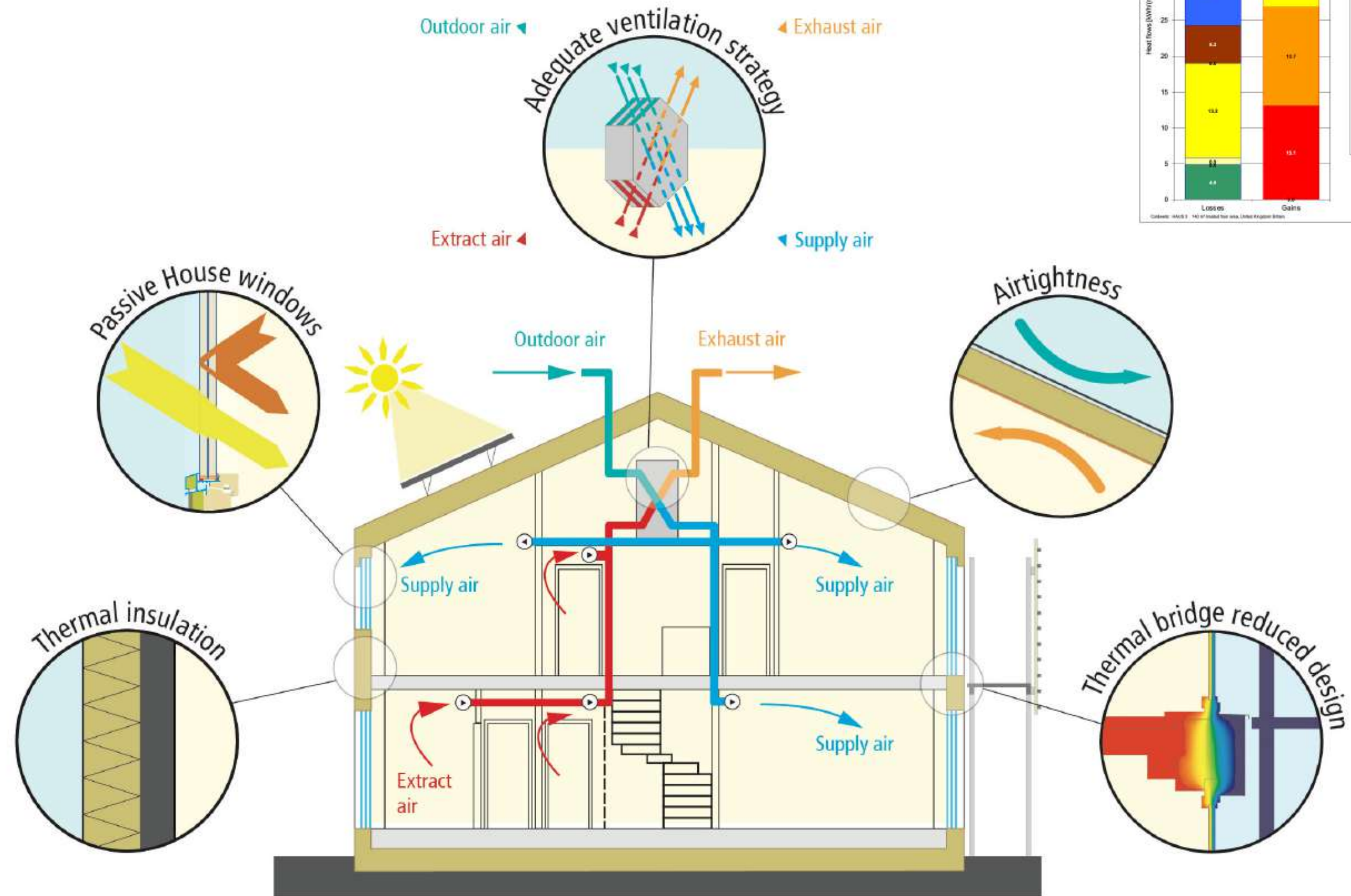


What is Passivhaus?

- A building with a very low space heating requirement, achieved through mainly passive measures



5 Key Elements



What is Passivhaus?

The result is also good indoor COMFORT – all by simply improving the build quality

- No draughts
- No condensation or mould
- No hot or cold radiant discomfort
- Whole house warm - no hypothermia
- Fuel Poverty eliminated
- Comfortable in summer
- Healthy - fresh air always, even if you shut the windows
- Quiet – thick insulation, airtight, triple glazing, silent ventilation



"The fire seems to be drawing well."

Passivhaus is a comfort standard

(It also just very energy efficient)

Airtightness	< 0.6 h ⁻¹ @ 50Pa (n50)	← Comfort
Surface temp (windows)	> 17°C	← Comfort
Summer Comfort	No more than 10% of year >25°C	← Comfort
Ventilation	~30 m ³ /hr.person	← Comfort
Space Heating	Heating demand <15 kWh/m ² yr @20°C or Peak heating Load <10 W/m ²	← Energy
Primary Energy Renewable	< 60 kWh/m ² yr	← Energy

What does 15kWh/m²yr look like?

100m² usable floor area
£0.10 per kWh utility cost

15 x 100 x 0.1 = £150

Annual cost to maintain the dwelling at 20°C

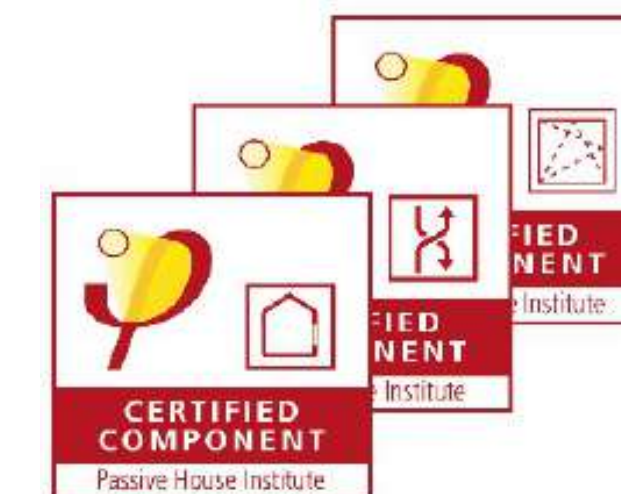
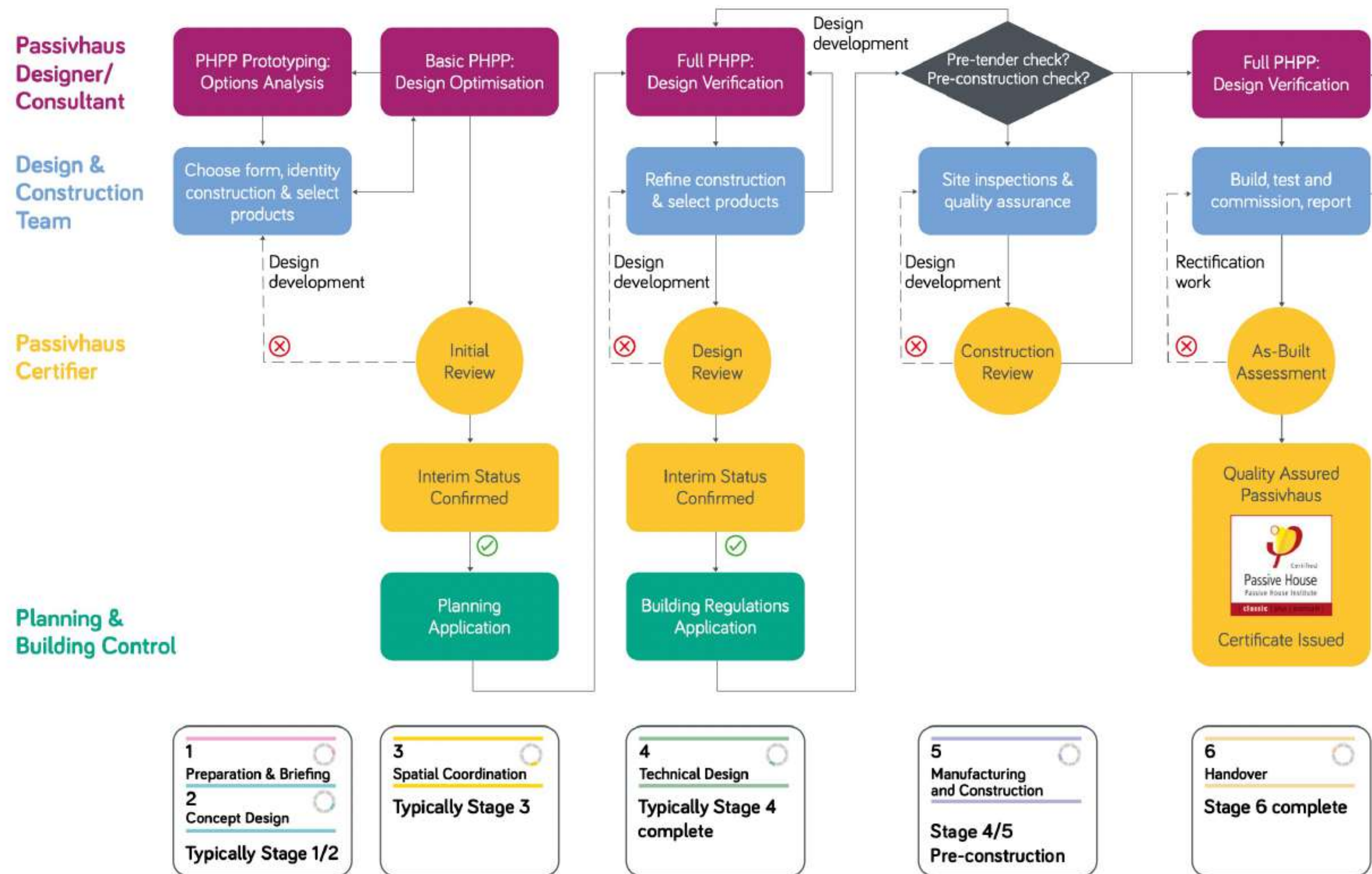
What is peak heat load?

How much heating power is needed to maintain 20°C on the coldest day of the year.

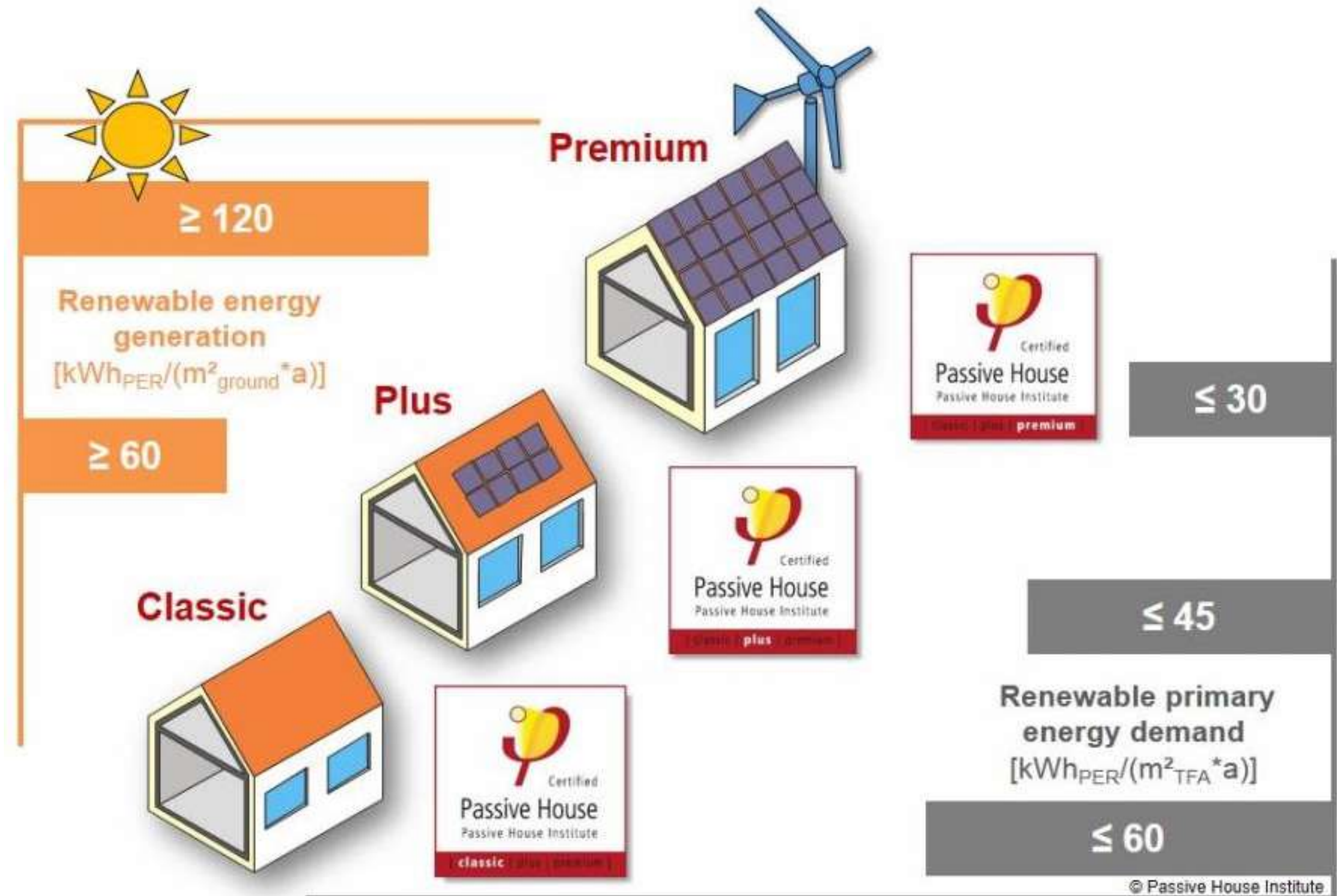
10 x 100 = 1000Watts

You could technically keep the house warm with a hair dryer

Passivhaus is Quality Assurance



Passivhaus New Build Standards



Passivhaus – Net Zero Hero?

← What about embodied carbon?

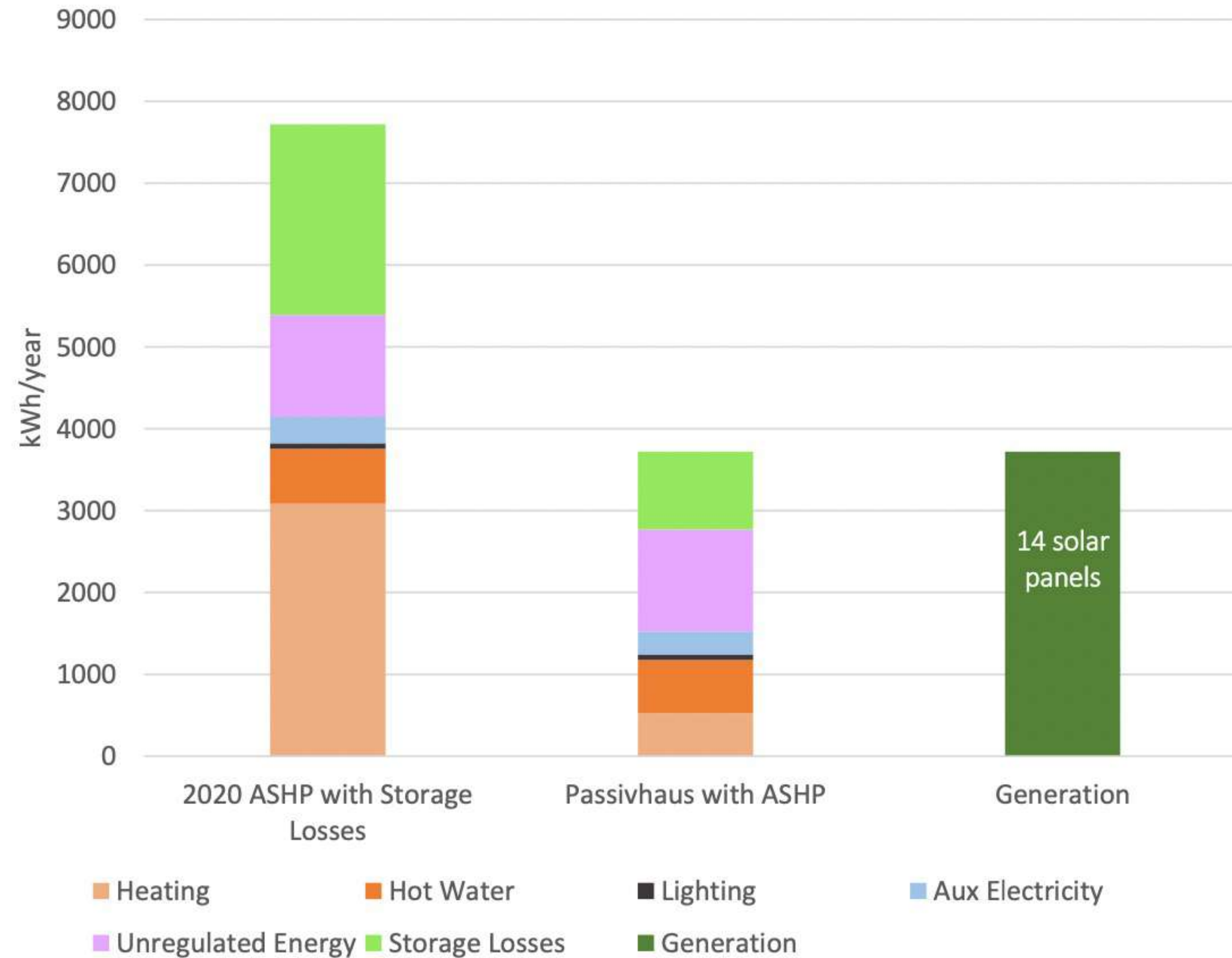
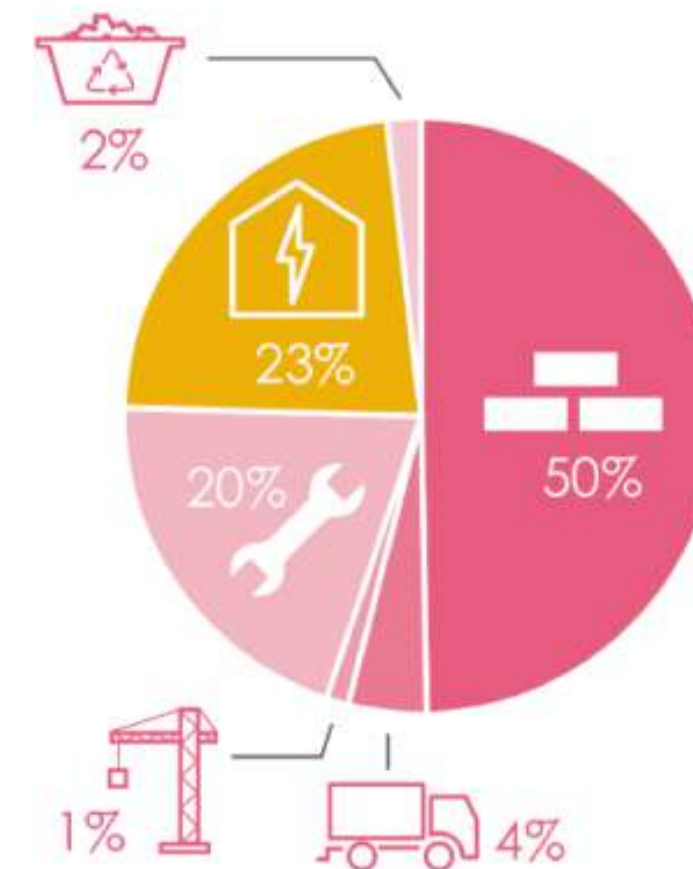
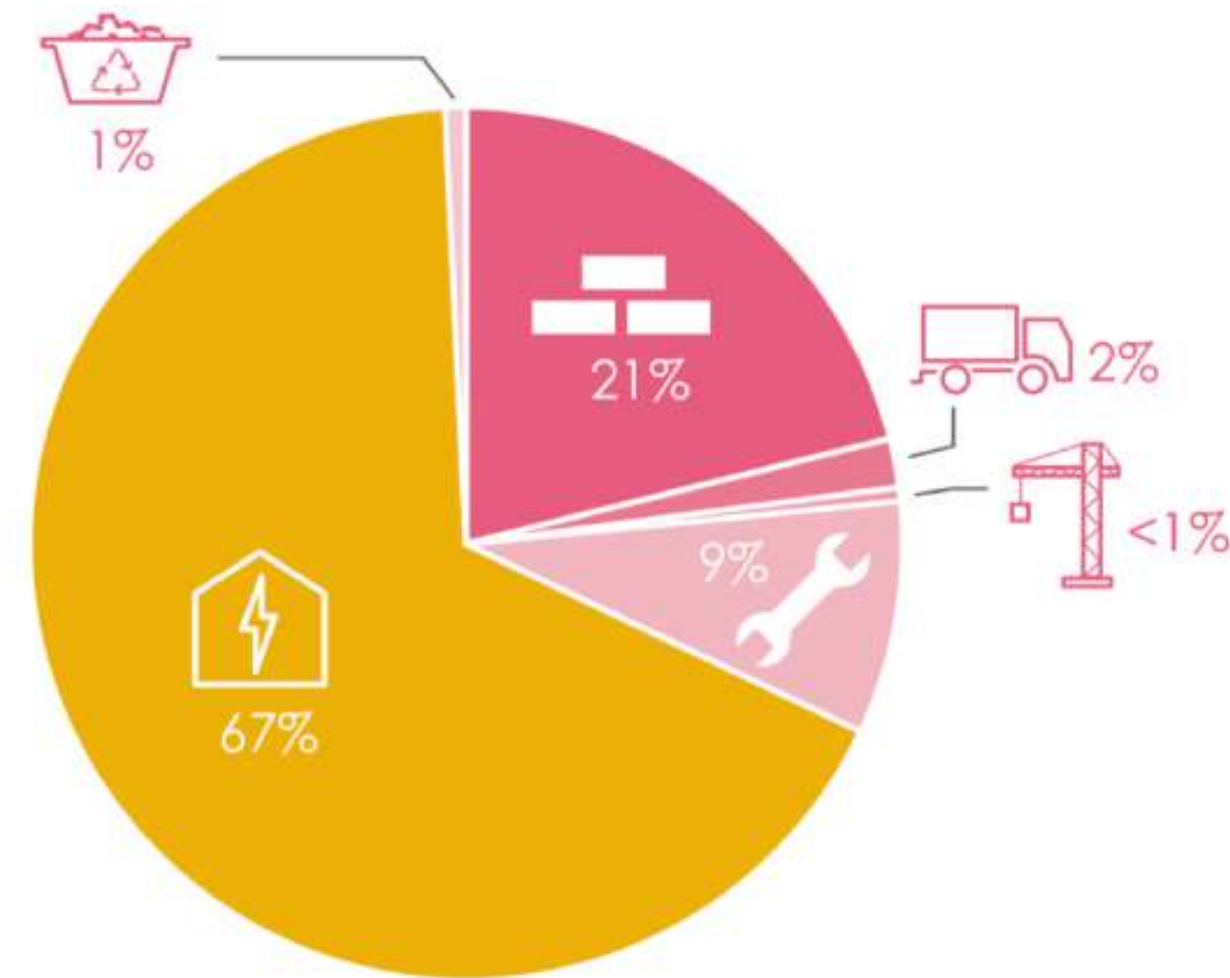


Figure 4 - Average new build energy demand vs Passivhaus

Why should we care about embodied carbon?



Why wait?



PASSIVHAUS MADE SIMPLE

COLDWELLS BUILD PASSIVHAUS:
PREDESIGNED, PREFABRICATED HOMES

CLARE BOOTH, COLDWELLS BUILD

PASSIVHAUS MADE SIMPLE

CUSTOM HOME CONTRACTORS

COLDWELLS
BUILD











AWARDS & PRESS



Wallpaper*

de
zeen

The
New York
Times

ELLE
DECORATION



arch
daily

HYPEBEAST

HOMES
& INTERIORS
SCOTLAND

LEIBAL

PASSIVHAUS MADE SIMPLE

CUSTOM HOME CHALLENGES

COLDWELLS
BUILD

DESIGNING TO BUDGET

DESIGN & PLANNING DELAYS

DECISION FATIGUE

UNPREDICTABLE BUILD PHASE

INEFFICIENT

PASSIVHAUS MADE SIMPLE

SIMPLIFY THE
SELF-BUILD PROCESS

COLDWELLS
BUILD

A COLLECTION OF TURNKEY,
DESIGN-DRIVEN HOMES

SIMPLIFY THE SELF-BUILD PROCESS

PREDESIGNED

FIXED PRICING → COST CERTAINTY

CURATED MATERIAL SELECTIONS

EFFICIENTLY EXECUTED USING
MODERN CONSTRUCTION METHODS

FAST ASSEMBLY TIMES

HEATING OUR HOMES
= 18% UK CO₂ EMISSIONS

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Environment Climate crisis Wildlife Energy

Opinion

This article is more than 2 years old

Britain's leaky homes make the energy crisis worse. Why have governments not fixed them?

Max Wakefield

Our housing stock needs better insulation and low-carbon heating, or we'll continue to suffer these shocks

Tue 28 Sep 2021 11.00 BST

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THE NEW STATESMAN

In this section

Chart of the Day | 14 January 2022

British homes among the worst insulated in Europe

In Britain the average home loses three degrees Celsius of indoor temperature after five hours.

By Ben Walker



GREENPEACE

Climate change | Article

UK homes are the biggest energy-wasters in Europe, but it didn't have to be this way

Stefano Gelmini
March 22, 2022



THE TIMES

UK World Comment Business & M

WEATHER EYE

Action on home insulation needs to hot up

Paul Simons
Wednesday April 20 2022, 12.01am, The Times

The government's recent new energy strategy outlined plans for increasing the UK's energy independence and cutting greenhouse-gas carbon emissions. One glaring omission



The Telegraph Log in

News Olympics Sport Business More

Cost of a badly insulated home to hit an extra £600 this year

Millions of draughty properties will fare the worst with energy bill payments

Jonathan Leake
1 April 2024 • 6:00am

43

Britain's failure to deal with its millions of draughty homes means many householders face up to £600 extra in annual gas and electricity bills, say energy analysts

PERFORMANCE GAP 60%

TRAINED BY:

Built
Environment
—
Smarter
Transformation



QUALIFIED:



PASSIVHAUS MADE SIMPLE

BENEFITS OF PASSIVHAUS

COLDWELLS
BUILD

- ➔ Performance Gap Virtually Eliminated
- ➔ 79% Less Heating Bills
- ➔ 40% Fewer Carbon Emissions
- ➔ Year-Round Comfortable Indoor Temperatures
- ➔ No Draughts, Damp, Mould Or Condensation
- ➔ 24/7 Ventilated Air

- ➔ Less Asthma, Hay Fever + Eczema Triggers
- ➔ 50% Less External Noise
- ➔ Less Maintenance Costs
- ➔ Higher Sales Value
- ➔ Future Proof, Ready For Net Zero In 2045

PASSIVHAUS MADE SIMPLE

COLDWELLS BUILD PASSIVHAUS:
ARGYLE

144M² • 4 BEDROOMS • BUNGALOW



COLDWELLS
BUILD



COLDWELLS
BUILD



COLDWELLS
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COLDWELLS
BUILD



COLDWELLS
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COLDWELLS BUILD PASSIVHAUS: BENEFITS



HEATING BILLS: ↓ 79%
CARBON EMISSIONS: ↓ 40%

TIME SAVING

STREAMLINED DELIVERY

**COLDWELLS BUILD:
FULLY FITTED, TURNKEY SOLUTION**

YOU BUILD:
SUPPLY & ASSEMBLE

HONEST, FIXED PRICING

FAST BUILD SPEEDS

DISCOUNTED SELF-BUILD MORTGAGES

PLOT FINDING MADE EASY



COLDWELLS
BUILD

PASSIVHAUS MADE SIMPLE

COLDWELLS BUILD PASSIVHAUS:
CONSTRUCTION

ROSS BOOTH, COLDWELLS BUILD

PASSIVHAUS MADE SIMPLE

TRADITIONAL
CONSTRUCTION CHALLENGES

COLDWELLS
BUILD

- ➔ Haul Huge Amounts of Materials to Site
- ➔ Unpredictable Weather Conditions
- ➔ Subcontractors Failing to Show up
- ➔ Material Delays

- ➔ Upset Neighbours
- ➔ Noise Restrictions
- ➔ Difficult Site Access
- ➔ Slow Going = Extra Hours, Money + Wasted Resources

PASSIVHAUS MADE SIMPLE

WHAT IS PREFABRICATION?

COLDWELLS
BUILD

- ➔ Efficient
- ➔ No Weather to Worry About
- ➔ Tasks Can be Done Simultaneously

- ➔ Deliver a Superior Product
- ➔ Less Construction Waste
- ➔ Improved Worker Safety

- ➔ Pre-Installed Insulation, Triple-Glazed Windows, Doors & Timber Cladding
- ➔ Cranes Lift Each Panel Into Place
- ➔ In Days, Your Home is Complete Externally
- ➔ Less Disruption to You and Your Neighbours
- ➔ Cleaner Building Site



COLDWELLS
BUILD

U-VALUE

WATTS-PER-METRE-SQUARE-KELVIN

(W/m^2K)

U-Value measures the rate of heat loss in a building element. It's measured in units of Watts-Per-Metre-Square-Kelvin (W/m^2K). Lower values indicate superior insulation. The closer to zero the better.

0.10 W/m².K
to 0.15 W/m².K

TYPICAL PASSIVHAUS U-VALUES

0.085 W/m².K
to 0.09 W/m².K

COLDWELLS BUILD PASSIVHAUS U-VALUES

DO PASSIVHAUS HOMES
COST MORE?

4% COST UPLIFT
FOR UK PROJECTS

- ➔ Performance Gap Virtually Eliminated
- ➔ 79% Less Heating Bills
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QUESTIONS?

EARLY-BIRD SIGN UP





COLDWELLS
BUILD

COLDWELLS
BUILD

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