



# Decarbonising the built environment in the UK

Addendum to the November 2022 report Decarbonising UK real estate

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Decarbonising UK real estate

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# Glossary

Term	Definition
Building life cycle	<p>The BS/EN 15978 standard divides the building life cycle into four stages:</p> <ul style="list-style-type: none"> <li>• Stage A: Product and construction process</li> <li>• Stage B: Use</li> <li>• Stage C: End of life</li> <li>• Stage D: Benefits and loads beyond the system boundary.</li> </ul> <p>Each stage is further divided into modules.</p>
Carbon emissions	<p>Although carbon dioxide is only one among a number of greenhouse gases, the term 'carbon emissions' is used throughout this paper as a proxy for human-produced greenhouse gases.</p>
Carbon intensity	<p>The quantity of carbon emissions associated with an activity or product, often compared to its alternatives. For example, travelling by car is more carbon-intensive than travelling by train.</p>
Embodied carbon	<p>The total greenhouse gas emissions and removals associated with materials and construction processes throughout the whole life cycle of a building.*</p>
Greenhouse gases (GHGs)	<p>Constituents of the atmosphere, both natural and anthropogenic (human-created), that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere and clouds.</p>
Life cycle assessment (LCA)	<p>An assessment of the environmental impact of a product or service.</p>
Net zero whole-life carbon building	<p>A building where the sum total of all building-related greenhouse gas emissions over a building's life cycle, both operational and embodied, is minimised; meets local carbon, energy and water targets; and, with residual offsets, equals zero.*</p>

Term	Definition
Net zero carbon operational energy building	<p>A building where:</p> <ul style="list-style-type: none"> <li>• no fossil fuels are used</li> <li>• all energy use has been minimised</li> <li>• it meets the local energy use target</li> <li>• all energy used is generated on or off site using renewables that demonstrate additionality (they are newly built for this purpose), and</li> <li>• any residual direct or indirect emissions from energy generation and distribution are offset (see Offset carbon emissions).*</li> </ul>
Offset carbon emissions	Reduced or avoided emissions meant to compensate for an equivalent quantity of emissions occurring elsewhere.
Operational carbon	The GHG emissions arising from all energy and water consumed by an asset in use, over its life cycle.*
Whole life carbon emissions	The sum total of all building-related greenhouse emissions, both operational and embodied, over the life cycle of a building, including its decommission. Overall whole life carbon building performance includes separately reporting the potential benefit from future energy recovery, reuse and recycling.*

\* Definitions adapted from RICS' [Whole life carbon assessment for the built environment](#), 2nd edition, 2023.



# Introduction

In November 2022, RICS published the report [Decarbonising UK real estate: Recommendations for policy reform](#). It assessed the main existing and proposed policies of the UK government in terms of their capacity to deliver carbon reductions in line with national climate targets.

Building on RICS research and key documents such as the Climate Change Committee's [Annual Progress Report](#) and the *UK Net Zero Carbon Roadmap*, the report identified significant gaps across the policy landscape and recommended a series of actions to address these gaps.

Since the original report was published, several relevant policy developments have taken place under the UK government led by Rishi Sunak. This addendum to the 2022 report examines these developments to understand whether progress has been made against the gaps that were identified.

# Key policy developments

Focusing on the topics covered in RICS' [Decarbonising UK real estate report](#), this section reviews relevant policy developments since November 2022. These include government activities as well as key outputs by organisations operating in this field.

## December 2022

- The UK GBC published its [Decarbonising the built environment – Government policy scorecard](#), where existing UK policies were reviewed against the set of recommendations provided in the [Net Zero Whole Life Carbon Roadmap of 2021](#). Several of the comments echo RICS' concerns in the November report, such as:
  - Operational carbon from existing residential buildings: there is still no national retrofit strategy, and there are almost no policies to support the renovation of owner-occupied homes.
  - Operational carbon from existing non-residential buildings: beside the lack of support for non-residential renovations, the UK government proposal to introduce an in-use performance-based policy framework in large commercial and industrial buildings (likely based on the NABERS UK scheme) has not progressed since the consultation of March 2021.
  - Operational carbon from new construction: the proposed Future Homes and Buildings Standards are not sufficient to ensure that all new buildings will be net-zero carbon by 2030.
  - Embodied carbon from new construction: no current or proposed policy addresses embodied carbon.

## January 2023

- The UK government published [Mission Zero](#), the result of an independent review of net-zero policies led by Chris Skidmore MP. Arguing that more action is needed from the UK government to match the UK's 'world-leading ambition with world-leading delivery', the report recognises net zero as the 'economic opportunity of the 21st century' and criticises the inconsistent and short-term approach of current policies. The report also lists a series of interventions for the UK government to consider, including some directed specifically at the built environment:
  - reforming the planning system to support net zero
  - making heat pumps a widespread technology within a 10-year period
  - banning the use of gas boilers by 2033 and
  - reforming the EPC scheme to create a net-zero performance certificate.

## March 2023

- The UK government published its [Carbon Budget Delivery Plan](#) as part of its obligation under the *Climate Change Act 2008*. The document lists a series of current and proposed policies across different economic sectors, quantifying their expected contributions to carbon reductions. Forty-four policies are included in the *Buildings* section, ranging from district heating to energy-efficiency schemes. Two items are worth mentioning here, as they shed some light on the proposed updates to the Building Regulations (Part L) and the Minimum Energy Efficiency Standards (MEES):
  - On Building Regulations, item 97 mentions ‘Regulations from 2025 through the Future Homes Standard to ensure all new homes are ready for net zero by having a high standard of energy efficiency and low carbon heating installed as standard.’ The wording ‘ready for net zero’ indicates that those new homes will not need any retrofit measures or additional technology to become effectively net-zero carbon once the electricity grid is sufficiently decarbonised, implying that electricity (i.e. heat pumps) will become the main source of heating in new homes.
  - On the MEES, item 93 proposes ‘to strengthen the *Minimum Energy Efficiency Standard Regulations* for the domestic Private Rented Sector in England and Wales to EPC Band C by 2025 for new tenancies and 2028 for all tenancies’, confirming the intention to raise the requirement from the current level (EPC band E) to band C.
- The UK government published [its response](#) to the recommendations of the Climate Change Committee’s (CCC) *Annual Progress Report 2022*. With regards to emissions from buildings, the CCC report noted that while good progress was made in some areas, significant policy gaps remained, in particular:
  - The CCC recommended the introduction of new policies to bring owner-occupied homes (not currently covered by the MEES) up to EPC band C by 2035. The UK government responded that it is planning to consult on this matter by the end of 2023.
  - The CCC recommended the implementation of an in-use performance-based rating scheme for offices, and the progressive extension of this scheme to other non-residential building types. The UK government responded that plans for a pilot for this scheme have been paused, and that while it ‘remains interested in exploring how to incorporate operational energy use within government policy’, it is ‘reviewing how this scheme would function within the policy landscape for commercial and industrial buildings’.
  - The CCC recommended making whole-life carbon assessments (WLCAs) mandatory for all new constructions by 2025, with a view to collecting sufficient data to subsequently introduce caps on embodied carbon. The UK government responded that it ‘accepts that we will need to resolve questions around embodied carbon’ and will run a consultation in 2023 on its ‘approach to mainstream the measurement and reduction of embodied carbon in new buildings’.
  - The CCC recommended a consultation on the design of policies addressing carbon emissions from industrial products (which include carbon-intensive construction products such as cement and steel). The UK government responded that it is currently running a consultation on ‘how to support a market for low carbon products through product standards, labelling and procurement policies’. Depending on the outcomes of the consultation, mandatory or voluntary product standards may be introduced, possibly in conjunction with a carbon border adjustment mechanism.



- £778m was offered to 107 projects that successfully bid for the second wave of the [Social Housing Decarbonisation Fund](#), which aims to upgrade social housing units that are below EPC band C. An additional £1.1bn will be provided by the successful applicants.
- The UK government published a list of successful local authorities that gained access to the £630m fund for phase 2 of the Home Upgrade Grant scheme. This scheme funds energy-efficiency measures for low-income households who live in a property that is on the gas grid and has an EPC band of D or lower.
- The UK government published [Powering up Britain – The net zero growth plan](#). This document compiles a list of policies through which the government intends to decarbonise the economy while fuelling economic growth (following the concept of ‘decoupling’ GDP from emissions). On buildings, the document does not contain any new policies but states that £6.6bn is being invested ‘towards improving energy efficiency and low-carbon heating’ (e.g. through the Social Housing Decarbonisation Scheme), and that additional £6bn will be invested between 2025 and 2028.
- The first meeting of the [Energy Efficiency Taskforce](#) took place. The taskforce is meant to advise ministers on how to achieve a 15% reduction in UK energy demand by 2030 (compared to 2021 levels), with a particular focus on leveraging private investments.

## April 2023

- AECOM was commissioned by the Department for Levelling Up, Housing & Communities (DLUHC) to carry out research activities to understand the sector-wide economic impacts of WLCAs for buildings, with a particular focus on embodied carbon.
- [Domestic](#) and [commercial](#) MEES regulations introduced in 2015 came into full force, with restrictions now applying to ongoing tenancies (before April 2023, they only applied to new tenancies or renewals). Essentially, all properties must have at least EPC band E to be let legally; therefore, properties with lower performance must be brought up to band E via energy-efficiency measures. Several exemptions are allowed, such as:
  - where the landlord does not obtain consent for the necessary works from the tenant
  - where all feasible energy-efficiency measures have been undertaken
  - where the only relevant improvements consist of wall insulation and it can be demonstrated that these measures would negatively impact the fabric or structure of the property
  - where it can be demonstrated that the necessary works would lower the value of the property by more than 5%
  - where the expected energy bill savings from the necessary measures exceed a payback time of 7 years, and
  - when the lease is shorter than 6 months or longer than 99 years.
- For residential properties, there is also a cost cap of £3,500; the property is exempted from further improvements if the EPC band is still below E after improvements have been made up to this cost cap. Some specific building types are also exempted.

## May 2023

- Over £4.1m was granted to [26 projects trialling innovative 'green finance' instruments](#) aimed at financing energy-efficiency measures in buildings.

## June 2023

- The [UK Net Zero Carbon Buildings Standard \(NZCBS\)](#) initiative published a technical update on its progress and opened a consultation on this matter. The technical update describes the fundamentals of the Standard, such as the metrics that will be used to demonstrate alignment with net zero, and the ongoing evidence-based work that is necessary to understand current and potential performance levels for embodied and operational carbon.
- The [International Sustainability Standards Board \(ISSB\)](#) published its first two IFRS Sustainability Disclosure Standards: *IFRS S1: General requirements for disclosure of sustainability-related financial information* and *IFRS S2: Climate-related disclosures*. While the ISSB has no authority to mandate the use of its Standards, the UK government has [repeatedly stated](#) its intention to adopt the Standards as the basis for its policy on sustainability disclosure requirements. A consultation on the matter has been planned for later in 2023. If the ISSB standards were to become mandatory requirements for companies in the UK, this would likely require businesses in the construction and real estate sectors to disclose their emissions, which in turn would oblige them to adopt carbon measuring and reporting procedures for their assets and operations.



## September 2023

- The UK government launched its [Great British Insulation Scheme \(GBIS\)](#). Previously known as ECO+, this scheme will run until March 2026 in parallel with the fourth iteration of the [Energy Company Obligation scheme \(ECO4\)](#). The GBIS works in a similar manner to the ECO schemes, by putting an obligation on energy suppliers to fund the installation of energy-efficiency measures in residential properties that are inefficient (EPC band D or lower) and/or occupied by low-income households. However, while the ECO schemes take a ‘whole-house approach’, the [GBIS will focus mostly on insulation measures](#), with a declared objective of improving around 300,000 units and lowering a typical energy bill by £300–400 per year.
- RICS published the new edition of the [Whole life carbon assessment for the built environment](#) professional standard. The previous edition of this document, issued in 2017, has effectively become the unofficial UK methodology for assessing and reporting carbon emissions at the project level. While adhering to this standard is only mandatory for chartered surveyors, the document has rapidly been adopted across the UK by designers and assessors, as it provides detailed guidance on the process and a harmonised reporting framework. The 2023 edition of the standard improves on the previous edition by expanding its guidelines, increasing requirements across different project stages, and introducing new details to differentiate between buildings and infrastructure assets.
- In a [live broadcast speech](#), UK Prime Minister Rishi Sunak announced a series of changes to the government’s net-zero policies, including two policies aimed at reducing emissions from buildings:
  - The date for banning the installation of new domestic gas boilers was moved to 2035 and new exemptions were introduced, while the maximum grant available through the Boiler Upgrade Scheme was raised to £7,500.
  - The plan to raise MEES requirements to EPC band C by 2025 for new tenancies and 2028 for all tenancies was cancelled entirely, on the basis of excessive costs for landlords. No further comment was made.

# Recommendations

This section reviews RICS' recommendations from November 2022, and considers the extent to which they have been addressed by the policy developments described above.

## Science-based decarbonisation targets

RICS asked the UK government to define science-based decarbonisation targets for UK real estate at the subsector and individual building levels, engaging with industry and academia through the NZCBS initiative. These targets should form the basis for consistent performance requirements across the policy landscape, from planning to business regulations, covering both embodied and operational emissions.

No action has been taken on this item by the government. The *Carbon Budget Delivery Plan* details how each policy will contribute to overall reductions, but it remains unclear whether the performance requirements mandated by regulations will be sufficient to deliver those reductions. This is largely due to the issue of inconsistent metrics used to mandate performance in new and existing buildings, which is discussed in the next two items.

Progress by the NZCBS shows that it is possible to determine performance requirements at the building level, so RICS renews our recommendation to government to leverage ongoing research to establish, at least on a voluntary basis, decarbonisation trajectories for the most common types of buildings.

## Future Homes and Future Buildings standards

RICS asked the UK government to demonstrate how the increase in Building Regulations requirements set out in the Future Homes and Future Buildings standards will deliver the reductions needed to reach the decarbonisation targets of 2030 and 2035. Net-zero carbon emissions should be mandated for all new buildings as soon as possible, and any delay in this approach should be justified with solid evidence.

As noted by the UK GBC, it remains unclear whether the proposed uplift in Building Regulations requirements is sufficient. The relative improvements determined by the notional building method used in the Building Regulations does not allow a measurement of performance improvement based on absolute figures. In fact, the government itself measures the improvements brought about by the uplift against the performance determined by previous regulation requirements, rather than against an absolute figure. Moreover, the 'ready for net zero' approach carries the risk of allowing new buildings to be designed inefficiently, formally achieving net zero in virtue of their reliance on the decarbonisation of the electricity supply, rather than prioritising the minimisation of energy demand via passive design.

## EPC improvements

RICS asked the UK government to improve the EPC scheme to make it fit for the different purposes that it serves. Besides implementing the recommendations of the *Making SAP* and *RdSAP 11 fit for Net Zero* report, significant improvements should be made to the way EPCs are calculated, presented and used:

- 1 Clearly present three metrics as the main results of the EPC assessment: final energy use, carbon emissions and energy cost. These metrics should be shown as absolute figures, as well as rating scores with associated bands. Making the three metrics available and equal in importance will enable policymakers to choose the correct one to track and regulate against for the specific policy objective, including for decarbonisation targets.
- 2 Include four additional metrics to provide a more comprehensive evaluation of building performance: fabric energy efficiency, space heating demand, peak energy load and on-site renewable generation.
- 3 Make it clear that the three main metrics are the results of a calculation based on typical weather and occupancy models, and therefore should be used as indicators of building performance under controlled conditions, not as reliable predictions of energy use, cost and emissions under all circumstances.
- 4 Fully digitalise EPC data, calculations, results and presentation. EPC data should be accessible via a digital platform, which could also provide the infrastructure for a comprehensive building passport. A new module should be added to replicate the original EPC calculations and allow users to modify parameters to produce a new set of results. This would provide more tailored information to consumers about the impact of occupants' patterns and energy efficiency improvements.
- 5 Campaign to inform the general public about the value of EPCs and how to use them correctly. The current rise in energy prices and the increase in extreme weather events caused by climate change provide a big opportunity to raise awareness about the condition of UK building stock and establish a clear link between building performance, energy cost and carbon emissions.

SAP 11 is scheduled to come into force in 2025, and the expert group led by BRE is progressing its work as planned. However, at the moment the issue of the wrong EPC metrics being used to regulate building performance remains relevant. In particular, domestic MEES requirements are based on EPC bands, which are determined by the energy cost metric, not on a measurement of emissions. Therefore, the government is regulating the performance of existing buildings through a metric that is not consistent with the objective of the policy, which is to achieve carbon reductions.

## Scaling up building retrofit

RICS asked the UK government to establish a national programme to fund retrofit projects, following the direction set out in the [National Retrofit Strategy](#) developed by the Construction Leadership Council. In the current context of rising energy bills and supply uncertainty, driving energy improvements in the existing stock on a large scale would carry multiple benefits: reducing emissions and energy bills, reducing energy demand at the national level, improving indoor conditions and asset value, and generating employment.

Although there are different opportunities to fund the retrofit of some properties, these are largely limited to low-income households and/or particularly inefficient properties. Despite its grandiose name, the GBIS is simply a modified ECO scheme, and falls flat in the face of the scale of the problem it tries to address. In 2022 the CCC noted that, according to the government's own pathway, residential retrofits need to increase to a rate of 500,000 per year by 2025 and one million per year by 2030. The GBIS (although it is not the only retrofit scheme in place) can deliver only about 100,000 per year. Moreover, there is still almost no support for retrofitting owner-occupied homes, as also noted by the UK GBC. This also applies to non-residential properties, which are subject to MEES but do not have a cap on the total cost of measures. Finally, scrapping the planned uplift of MEES requirements to EPC band C implies that – for the foreseeable future – landlords will have no obligation to retrofit their properties above the current MEES requirement of EPC band E. This is going to impact not only the large share of UK tenants who live in fuel poverty, but also manufacturers and installers of energy-efficient technologies.

## Performance-based rating scheme

RICS asked the UK government to accelerate the development of a national performance-based rating scheme based on the NABERS UK system, ensuring that final energy use and carbon emissions are publicly available metrics. The government should undertake the following, in order:

- 1 Mandate performance monitoring and disclosure for large non-domestic buildings from 2024, and engage with the industry to understand how this requirement could be progressively extended to all non-domestic buildings.
- 2 Develop a policy to stimulate improvements in building operations via fiscal incentives by 2030, rewarding buildings that show annual improvements as well as buildings that perform above specific thresholds. These thresholds should be established on the basis of good practice, and then progressively increased to align with science-based targets.

As mentioned in the government's response to the CCC, progress on this front has intentionally been paused. While it is understandable to be wary of imposing new requirements on businesses that are already facing economic turbulence, achieving carbon savings through efficient management of commercial buildings would also mean delivering economic savings through lower energy bills.

## Embodied carbon

RICS asked the UK government to introduce embodied carbon requirements in a new section of the Building Regulations, as proposed by the [Part Z initiative](#). More explicitly, the government should:

- 1 Adopt the RICS standard [Whole life carbon assessment for the built environment](#) as a national methodology, as recommended by the Environmental Audit Committee.
- 2 Require embodied carbon assessments to be conducted on buildings larger than 1,000m<sup>2</sup> or ten dwelling units from 2025, to be extended to all buildings from 2030.
- 3 Introduce maximum limits on embodied carbon, to be verified at both the design stage and post-completion. Limits should be initially established on the basis of good practice benchmarks, and then progressively increased to align with decarbonisation targets.

To fully address the need for embodied carbon reductions, the government should also:

- 1 Require manufacturers to publish Environmental Product Declarations (EPDs) for all their products. Availability and quality of data at the product level need to improve in order for embodied carbon assessments to be more reliable.
- 2 Work with devolved governments and local authorities to agree on a national strategy favouring the reuse of existing buildings and setting carbon budgets for new developments.

Very little progress has been made on this front. As noted in the response to the CCC, the government is consulting on the matter of introducing product-level standards, and intends to consult on addressing embodied carbon at the building level. Given the time needed to progress policy development through consultation and arrive at an actual piece of regulation, at this pace it may take several years before embodied carbon is actually regulated.

We welcome the research commissioned by DLUHC from AECOM to understand the sector-wide economic impacts of WLCAs for buildings. But while gathering evidence is always beneficial, delaying action translates into more and more embodied carbon associated with new constructions occurring in the present.

# Conclusions

The extreme weather events that occurred across the world in 2023 are a stark reminder of the urgency to mitigate the worst effects of climate change. Showing international leadership and taking responsibility for its past and current emissions, the UK has committed to reaching net zero carbon by 2050 with the [Climate Change Act 2008](#). To reach such an ambitious but necessary target, every sector of the UK economy must do its part, and the built environment is no exception. However, there has been almost no progress in addressing the policy gaps identified in our 2022 report, as shown in this addendum. In fact, a significant step backwards was made by cancelling the planned MEES uplift. Therefore, our recommendations remain just as relevant after one year.

Three issues are particularly concerning.

- 1 The current approach to lowering emissions from existing and new buildings appears to over-rely on the decarbonisation of the electricity grid. Simply switching from fossil fuels to electricity adds to the national demand for electricity generation and does nothing to address the poor quality of large sections of the outdated building stock of the UK. Only the minimisation of energy demand through passive design and energy-efficiency measures can lead to a truly decarbonised built environment.
- 2 The magnitude of the effort needed to renovate existing buildings across the UK has been significantly underestimated. Existing and proposed economic support schemes do not seem to be sufficient to reach the required rate of 500,000 domestic retrofits per year. Moreover, domestic improvements continue to be measured and regulated against EPC ratings through the current MEES. Given the impact of this policy on the market and the costs it imposes on landlords, it is disheartening to know that these efforts may not lead to the desired outcome (carbon reductions), due to the fundamental flaw of the domestic EPC rating being based on energy cost rather than carbon. Rather than addressing this underlying issue, the UK government has chosen to scrap the planned MEES uplift on the basis of excessive cost for landlords. This is quite puzzling, at least for the domestic sector, since the current MEES regulation includes a cap on how much landlords can be asked to spend on measures to bring their property up to EPC band E, and it could be expected that a similar mechanism would have applied to the uplifted MEES.
- 3 Embodied carbon continues to be an entirely unregulated source of emissions from the built environment, despite the leadership that UK professionals have demonstrated in progressing measurement, reporting and reduction practices. Every year the regulation of embodied carbon is delayed means that an increasing share of our limited carbon budget is spent on emissions that could be avoided, and that the industry is ready to tackle.

If the UK wants to retain and renew its world leadership on climate change action, RICS urges current and future UK governments to address these issues by accelerating policy development in line with our recommendations.



## Delivering confidence

We are RICS. Everything we do is designed to effect positive change in the built and natural environments. Through our respected global standards, leading professional progression and our trusted data and insight, we promote and enforce the highest professional standards in the development and management of land, real estate, construction and infrastructure. Our work with others provides a foundation for confident markets, pioneers better places to live and work and is a force for positive social impact.

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