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The new world of Net Zero Carbon.

Making it possible. The Net Zero Carbon challenge & opportunity.

ASHLEY BATESON

DESIGN, UNLEASHED

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Welcome.
Making it possible.
The Net Zero Carbon challenge & opportunity.

Facilitator
Andrew Bullmore
Partner

Presenter
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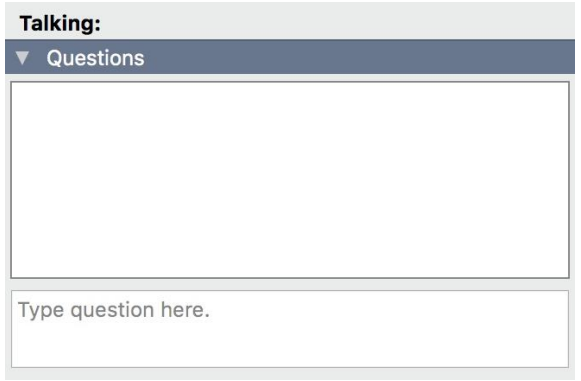

Any questions?
Use the panel provided.

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Presentation outline.

- Climate context.
- Zero carbon drivers.
- Defining net zero.
- Assessing whole life carbon.
- Offsets.

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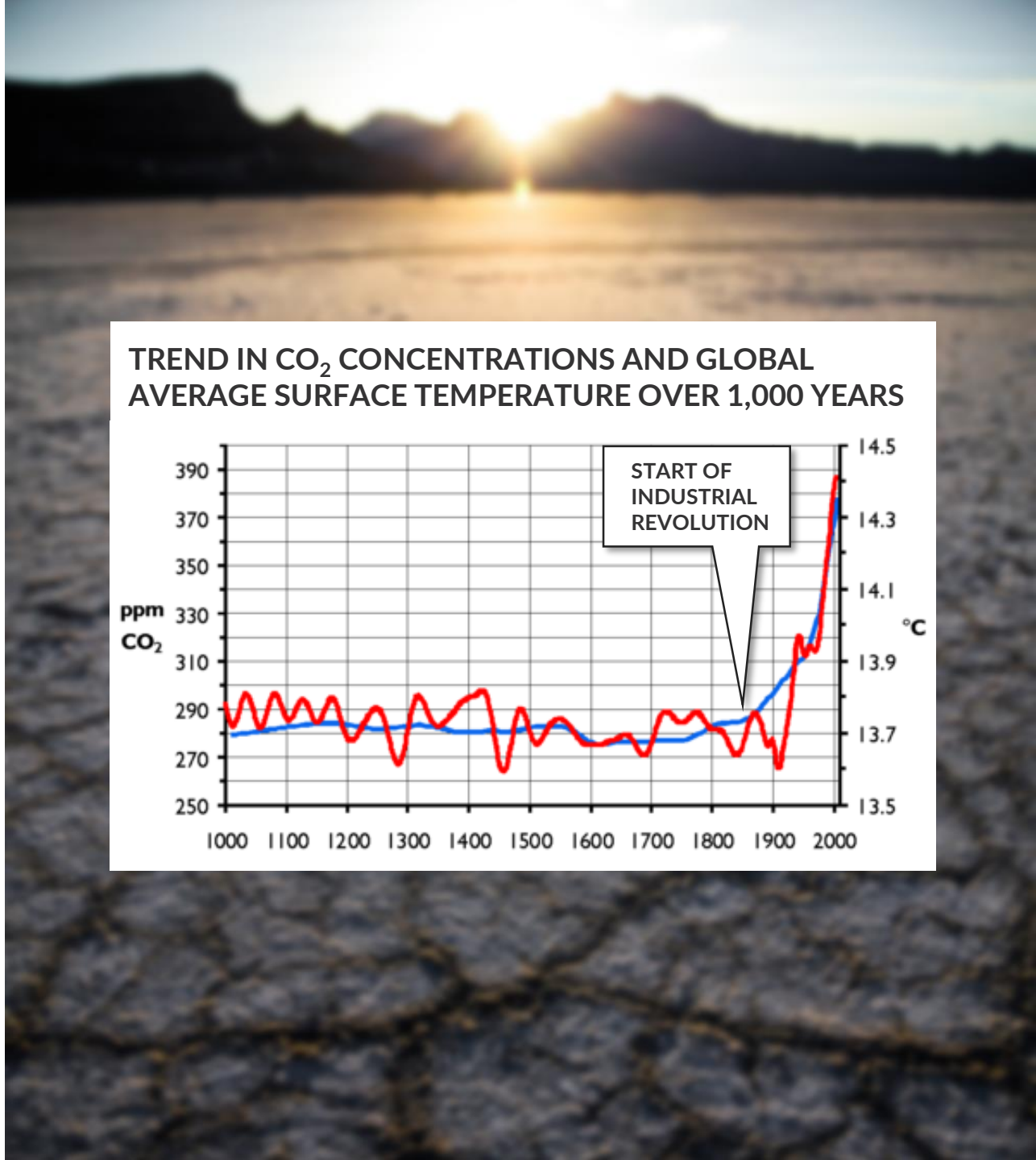
Global warming link to greenhouse gases.

- Greenhouse gas concentrations increased with the start of the industrial revolution (circa. 1850).
- The world is now already 1°C warmer than 150 years ago.
- Peak temperatures will increase in some regions more quickly.
- The frequency of extreme weather events is increasing.



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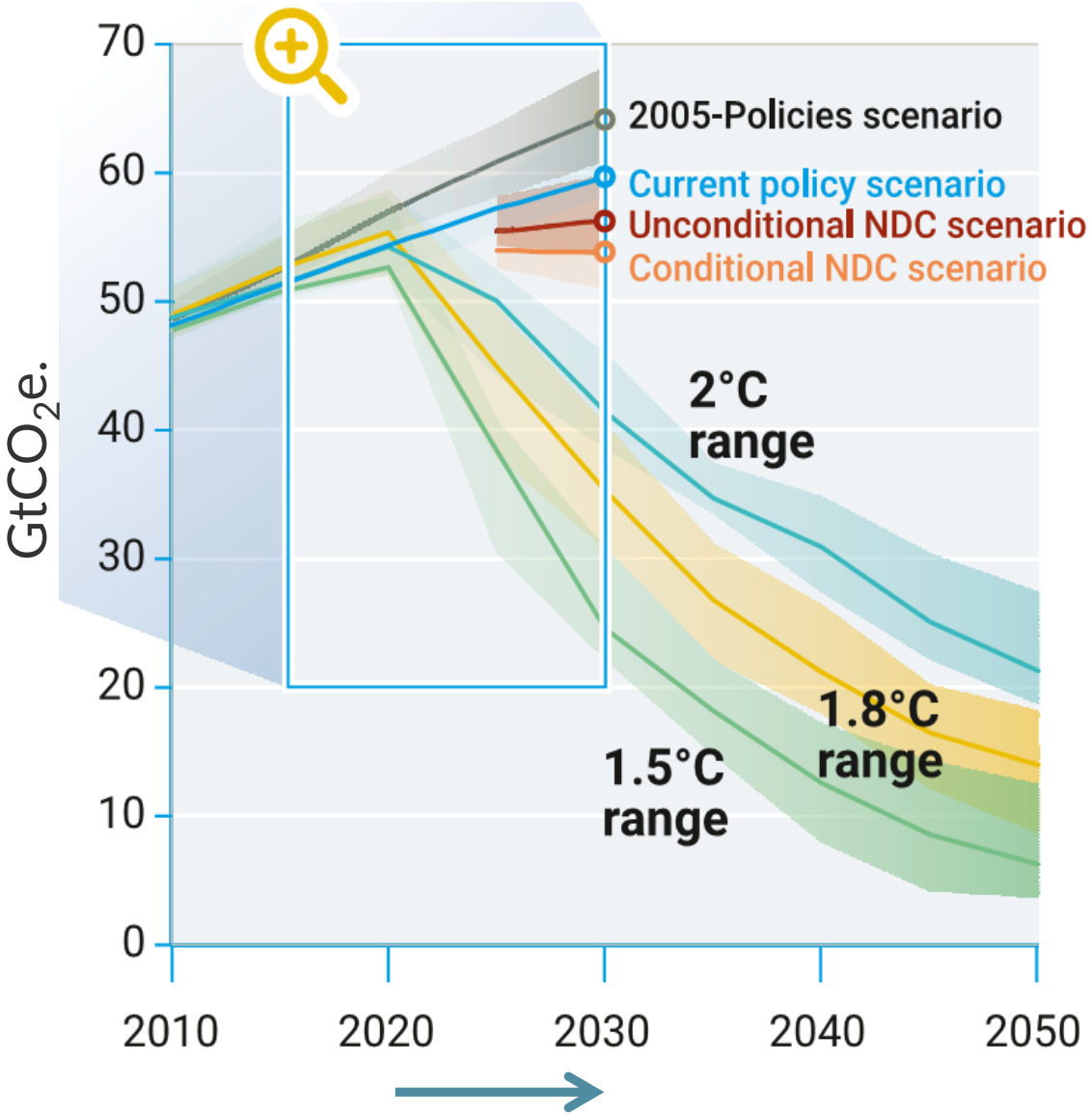
Paths to net zero.
The global challenge.

- Globally, most countries have declared nationally determined contributions (NDCs) to plan reductions in carbon emissions.
- The UN has identified that we need more policy commitments to limit climate change to 1.5°C (Paris Agreement target, set in 2015).
- There is a significant opportunity for business to demonstrate leadership.



Source: UN Emissions Gap Report, 2019

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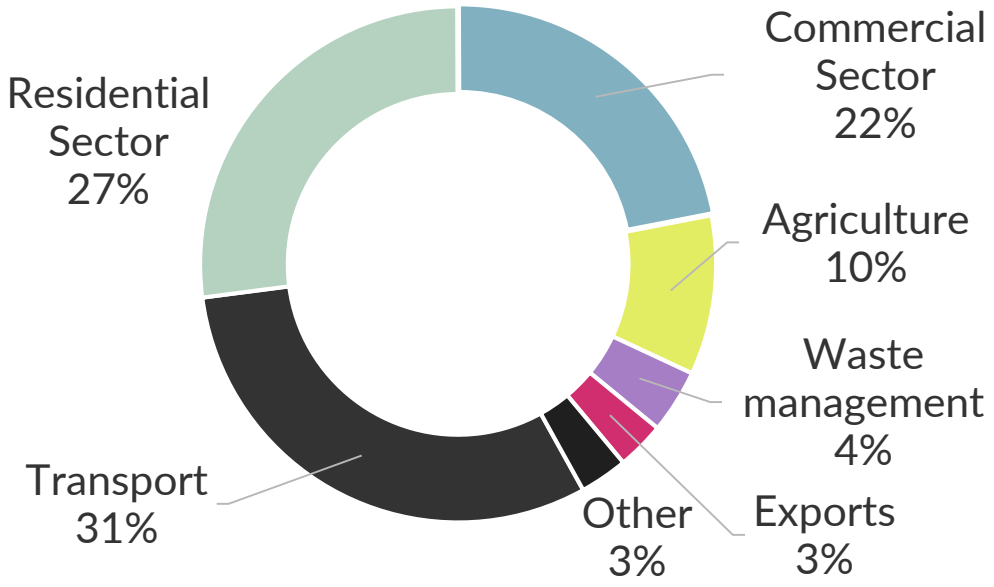
The built environment accounts for half of UK carbon emissions.



https://www.gov.uk/government/collections/final-uk-greenhouse-gas-emissions-national-statistics

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“I am convinced we continue to pollute because we are not fully informed of the consequences of our actions.”

GRETA THUNBERG
CLIMATE CHANGE ACTIVIST

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Zero Carbon.
Challenge and opportunity.

Mark Carney, Former Governor of Bank of England

Companies and industries that are not moving towards zero-carbon emissions will be punished by investors and go bankrupt.

"There will be industries, sectors and firms that do very well during this process because they will be part of the solution,"

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Carbon performance.
Emerging drivers.

Mandatory drivers.

- Building regulations.
- Planning policies.
- Minimum Energy Efficiency Standards (MEES).

Investor drivers.

- Corporate responsibility; carbon reporting.
- UN Sustainable Development Goals.
- GRESB (Global Real Estate Sustainability Benchmark); GRI (Global Reporting Initiative); Science Based Targets; Better Building Partnership (BBP) Climate Commitment.
- Sustainable finance / Green loans, etc.

GRESB®

BBP | BETTER BUILDINGS PARTNERSHIP

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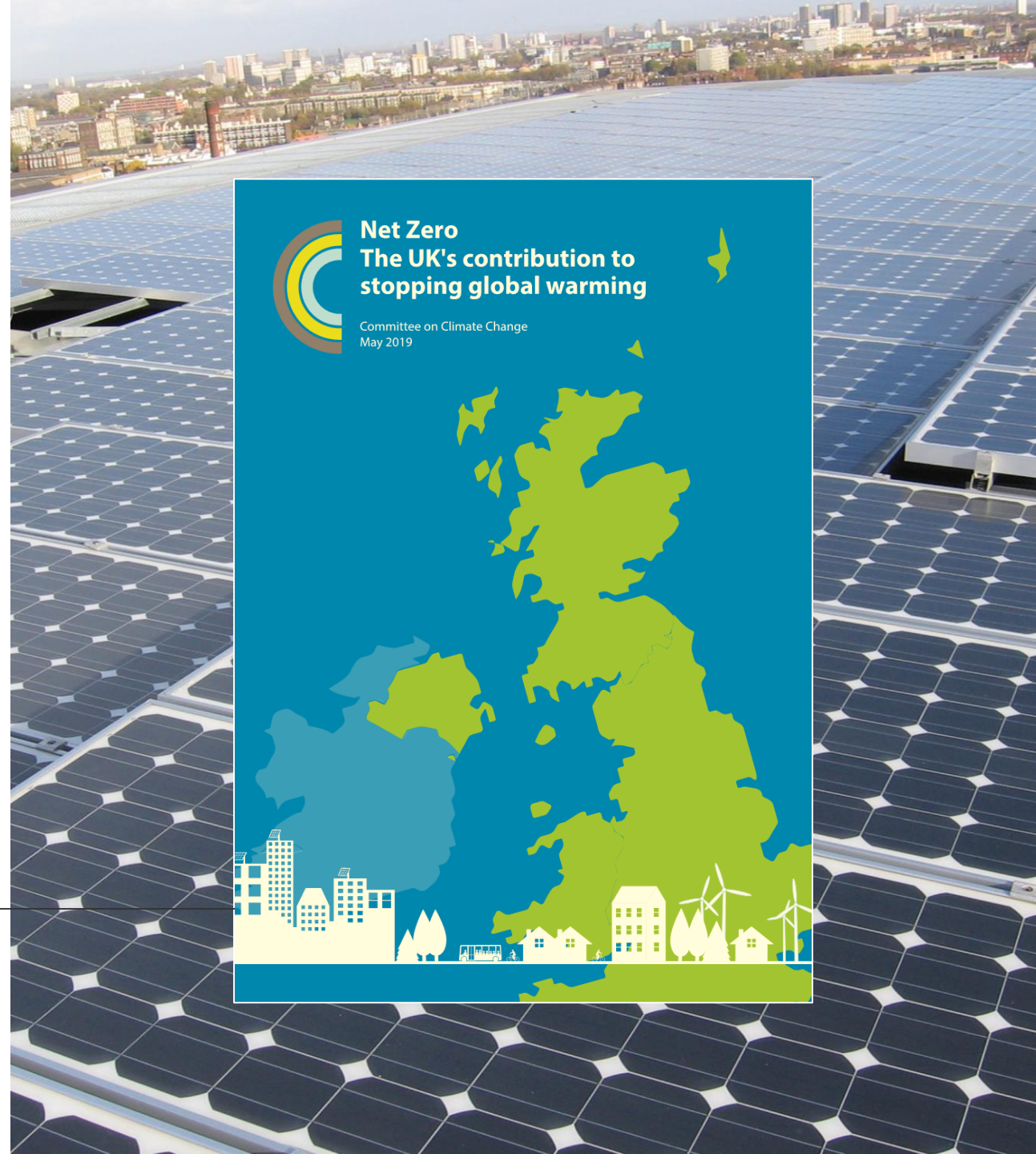
UK policy context.

- UK has made a legal commitment to achieve net zero territorial carbon emissions (by 2050).
- Building regulations expected to become more stringent (likely 2020 and 2025).
- New carbon factors to be used in building regulation compliance assessments.

COMMITTEE ON CLIMATE CHANGE REPORT RECOMMENDING 2050 NET ZERO CARBON TARGET



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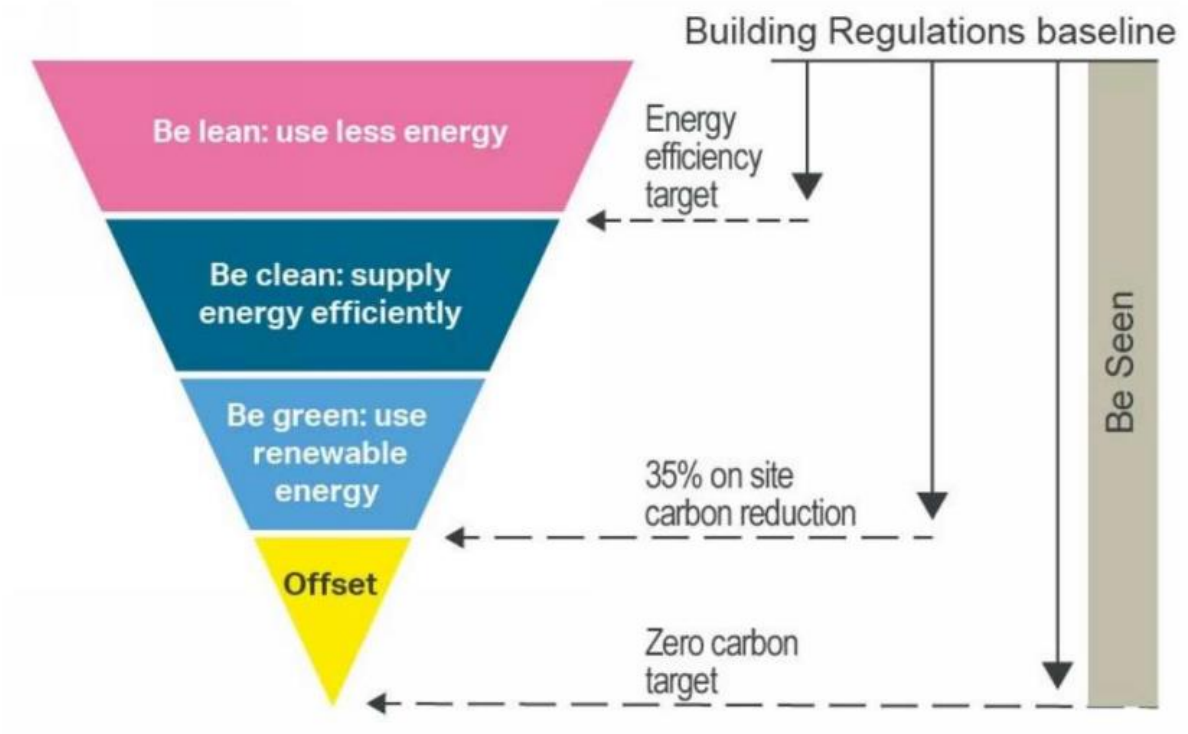
London Plan.
Net zero policy.

- Need to include information on how the building's actual energy performance will be monitored post-construction and declared on the GLA's online platform.
- New 'Be seen requirement' for declaring energy performance.
- Proposal for 'Whole Life-Cycle Carbon Assessments'.
- Proposal for 'Circular Economy Statements'.

The London Plan energy hierarchy



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Targeting zero.
Adding value and resilience.

13 JULY 2020

Enough Greenwashing — We Need To Show Which Buildings Are Really Sustainable

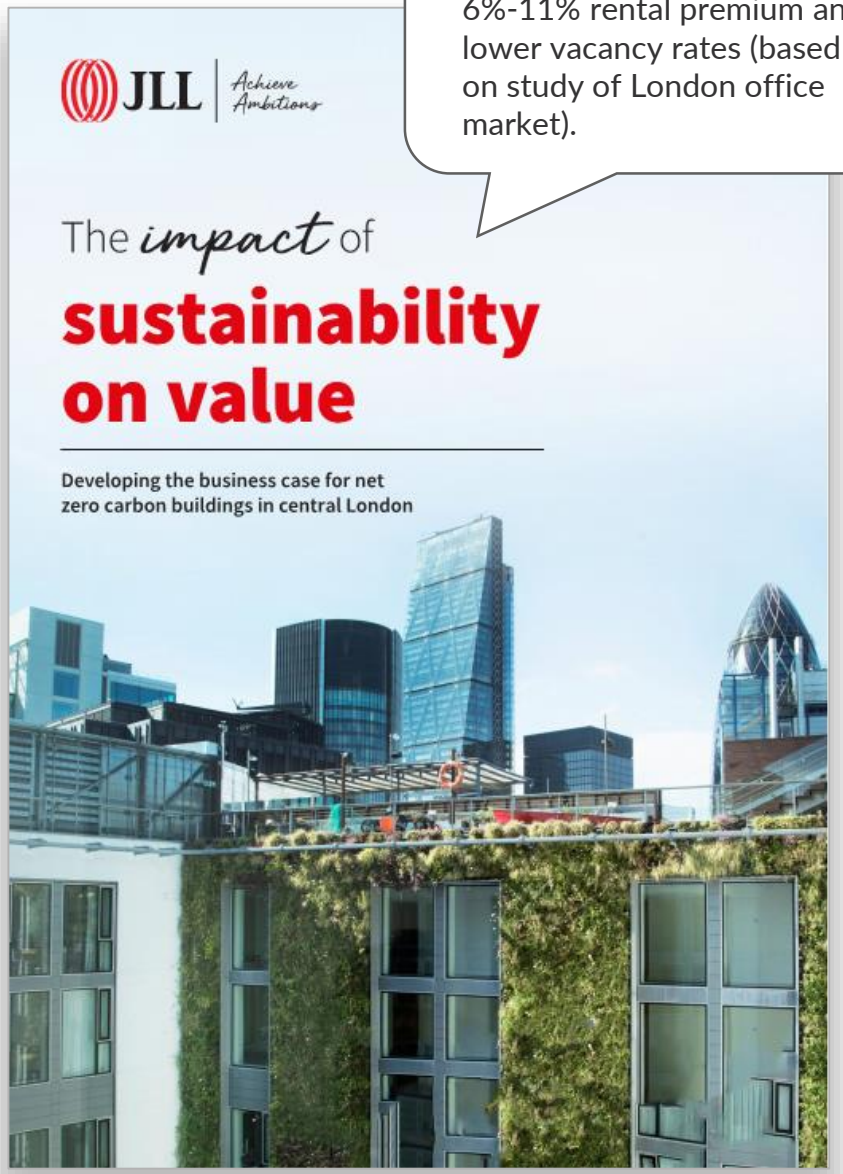
Tor Burrows, Director of Sustainability & Innovation for Grosvenor Britain & Ireland shared an article with Bisnow discussing the need to "walk the walk" in delivering energy reduction and sustainable design.

Landsec

Working towards net zero carbon

A Net Zero NHS

Sustainable buildings have 6%-11% rental premium and lower vacancy rates (based on study of London office market).

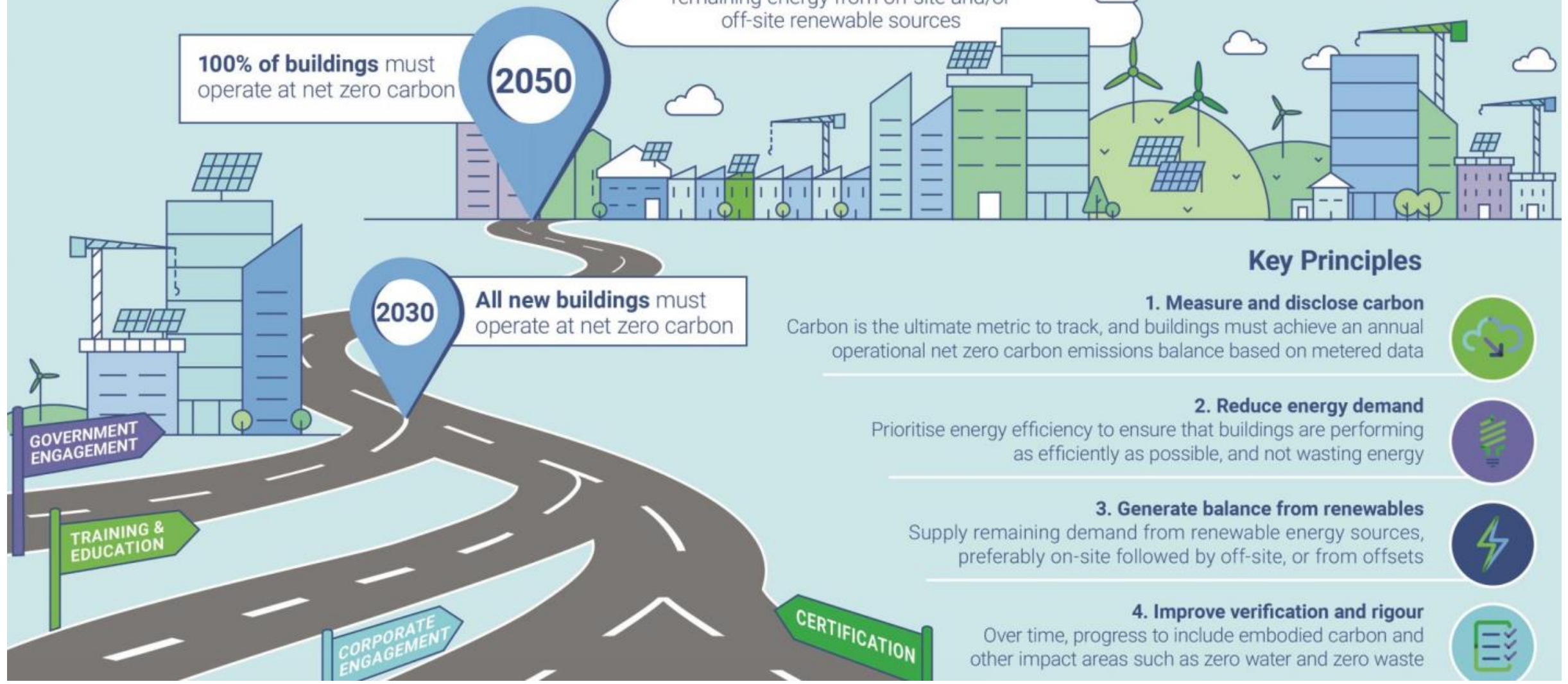


Advancing Net Zero

A World Green Building Council global project

WorldGBC definition:
A net zero carbon building is highly energy efficient with all remaining energy from on-site and/or off-site renewable sources

WORLD GREEN BUILDING COUNCIL



Key Principles

1. Measure and disclose carbon
Carbon is the ultimate metric to track, and buildings must achieve an annual operational net zero carbon emissions balance based on metered data

2. Reduce energy demand
Prioritise energy efficiency to ensure that buildings are performing as efficiently as possible, and not wasting energy

3. Generate balance from renewables
Supply remaining demand from renewable energy sources, preferably on-site followed by off-site, or from offsets

4. Improve verification and rigour
Over time, progress to include embodied carbon and other impact areas such as zero water and zero waste

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Achieving net zero in operation.
Balancing onsite/ offsite emissions.

Carbon emissions from gas and power.

Carbon emissions reduced by onsite renewable energy.

Carbon emissions reduced by offsite renewable energy (i.e. offset)

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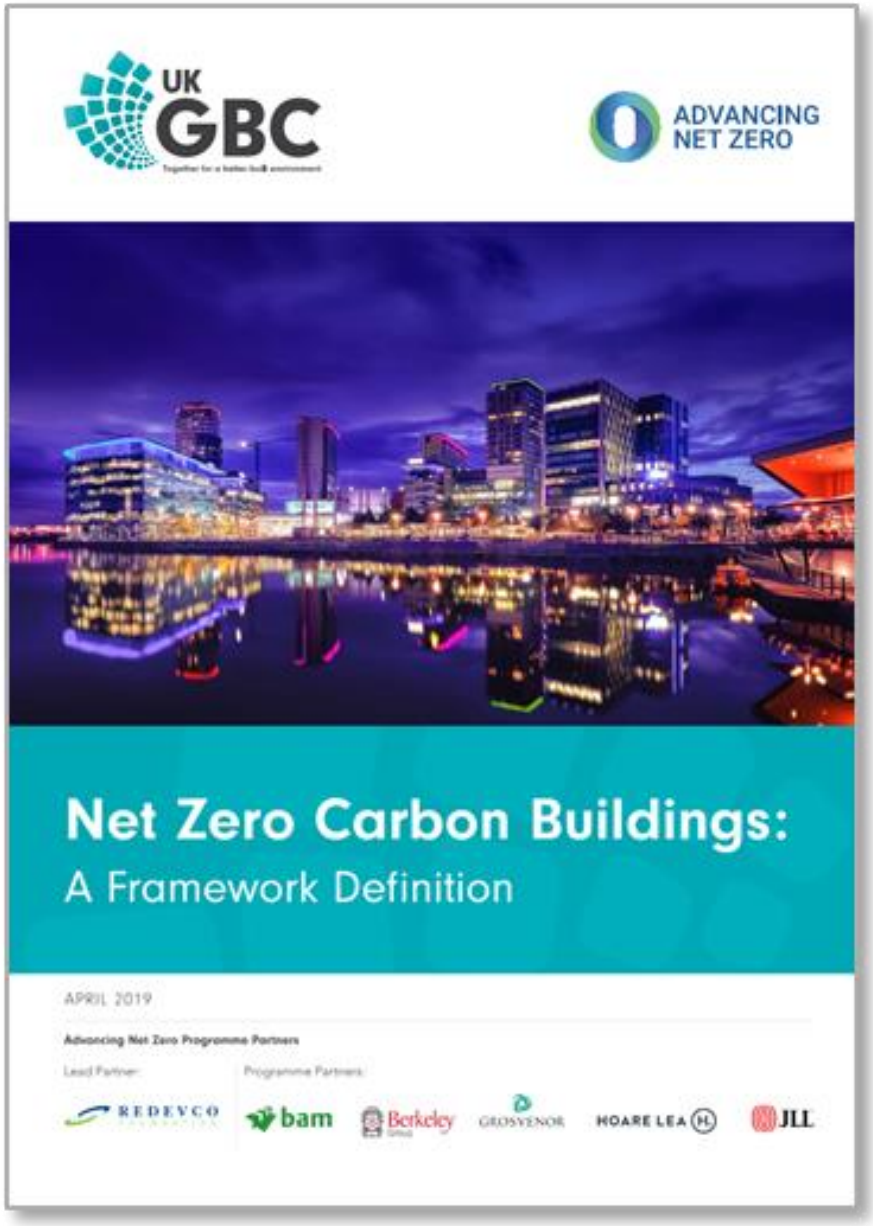
UK-GBC.
Advancing Net Zero.

- Hoare Lea are sponsors and steering group partners for the UK-GBC Advancing Net Zero programme.
- Advocating all **new buildings** to be net zero carbon in operation by 2030.

https://www.ukgbc.org/ukgbc-work/advancing-net-zero/



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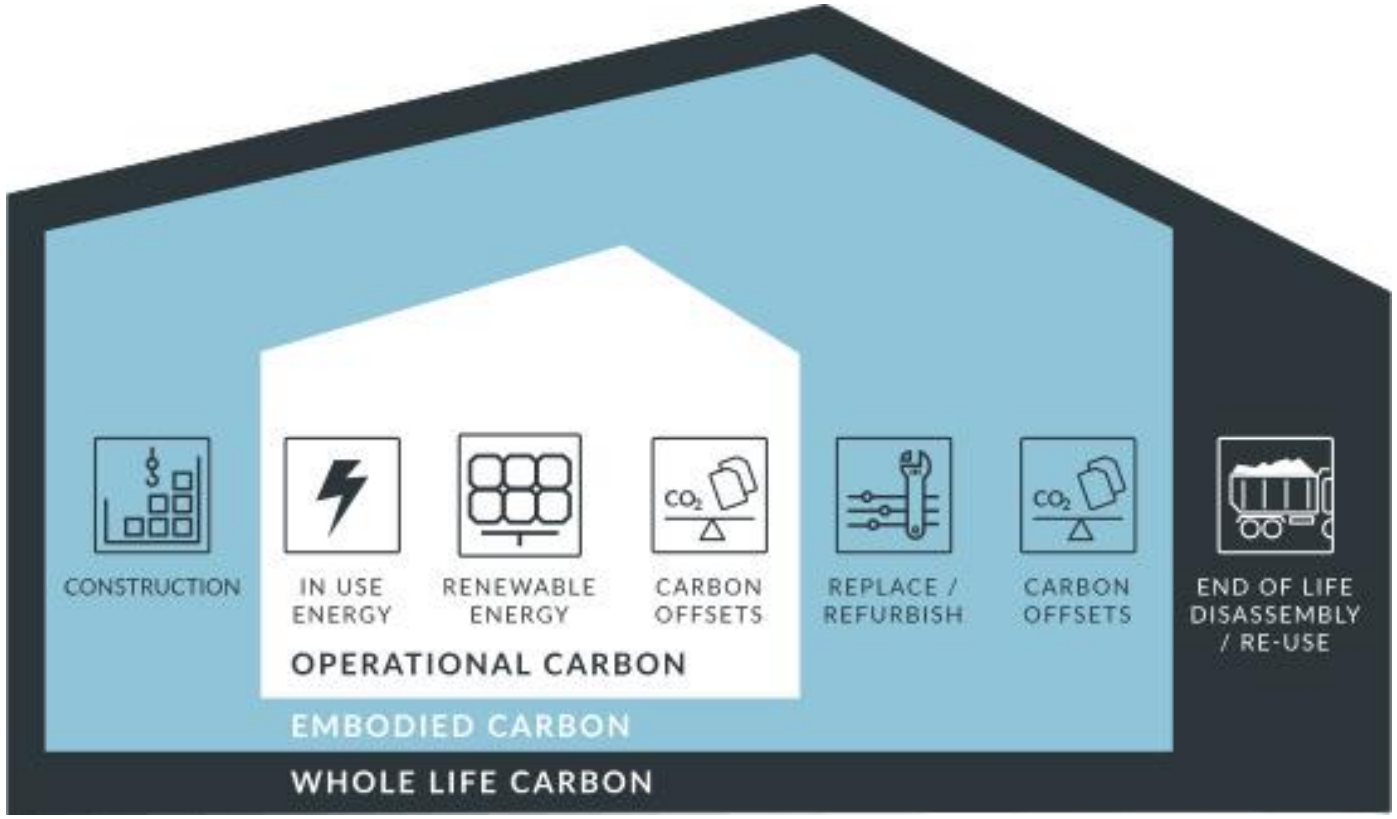
What is zero carbon development?
Defining the scope.

UK-GBC framework defines two potential targets for net zero carbon:

- Net zero carbon in construction (embodied)
- Net zero carbon in operation

Whole Life Carbon includes embodied and operational carbon emissions.

- Remaining carbon emissions to be offset.



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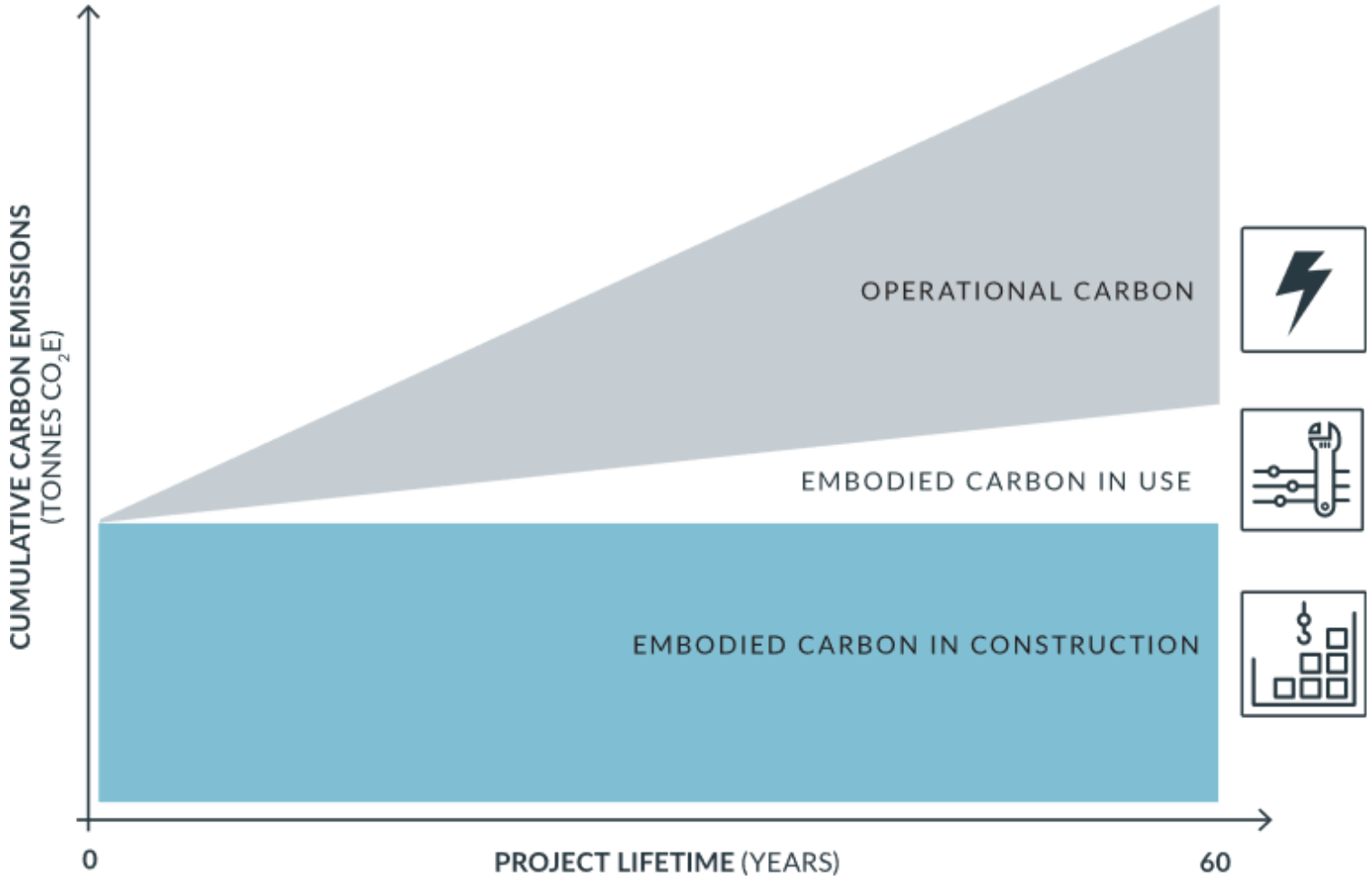
Net Zero Carbon.
Whole life assessment.

Cumulative carbon emissions.

Typical 60-year whole life assessment.



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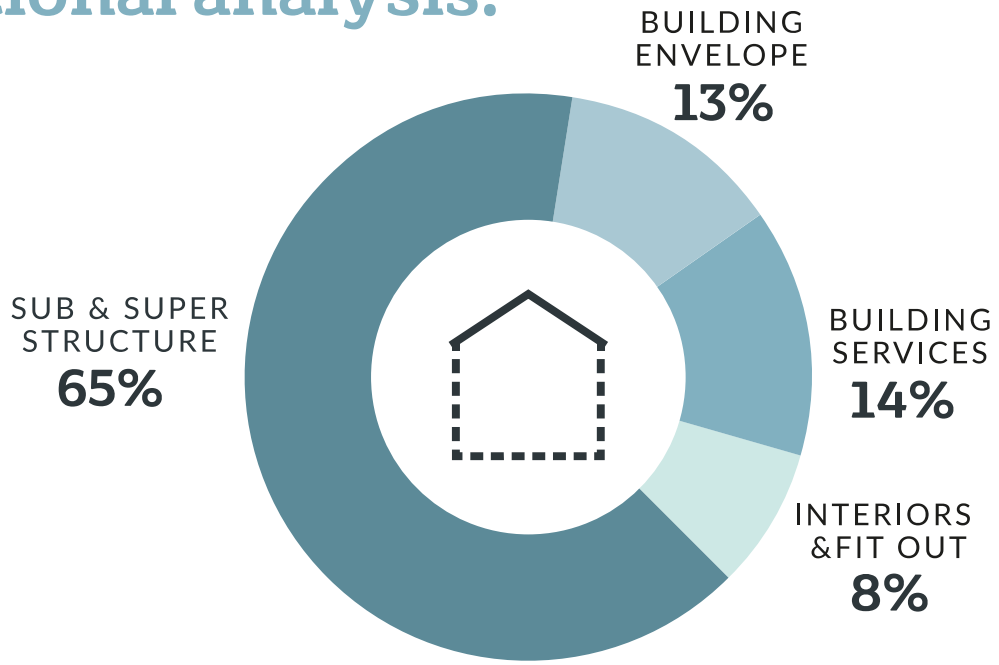
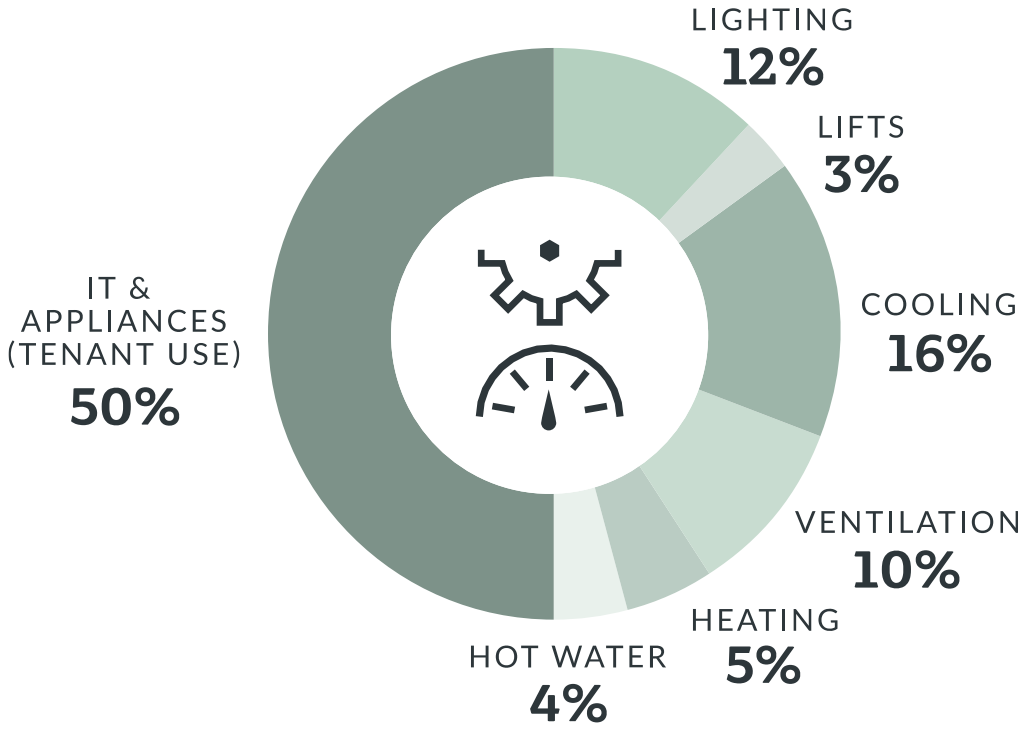
Net Zero Carbon.
Embodied and operational analysis.



Embodied carbon



Operational carbon

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Getting to zero in operation.

Follow the energy hierarchy.

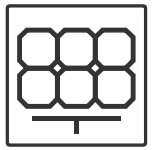
1. ASSESS
Energy & carbon baseline

Assess baseline energy use; compare with benchmarks/ targets.

2. REDUCE
Optimisation & upgrade

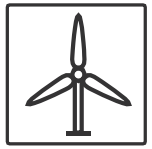
Design efficient systems; optimise performance.

3. GENERATE
Onsite options



Incorporate opportunities for generating renewable energy onsite.

4. SOURCE
Offsite options



Purchase green energy to supply the building (e.g. 100% renewable electricity contracts).

5. OFFSET
Displace remaining

Invest in carbon offsets, such as afforestation/ local carbon displacement projects.

VERIFY NET ZERO CARBON
Declare outcomes and monitor

Monitor and declare outcomes.

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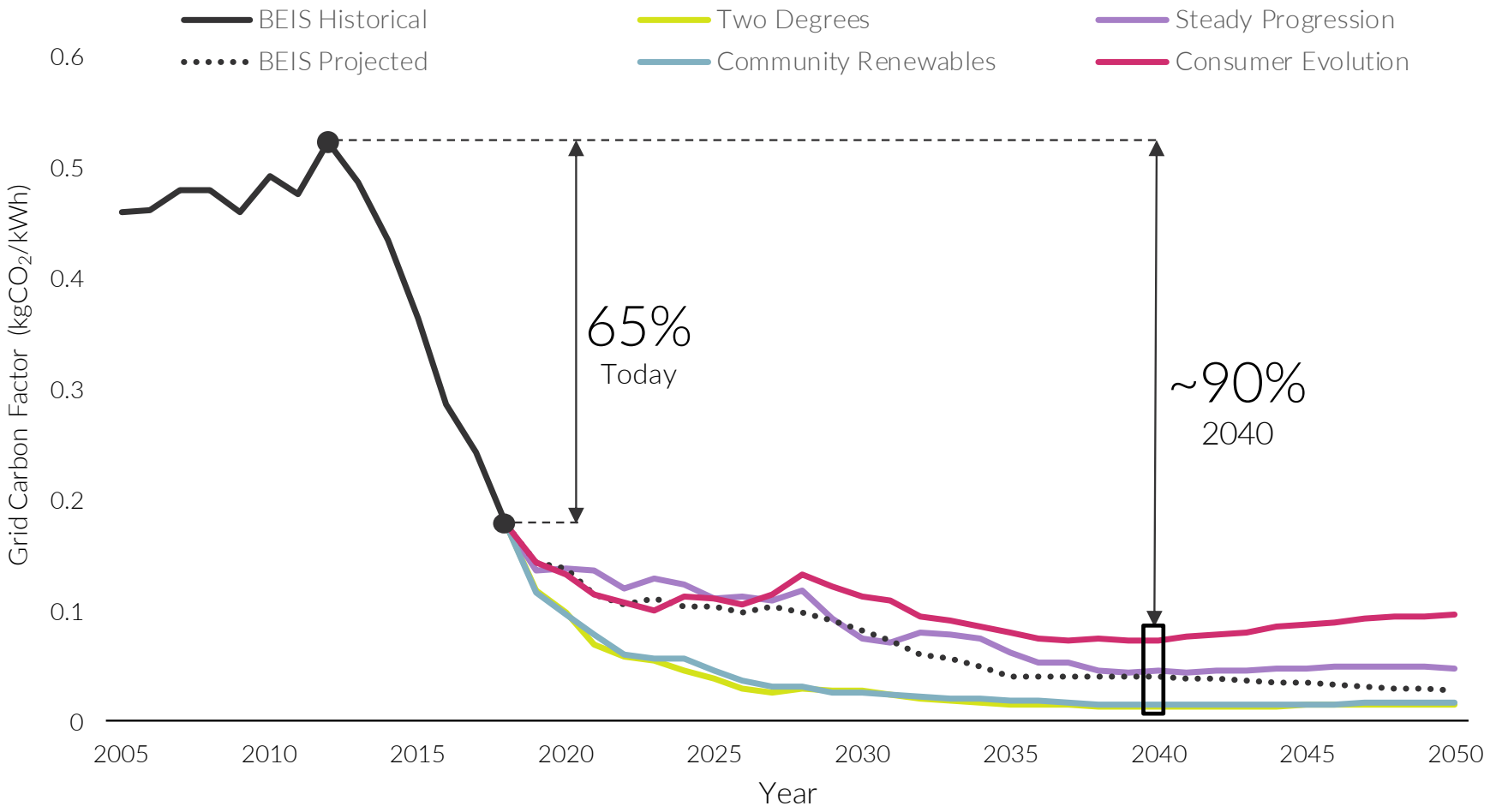
Grid decarbonisation.

Grid decarbonisation means heat pumps are now more carbon efficient than gas-boilers.

Government proposing to ban gas-heating in new homes from 2025.

Current building regulation carbon factors are out of date.



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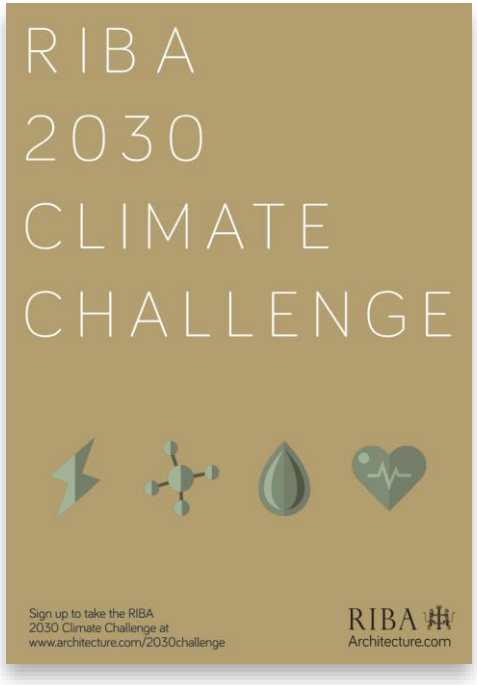
Zero Carbon – energy intensity targets.
Industry guidance for new development.



RIBA, 2019

UKGBC, 2020

LETI, 2020

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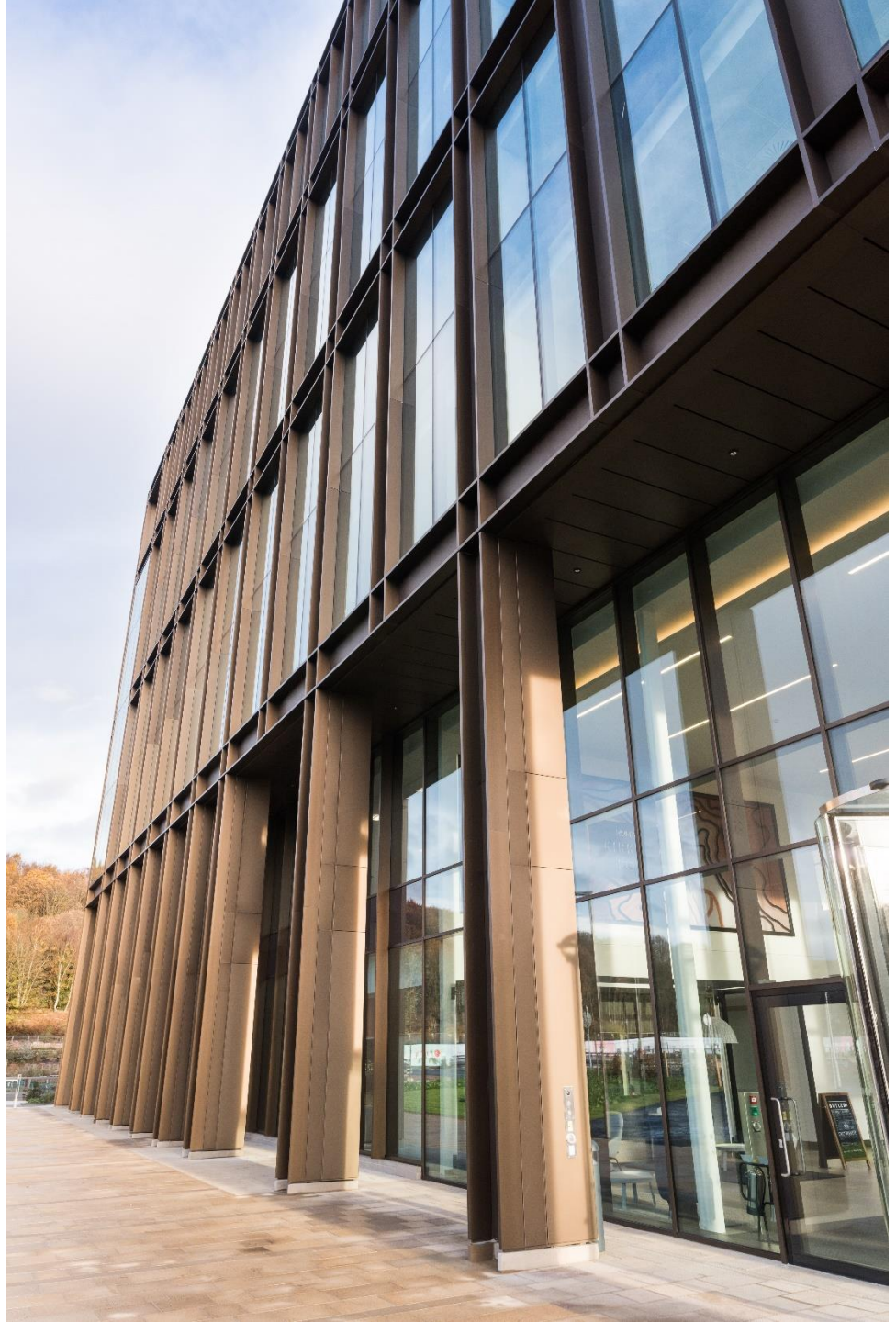
Energy intensity targets.

Progressive reductions in energy use proposed for new buildings.

The targets are for ‘total’ energy use in new buildings, to be verified during occupation.

Building type	Energy performance targets: kWh/m2 (GIA)				
	Baseline	2020	2025	2030	Paris proof/ climate proof target
Residential*	146	105	70	35	35
Offices**	225*	130	90	70	55

Sources:
* RIBA 2030 Climate Challenge ** UKGBC Energy Performance Targets for Offices



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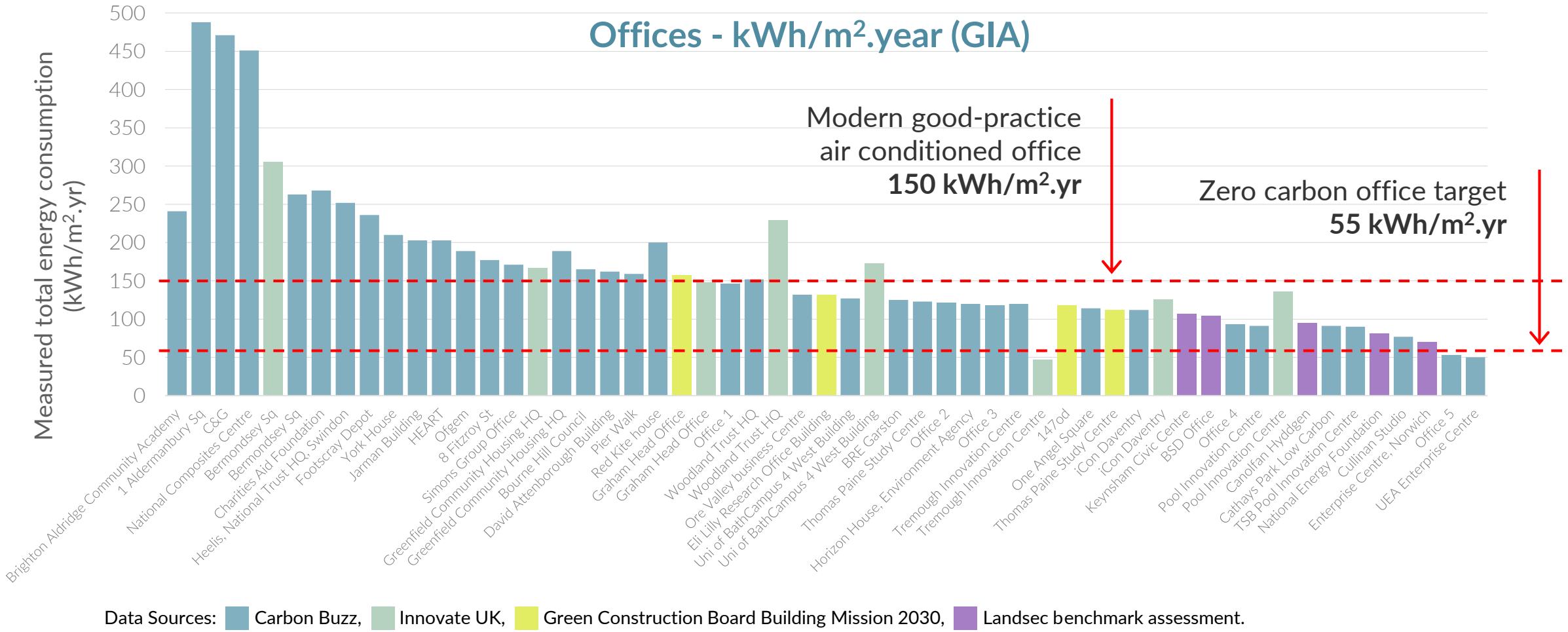
Office buildings – evidence review of measured energy.



Data Sources: Carbon Buzz, Innovate UK, Green Construction Board Building Mission 2030, Landsec benchmark assessment.

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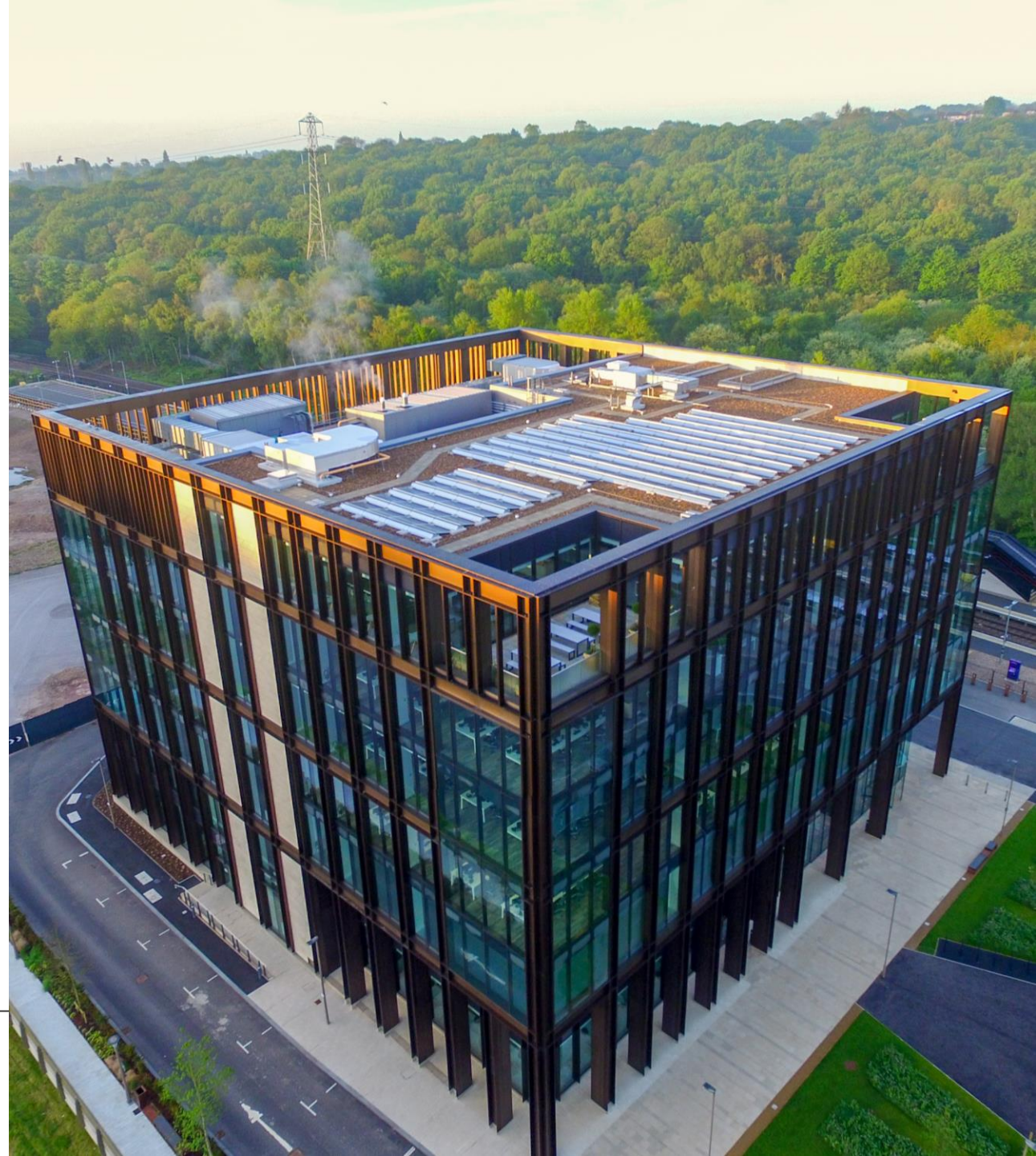
Operational carbon.
Design priorities.

- Optimise façade performance.
- Mixed mode ventilation.
- Heating/ cooling efficiency.
- Daylight/ lighting efficiency.
- Intelligent controls.
- Full testing and commissioning.
- Verify performance / post occupancy evaluation.



NUMBER ONE,
KIRKSTALL FORGE, LEEDS

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The final step in net zero - carbon offset options.

Peatland restoration

Afforestation

Retrofits

Off-site solar-PV

Wind farms

Green Finance

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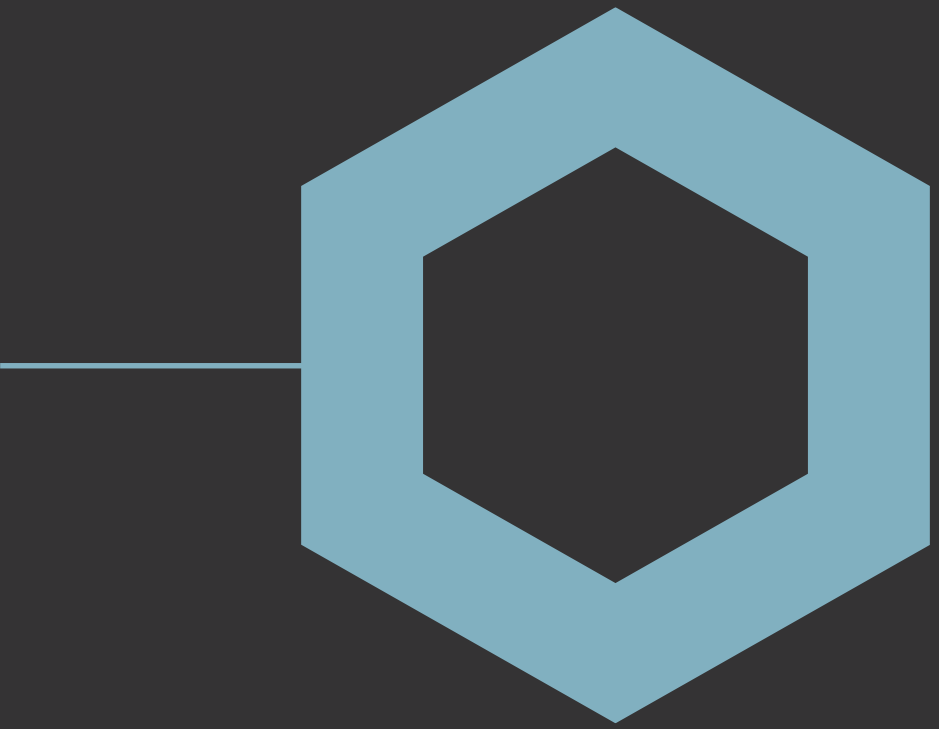

Thank you.
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