RIBA 2030 Climate Challenge

Version 2 (2021)

www.architecture.com/2030challenge

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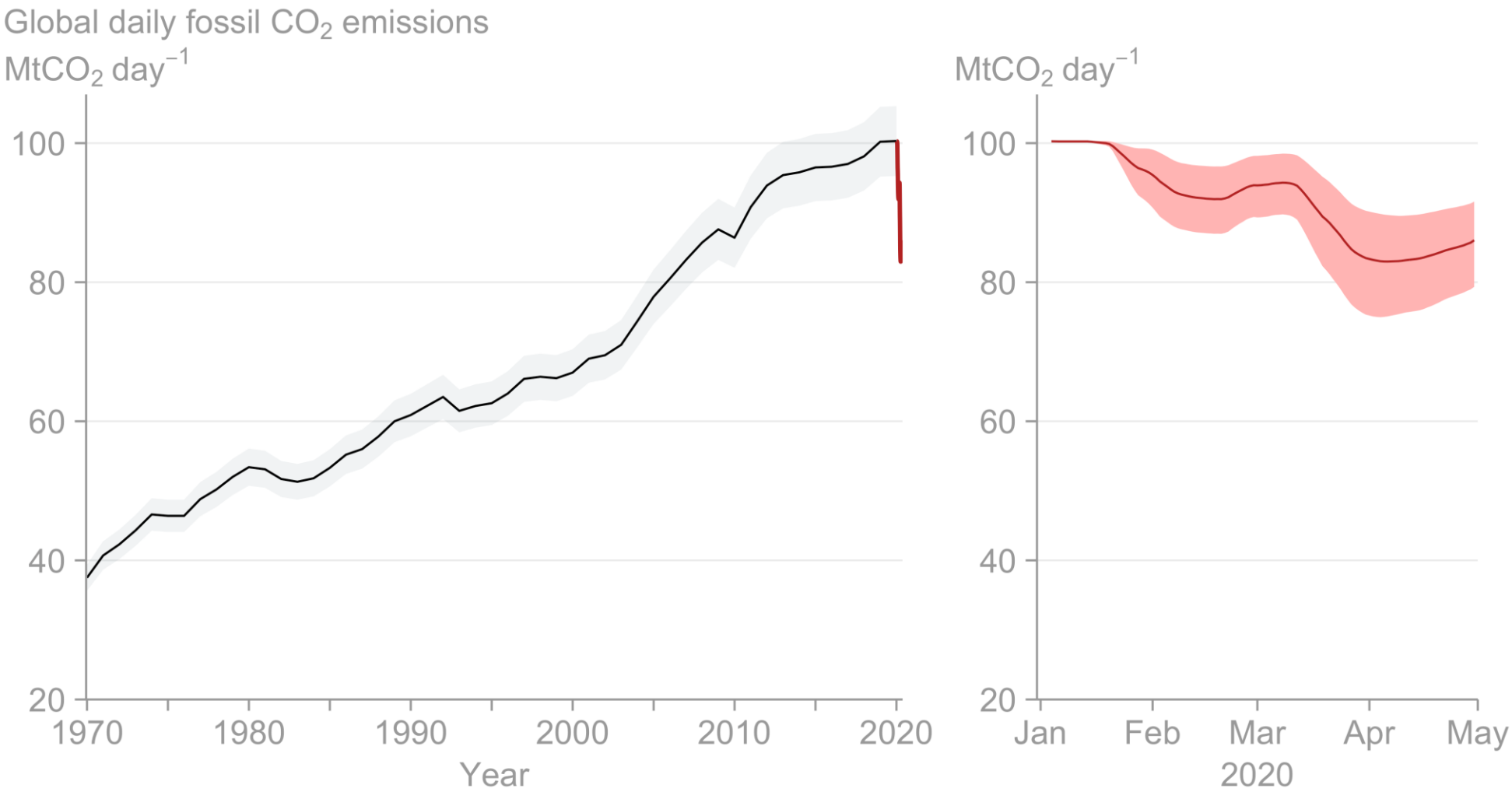
Global CO_2 Emissions



1/4 from use of buildings

1/10 from construction

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RIBA Climate Change Resolution

RIBA joined the declaration of an environment and climate emergency and confirmed support for the UK government's commitment to put into legislation the UKCCC recommendation for a UK 2050 net zero greenhouse gas emissions target.

June 2019

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UN Sustainable Development Goals

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UN Sustainable Development Goals – Buildings

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RIBA Sustainable Outcomes

- Good Health and Well-being
- Sustainable Water Cycle
- Net Zero Operational Carbon Emissions
- Sustainable Life Cycle Cost
- Sustainable Connectivity and Transport
- Sustainable Communities and Social Value
- Net Zero Embodied Carbon Emissions
- *Whole Life Carbon Emissions*
- Sustainable Land-use and ecology

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RIBA Sustainable Outcomes Metrics

1 Net Zero Operational Energy/Carbon - *kWh/m2/y, kgCO2e/m2/y*
CIBSE TM54, Passivhaus, Living Building Challenge

2 Net Zero Embodied Carbon - *$kgCO_2e/m^2$*
RICS Whole Life Carbon, BREEAM, Living Building Challenge

3 Sustainable Water Cycle - *litres/person/day*
Living Building Challenge, BREEAM Water

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4 Sustainable Connectivity and Local Transport- *$kgCO_2e/km/p/y$*
BREEAM Transport

5 Sustainable Land-use and Ecology - *various metrics*
Living Building Challenge, BREEAM Bio-diversity

6 Good Health & Wellbeing - *various metrics*
BREEAM, Well building Standard- light, air, water, noise, overheating

7 Sustainable Communities and Social Value - *various metrics*
Living building Standard, BREEAM, Well building Standard, RIBA Social Value Toolkit

8 Sustainable Life Cycle Cost - *$£/m^2$*
ICMS Whole Life Cost

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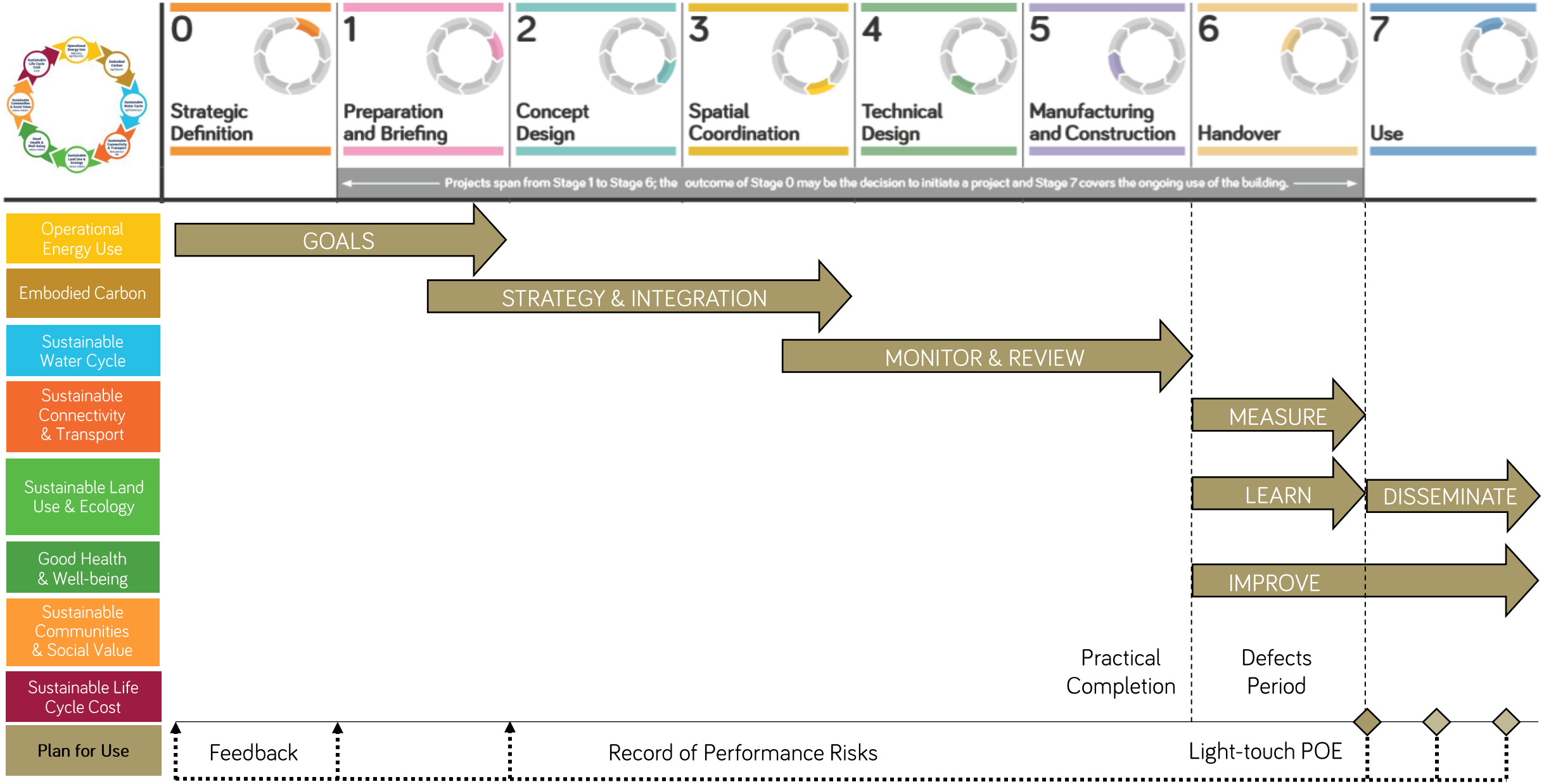
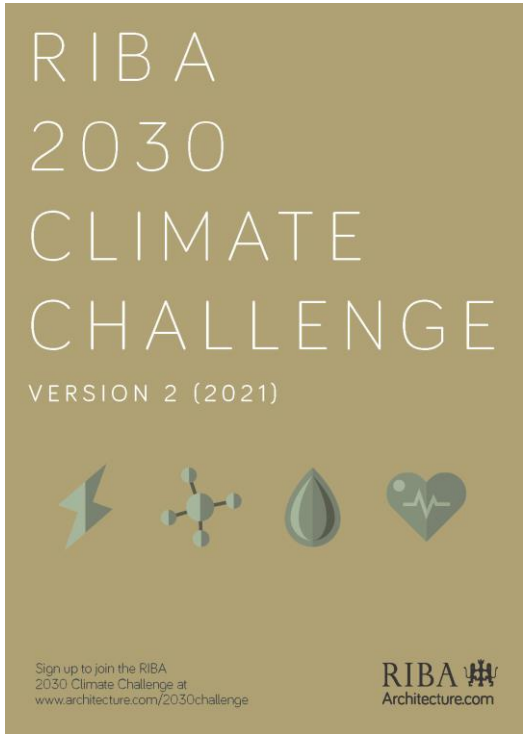
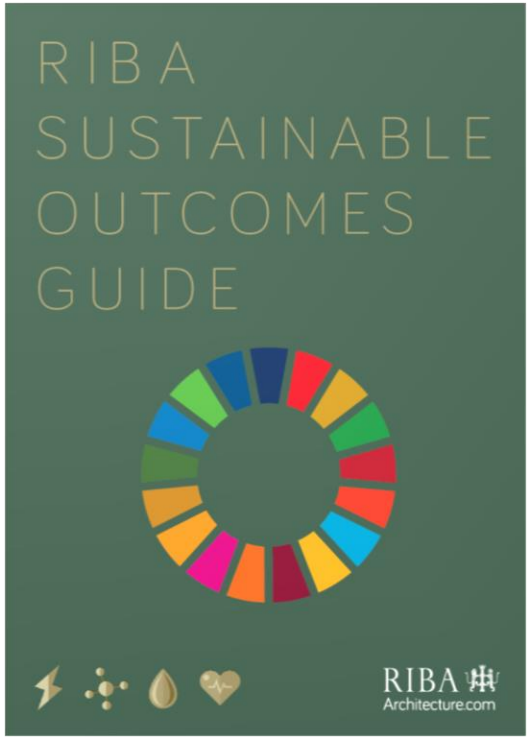
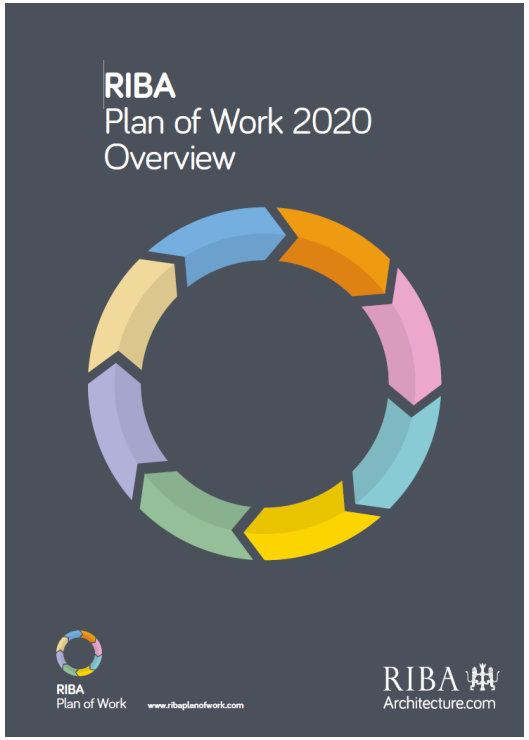
RIBA Sustainable Outcomes – Plan of Work 2020

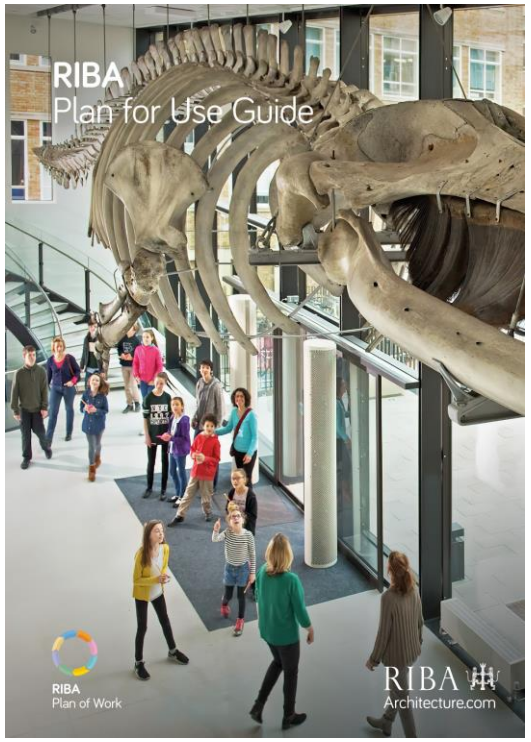


RIBA Sustainable Outcomes – Suite of Guidance









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Target Setting

Operational Energy – $kWh/m^2/y$
Embodied Carbon – $kgCO_2e/m^2$
Water Use – litres/person/day
Health and Wellbeing – various

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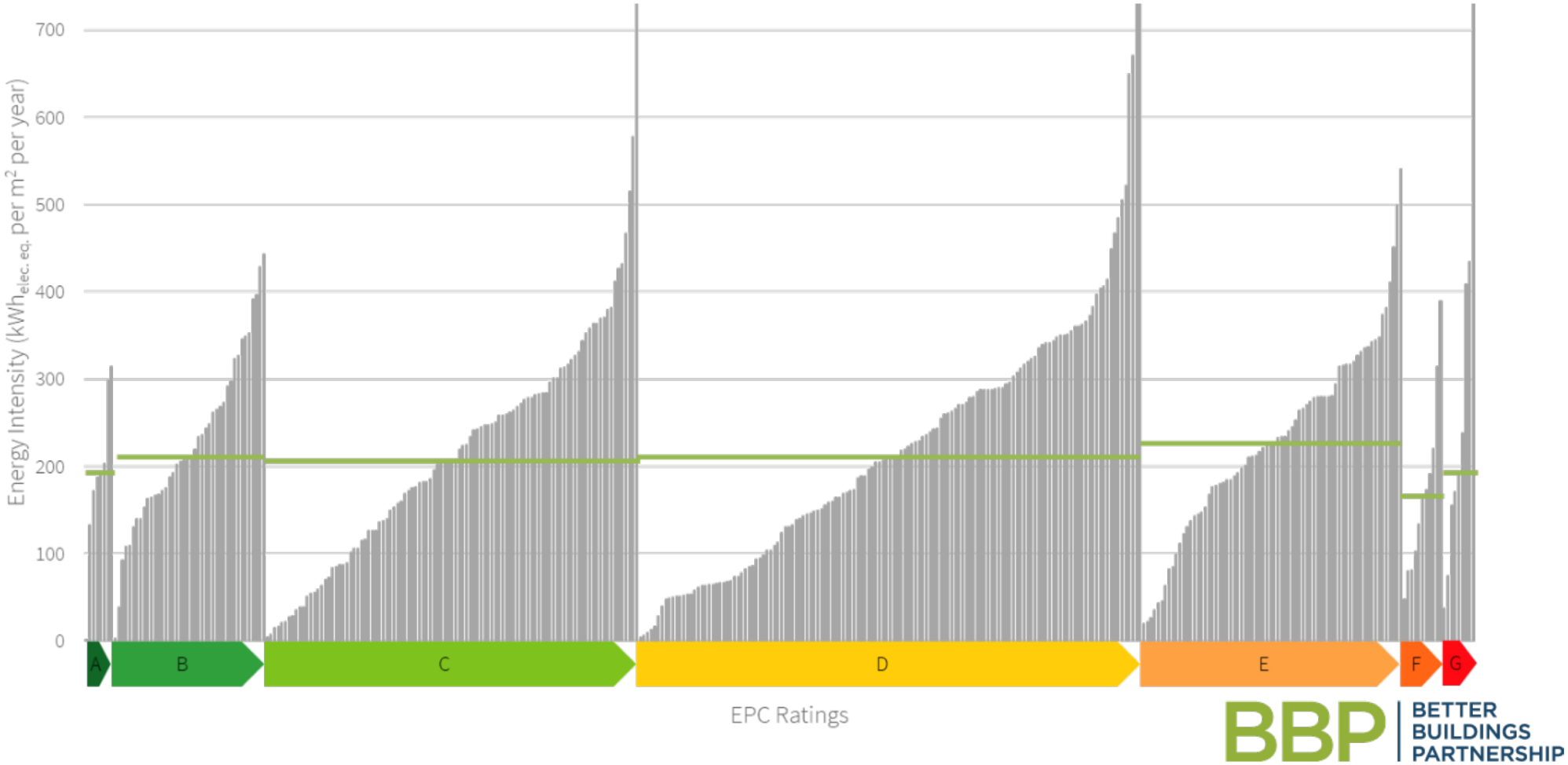
A Dysfunctional Regulatory System



BBP | BETTER BUILDINGS PARTNERSHIP

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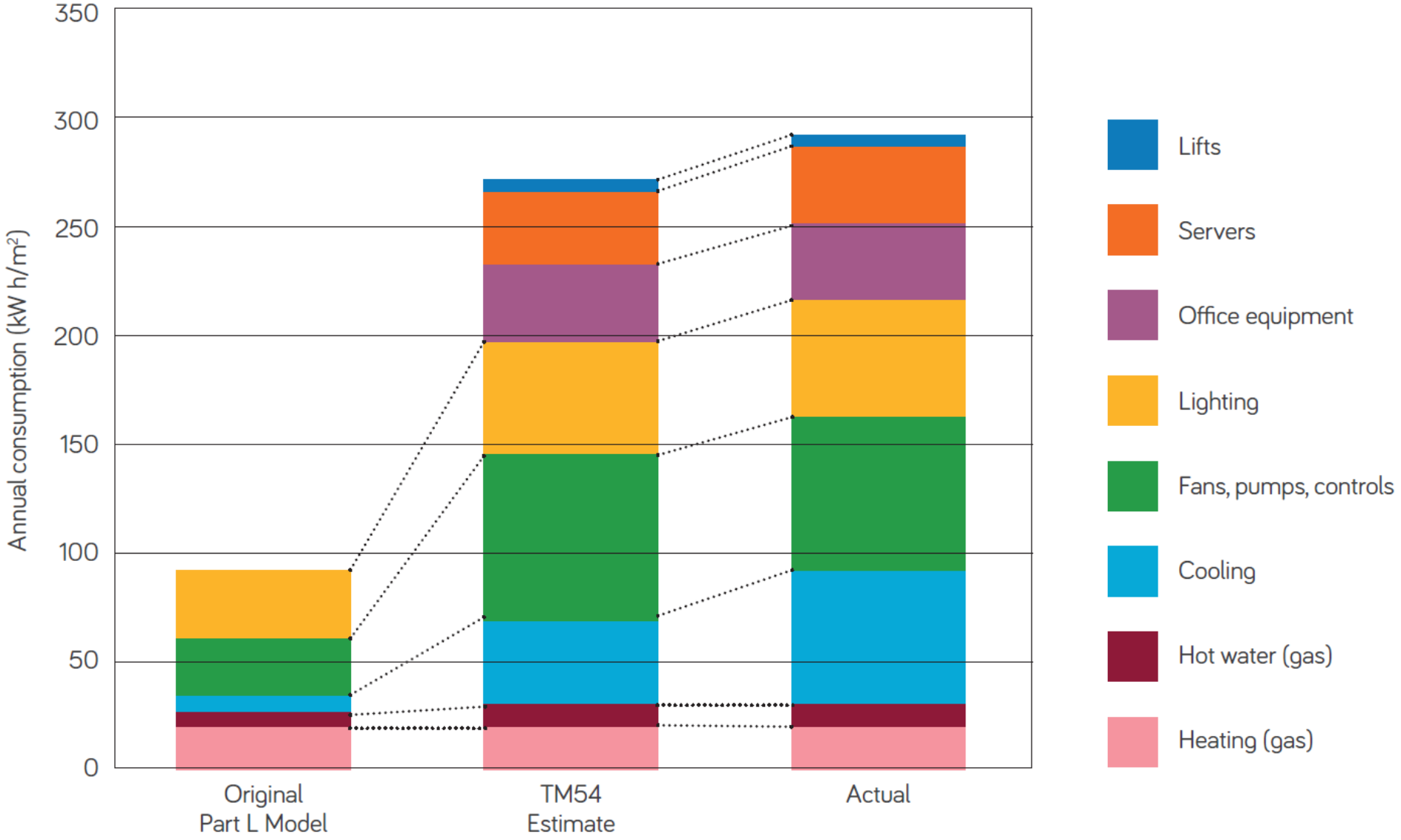
More Accurate Energy Modelling



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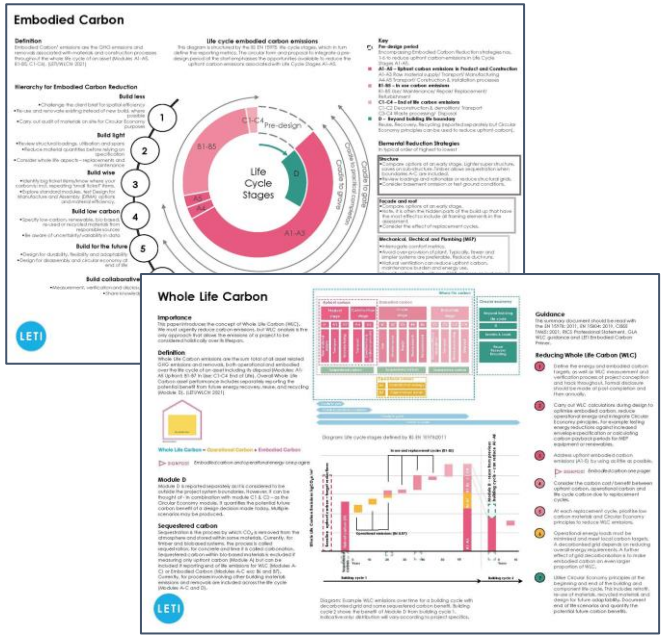
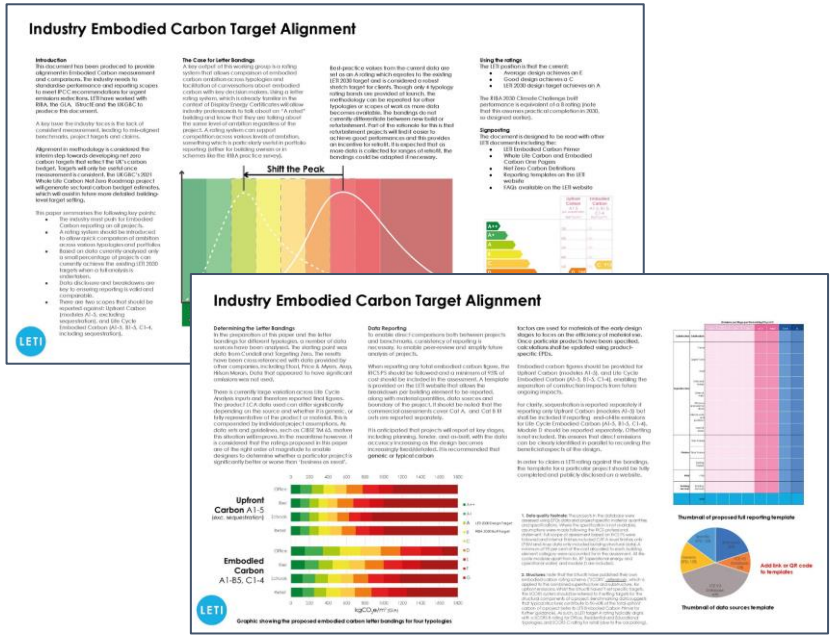
LETI/RIBA/WLCN Carbon Alignment

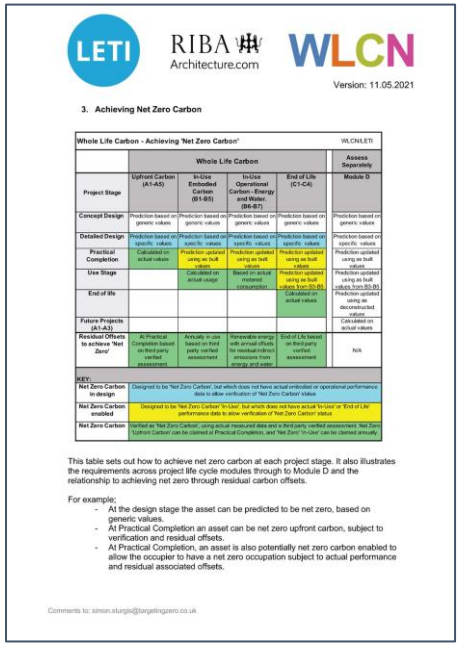
Information



Targets



Definitions



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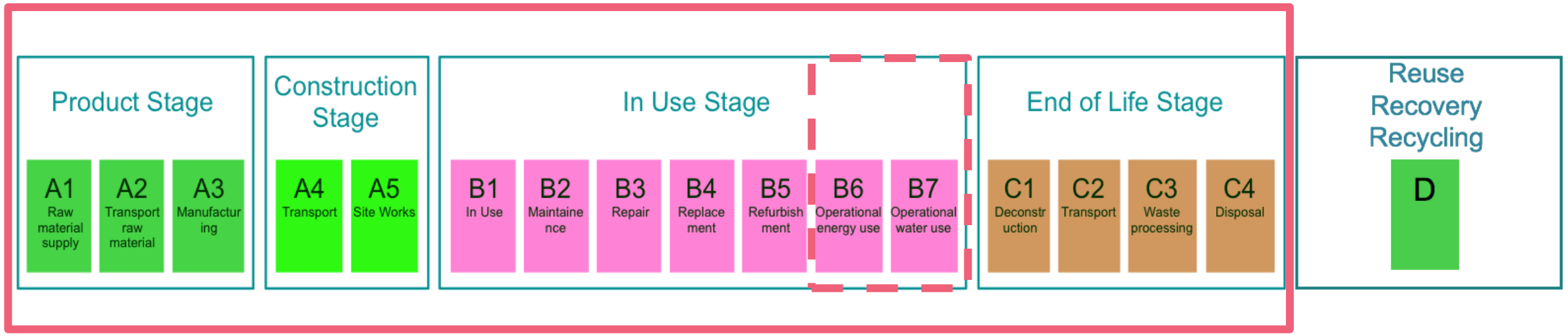
Lifecycle phases



Embodied Carbon

(operational reported separately)

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Non-Domestic – Offices Targets

RIBA Sustainable Outcome Metrics	Business as Usual	2025 Targets	2030 Targets	Notes
Operational Energy kWh/m^2/y	130 kWh/m^2/y DEC D (90)	< 75 kWh/m^2/y DEC B (50) and/or NABERS Base build 5	< 55 kWh/m^2/y DEC B (40) and/or NABERS Base build 6	Targets based on GIA. Figures include regulated & unregulated energy consumption irrespective of source (grid/renewables). 1. Use a 'Fabric First' approach 2. Minimise energy demand. Use efficient services and low carbon heat 3. Maximise onsite renewables
Embodied Carbon kgCO$_2$e/m^2	1400 kgCO$_2$e/m^2	< 970 kgCO$_2$e/m^2	< 750 kgCO$_2$e/m^2	Use RICS Whole Life Carbon (modules A1-A5, B1-B5, C1-C4 incl sequestration). Analysis should include minimum of 95% of cost, include substructure, superstructure, finishes, fixed FF&E, building services and associated refrigerant leakage. 1. Whole Life Carbon Analysis 2. Use circular economy strategies 3. Minimise offsetting and use as last resort (accredited and verifiable) BAU aligned with LETI band E; 2025 target aligned with LETI band C and 2030 target aligned with LETI band B.
Potable Water Use Litres/person/day	16 l/p/day (CIRA W11 benchmark)	< 13 l/p/day	< 10 l/p/day	CIBSE Guide G.

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Non-Domestic – Schools Targets

RIBA Sustainable Outcome Metrics	Business as Usual	2025 Targets	2030 Targets	Notes
Operational Energy kWh/m^2/y	145 kWh/m^2/y	< 70 kWh/m^2/y	< 60 kWh/m^2/y	Targets based on GIA. Figures include regulated & unregulated energy consumption irrespective of source (grid/renewables). Refer to Department for Education Output Specifications for schools: 2025: Primary <55 kWh/m^2/y, 2030: Primary <45 kWh/m^2/y 1. Use a 'Fabric First' approach 2. Minimise energy demand. Use efficient services and low carbon heat 3. Maximise onsite renewables
Embodied Carbon kgCO2e/m^2	1000 kgCO$_2$e/m^2	< 675kgCO$_2$e/m^2	< 540 kgCO$_2$e/m^2	Use RICS Whole Life Carbon (modules A1-A5, B1-B5, C1-C4 incl sequestration). Analysis should include minimum of 95% of cost, include substructure, superstructure, finishes, fixed FF&E, building services and associated refrigerant leakage. 1. Whole Life Carbon Analysis 2. Use circular economy strategies 3. Minimise offsetting and use as last resort (accredited and verifiable) BAU aligned with LETI band E; 2025 target aligned with LETI band C and 2030 target aligned with LETI band B.
Potable Water Use m^3/pupil/year	4.5 m^3/pupil/y	< 1.5 m^3/pupil/y	< 0.5 m^3/pupil/y	Refer to Department for Education Output Specifications for schools.

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Domestic/Residential Targets

RIBA Sustainable Outcome Metrics	Business as Usual	2025 Targets	2030 Targets	Notes
Operational Energy kWh/m^2/y	120 kWh/m^2/y	< 60 kWh/m^2/y	< 35 kWh/m^2/y	Targets based on GIA. Figures include regulated & unregulated energy consumption irrespective of source (grid/renewables). BAU based on median all electric across housing typologies in CIBSE benchmarking tool. 1. Use a 'Fabric First' approach 2. Minimise energy demand. Use efficient services and low carbon heat 3. Maximise onsite renewables
Embodied Carbon kgCO$_2$e/m^2	1200 kgCO$_2$e/m^2	< 800 kgCO$_2$e/m^2	< 625 kgCO$_2$e/m^2	Use RICS Whole Life Carbon (modules A1-A5, B1-B5, C1-C4 incl sequestration). Analysis should include minimum of 95% of cost, include substructure, superstructure, finishes, fixed FF&E, building services and associated refrigerant leakage. 1. Whole Life Carbon Analysis 2. Use circular economy strategies 3. Minimise offsetting and use as last resort (accredited and verifiable) BAU aligned with LETI band E; 2025 target aligned with LETI band C and 2030 target aligned with LETI band B.
Potable Water Use Litres/person/day	125 l/p/day (Building Regulations England and Wales)	< 95 l/p/day	< 75 l/p/day	CIBSE Guide G.

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Current Good Practice (2021)

For reference purposes, current (2021) Good Practice for new build projects in-use now, are as follows:

Non-Domestic (new build office):
Operational Energy 90 kWh/m^2/y (GIA) and/or DEC C(65) and/or NABERS Base build 5;
Embodied Carbon LETI Band D 1180 kgCO_2e/ m^2;
Potable Water Use 16 l/p/day

Non-Domestic (schools):
Operational Energy 75 kWh/m^2/y (GIA);
Embodied Carbon LETI Band D 870 kgCO_2e/m^2;
Potable Water Use 3m^3/pupil/year

Domestic/Residential:
Operational Energy 60 kWh/m^2/y (GIA) no gas boilers;
Embodied Carbon LETI Band D 1000 kgCO_2e/m^2;
Potable Water Use 110 l/p/day

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Health Requirements

Best Practice Health Metrics	Requirement	References
Overheating	25-28 °C maximum for 1% of occupied hours	CIBCE TM52, CIBSE TM59
Daylighting	> 2% av. daylight factor, 0.4 uniformity	CIBSE LG10
CO_2 levels	< 900 ppm	CIBSE TM40
Total VOCs	< 0.3 mg/m^3	Approved Document- F
Formaldehyde	< 0.1 mg/m^3	BREEAM

Avoid unintended consequences of poor health and wellbeing by meeting key health metrics set out in the RIBA 2030 Climate Challenge.

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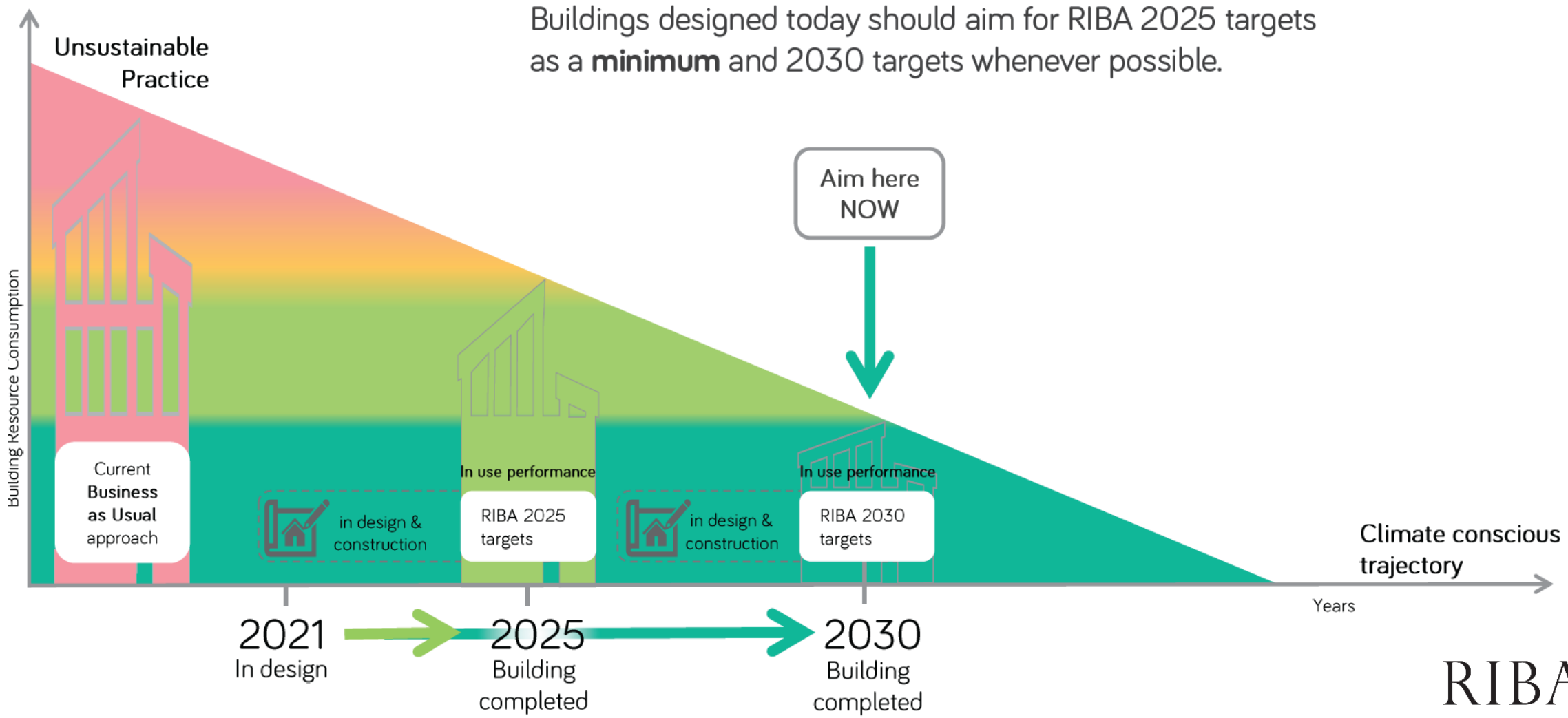
RIBA 2030 Climate Challenge Trajectories



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Practices commit to attempting to meet the targets

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2030 Data Submission

- **Predicted gross regulated energy use** (kWh/m^2/y) including energy for heating and hot water, lighting, pumps and fans.
- **Predicted gross unregulated energy use** (kWh/m^2/y) including end user, plug-in energy use.
- **Predicted on site renewables output**, if applicable (kWh/y).
- **In-Use Gross Operational Energy** (kWh/m^2 /y) from meter readings/bills over a year so that winter and summer seasons feature in the data.
- **In-Use Potable Water** (Litres/person/day) from meter readings/bills
- **Embodied Carbon** ($kgCo_2e/m^2$) for RICS modules A-C, excluding B6-7

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2030 Data Submission

The RIBA provides assurance that all submitted data will remain anonymous and will only be used by the RIBA to:

- grow industry knowledge of trends in building performance
- identify trends in building performance gaps between predicted design targets and actual building performance data
- identify opportunities for improvements for sectoral carbon reductions
- deliver targeted research and knowledge development to the profession
- inform future engagement activity for the RIBA membership

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2030 Data Submission

- Signatories who join the Challenge commit to submit data relating to their significant projects.
- We understand that, for some projects, operational data, from energy or water bills, is not available to the practice. If this is the case, it is still helpful for us to know why.
- Whole life carbon assessments are becoming easier to do but still require resourcing by the client and the design team. If they are not undertaken on the project the RIBA does not expect practices to undertake this work just for the RIBA.

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Talking to Clients

about the 2030 Climate Challenge

Guidance for architects
Guidance for clients
Template letters

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