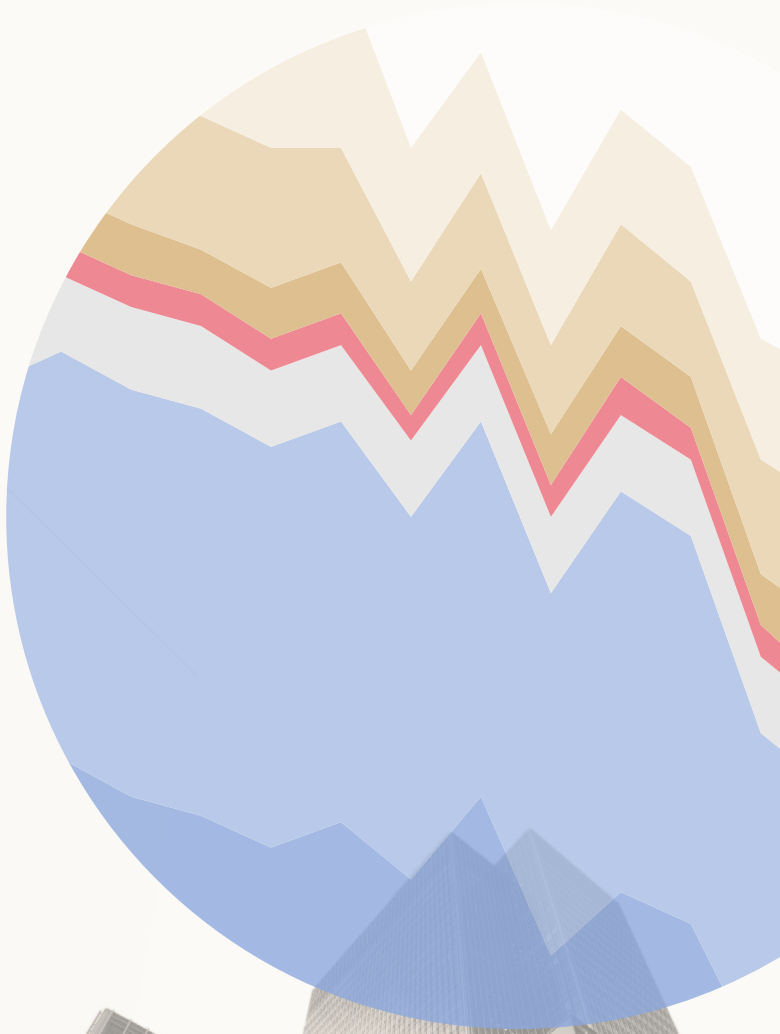
Net Zero Whole Life Carbon Roadmap Progress Report

A Pathway to Net Zero for the UK Built Environment

March 2026



UK GBC

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"This progress report makes it very clear–our industry is not moving fast enough in our efforts to decarbonise.

A renewed sense of urgency is critical. We must now reduce emissions more than three times faster than we have so far to get back on track. The later we leave it, the harder it will be, and we're amplifying the the missed opportunities for tackling the interconnected nature and social crises too. Industry and government need to work hand-in-hand to drive decisive change, bridge the emissions gap and set us on a path to deliver the future we need. "

—

Simon McWhirter, Chief Executive, UKGBC

UKGBC Net Zero Whole Life Carbon Roadmap for the Built Environment

UKGBC's Net Zero Whole Life Carbon Roadmap for the Built Environment (the Roadmap), published in 2021, was the first industry-led effort to develop a pathway to Net Zero for buildings and infrastructure in the UK. It identified the rapid and consistent actions needed to realise the 85% reduction in greenhouse gas emissions (compared to 1990) required en route to near zero emissions by 2050. This included both future-facing policy reforms and engagement from all sectors of the UK construction industry.

This report reviews progress in the six years following the 2018 baseline of the Roadmap. It presents the operational carbon, embodied carbon, and F-gas emissions of the entire UK domestic, non-domestic, and infrastructure stock based on reported data, for comparison against the progress determined to be necessary by the Roadmap.

KEY MESSAGES

1. **The UK built environment is failing to decarbonise at the pace required.**
   Emissions have fallen by just 14% since 2018, far short of the 24% reduction required by 2024. The gap is widening, not closing, and we are significantly off the Net Zero pathway.

2. **The next two years are make-or-break.**
   To recover lost ground by 2027, emissions must fall more than three times faster than they have to date. Any further delay will lock in higher costs, greater disruption, and lost opportunities.

3. **Embodied carbon remains the biggest blind spot.**
   Instead of falling, embodied emissions have risen since 2018, showing that current construction practices are incompatible with net zero and that voluntary action alone is insufficient.

4. **Policy intent is no longer enough.**
   Momentum is returning, but without decisive regulation and rapid delivery, ambition will not translate into emissions reductions at the scale or speed required.

Executive Summary

According to the Roadmap, UK built environment emissions needed to fall by 24% from 2018 to 2024. This progress report shows that they fell by just 14%.

Operational emissions reduced by 21%, which was close to that needed based on the Roadmap (24% requirement), whilst recorded embodied carbon emissions actually increased by 5%, compared to the 20% reduction required. Key influences across this time period include the Covid-19 pandemic, (although the initial fall and subsequent rebound of emissions have effectively balanced each other out) and lower than expected levels of grid decarbonisation (24% actual vs 67% predicted). Making up the resulting annual emissions shortfall of nearly 20 $MtCO^2e$ would require taking a third of all cars off the UK's roads.[1]

This means we have fallen even further behind than we were at the time of the last update, published in 2023. The timeline to decarbonise the built environment cannot be extended. More rapid and immediate decarbonisation is vital to move us back on track by the time the next progress update is released.

The engagement and action of industry is crucial to this accelerated decarbonisation. We must act quickly, learning from exemplary projects, and making decarbonisation a part of business as usual. Prioritising retrofit, increasing renewable energy supply, and monitoring and reducing embodied carbon in design, construction and use are not just suggestions, they are a requirement for real progress.

The new Labour Government has brought renewed momentum to climate and housing policy, with early reforms signalling intent to tackle the UK's inefficient, high-carbon buildings. There have been several consultations, strategies and plans which suggest progress across areas which had previously stalled. However, the challenge now is in delivery. Policies must make upgrading homes affordable, support commercial retrofit, and provide new developments genuinely fit for the future.

With increasing urgency we need real political and industry leadership fostering swift and decisive action to drive systemic change at the pace and scale required to reduce emissions in line with the pathway set out.

Falling significantly short of the targeted reduction from 2018 to 2024 amplifies the need for an immediate and profound refocussing and acceleration of our efforts.

20 $MtCO_2e$

Annual shortfall in emissions reductions by 2024

The shortfall in emission reductions amounted to 20 $MtCO_2e$. This is equivalent to the annual emissions of nearly 12 million cars[2] or heating nearly 9 million homes this winter[3].

14%

Reduction in overall emissions

Emissions in the UK built environment decreased by 14% from 2018 to 2024, falling well short of the required 24% reduction identified by the Roadmap.

35 $MtCO_2e$

Reduction needed over the next two years

In order to get back on track, a further 18% reduction in emissions would be needed by the time the next progress update is released in 2027. This equates to a 35 $MtCO_2e$ decrease in emissions and would require decarbonising over the next two years more than three times as fast as we have seen so far.

[1] Statista - Carbon footprint of cars in the UK 2023

[2] RAC Foundation

[3] ONS – UK Households 2023

UK Net Zero Whole Life Carbon Roadmap

2025 Progress Report

UK built environment emissions reduced 14% since 2018, falling short of the 24% reduction needed

According to the Roadmap, total emissions needed to fall 24% by 2024 over the 2018 baseline. In reality, they fell just 14%, translating to a near 20 $MtCO_2e$ shortfall. The total emissions reported for 2024 are higher than the Roadmap model predicted, caused by a small shortfall in required operational carbon emissions against that required (21% actual vs 24% required) and a rise in embodied carbon emissions (5% increase vs required 20% reduction).

Historic emissions have decreased slightly due to updates to international greenhouse gas emissions data

Embodied carbon emissions have decreased relative to the 2022 update, for the year 2018 the newly calculated emissions are 58 $MtCO_2e$ vs 67$MtCO_2e$ in the previous update. This has had some impact on the absolute reduction made overall since 2018, as all reductions are being measured against a baseline that is lower than was indicated in the 2022 update (see further explanation on page 6).

Committed policies still do not take us close to delivering decarbonisation fast enough to achieve net zero

The Roadmap uses the latest Department of Energy Security and Net Zero (DESNZ) Energy and Emissions Projections (EEP), 2025, to create a business-as-usual scenario reflecting committed national government policies. The model was updated with the latest projection data which shows that, without further policy intervention, future annual emissions are likely to reduce to just over 120 $MtCO_2e$ by the early 2030's before rising again, close to 140$MtCO_2e$ by 2050. This is an order of magnitude in excess of the <10$MtCO_2e$ shown on the Roadmap by 2050.

FIGURE 1: HISTORIC BUILT ENVIRONMENT EMISSIONS (1990-2024)

Excluding Transport, with Business as Usual Projections Overlaid onto the 2021 UKGBC Net Zero Whole Life Carbon Roadmap Data.

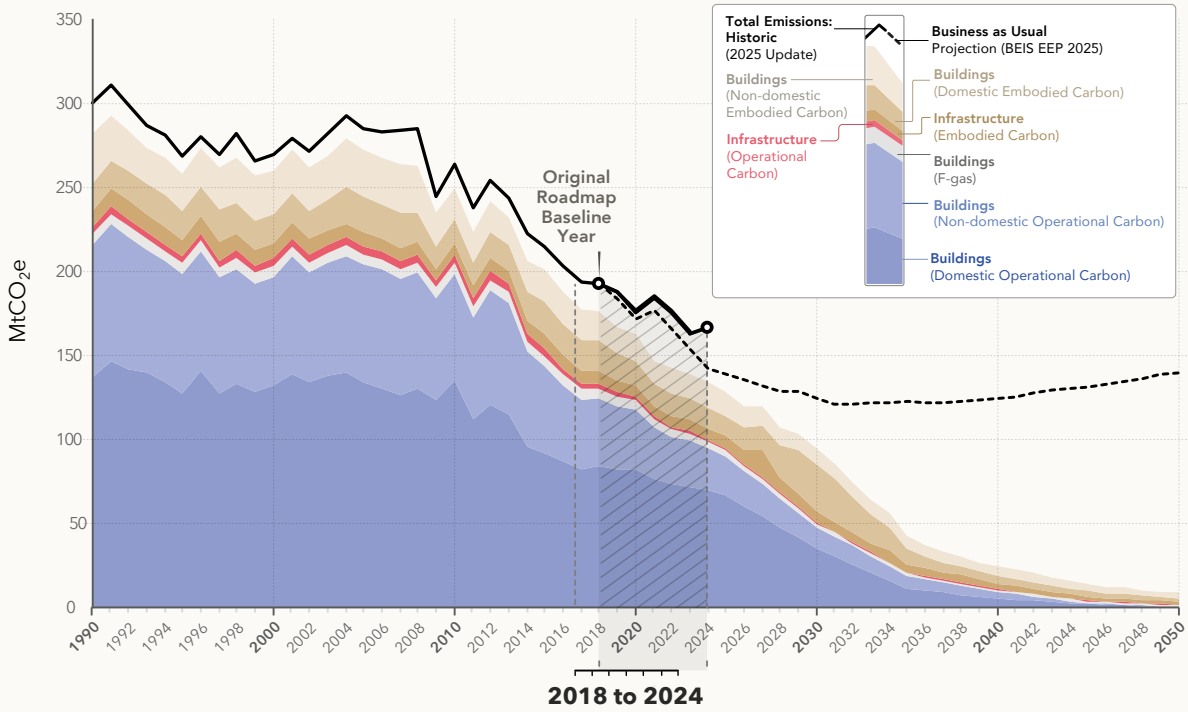


FIGURE 2: REQUIRED EMISSIONS REDUCTIONS

As defined by the 2021 UKGBC Whole Life Carbon Roadmap

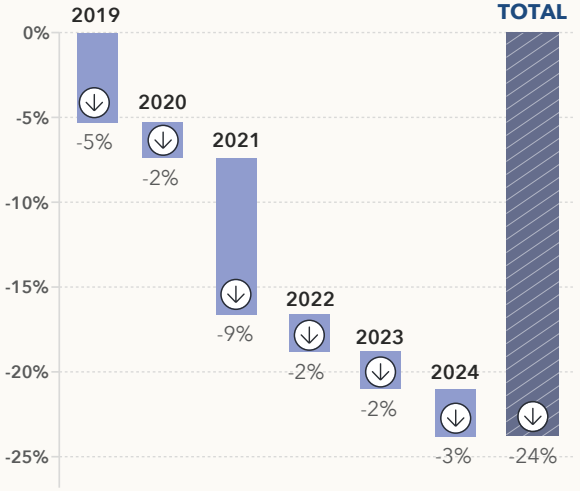
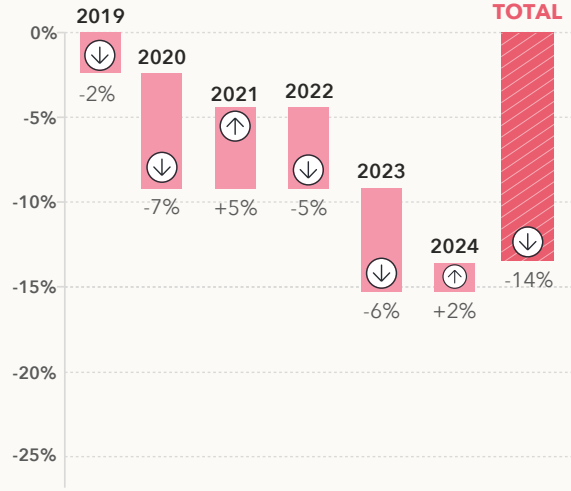


FIGURE 3: ACTUAL EMISSIONS



These figures have been rounded to the nearest whole number

Industry Context

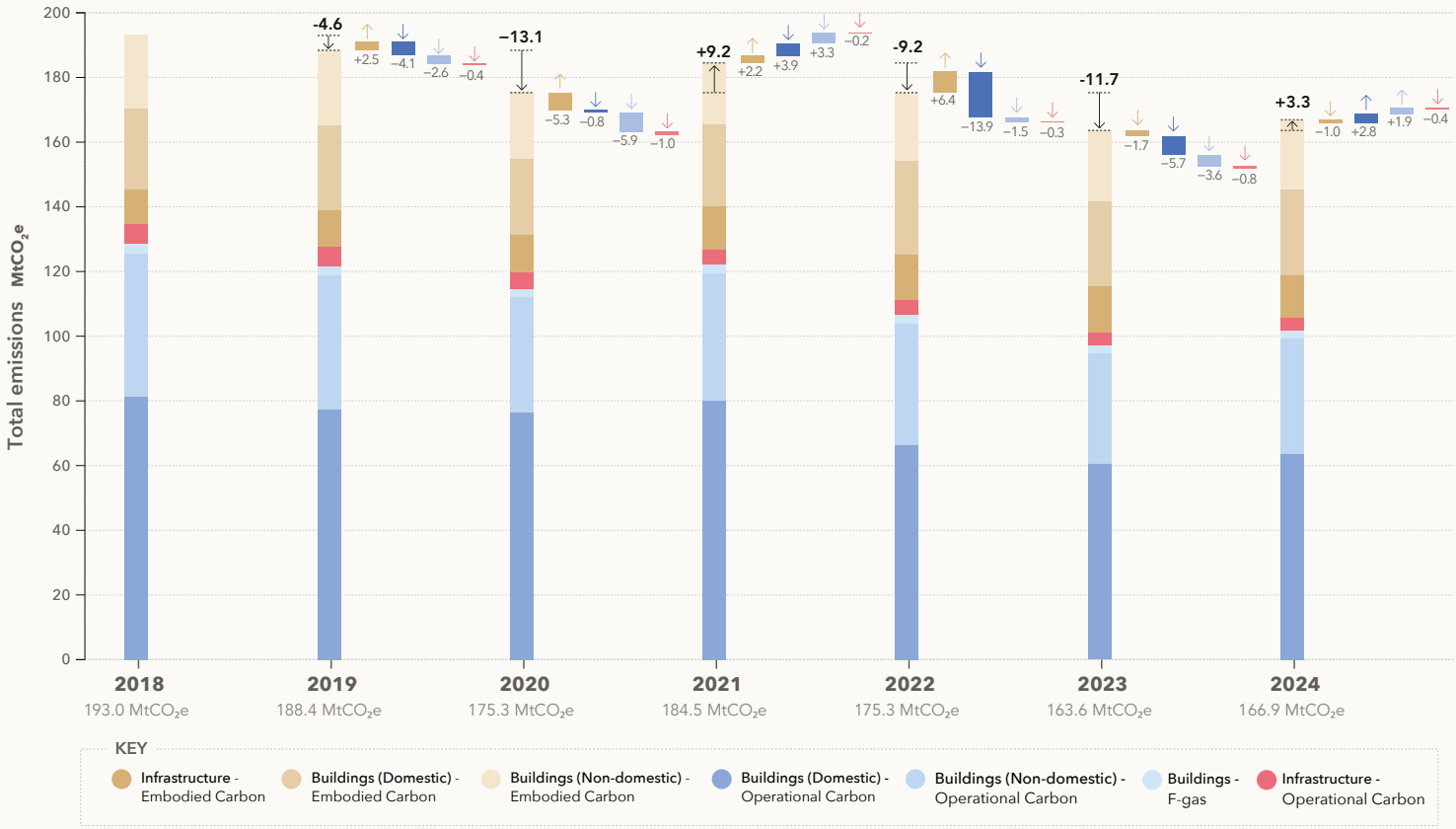
Whilst external events have shaped UK built environment emissions since 2018, notably the Covid pandemic and global energy price shocks, one thing is clear, we are not moving fast enough in our efforts to decarbonise.

This progress report indicates that while there has been some progress, widescale shifts in practice have not yet occurred, particularly in relation to how much is being built, and what typologies, and the embodied carbon associated. The sector needs to think differently and must move further and faster to realise the transformational impact the sector is capable of. Every effort to go beyond business as usual can help establish market maturity, economies of scale and, ultimately, demonstrate what is possible with ambition and tenacity.

Operational Carbon

Total operational carbon emissions have fallen just short of the reduction required by the roadmap, although the 3% shortfall still represents over 5 $MtCO^2e$, enough to heat all of the 1.5M proposed new build homes identified by the current government[4], and more besides.

FIGURE 4: CHART SHOWING EMISSIONS CHANGES PER SECTOR FOR EACH YEAR 2019 - 2024



We are seeing a fall in emissions, 2023 saw the lowest emissions on record in all sectors, but each sector also saw a small rise in emissions in 2024 and overall we are not reducing operational emissions fast enough to stay on track with Roadmap projections.

The majority of operational emissions continue to come from domestic buildings and therefore this sector is key to keeping to trajectory for total operational emissions. It is encouraging that operational emissions in the domestic sector have fallen by 22% since 2018, in excess of that predicted at 18%. That said there has not been an even or consistent fall each year, with fluctuations due to energy prices and warmer winters potentially exaggerating potential improvements in energy efficiency and home insulation. However there is an observable longer-term trend reflecting improvements in energy efficiency. What remains of concern is that over 70% of homes built in 2024 were still fitted with fossil fuel boilers.[5]

Performance in the non-domestic sector is less encouraging. Although we have seen an overall fall of 19% since 2018, our Roadmap projected the need for a reduction of 36% in this sector, nearly double that achieved. In addition, given that projections in 2018 took no account of the move to hybrid working seen both during and following the Covid-19 pandemic, this result is doubly disappointing. In 2023 there was a small recorded 1% fall in non-domestic energy consumption, but there was then a 3% rise in 2024. This may in part be explained by lower energy prices and colder weather, but also highlights potential limitations in the way energy efficiency measures and behaviours have been embedded.

Finally, it is worth noting that, although only accounting for approximately 2% of total UK operational energy emissions, those from the infrastructure sector of the built environment fell by less than half the amount required from 2018 to 2024, a 23% actual fall vs projected fall of 58%.

[4] UK Government – Plan for Change

[5] CCC Progress in reducing emissions 2025 report to Parliament

Grid decarbonisation

The electricity grid has decarbonised by just 24% since 2018, compared to the 67% projected in the Roadmap.

While most fossil fuels emissions intensities are consistent over the period 2018-2024, there remains a significant difference between the projected grid electricity emissions intensity used in the Roadmap and the reported data: grid emissions intensity reduced by just 24% compared to the 67% projected in the Roadmap, which was based on the National Grid Future Energy Scenarios report.[6] It is likely that this major shortfall is impacted by grid connection delays, supply chain constraints and current capacity issues within the planning approvals process.

It is becoming increasingly important that we deliver a decarbonised electricity system by 2035 to support the achievement of our national Net Zero target. As we predominantly electrify heat and transport, any shortfall in grid decarbonisation will have an increasingly significant effect on the built environment's ability to reduce emissions in line with the Roadmap.

[6] National Grid Future Energy Scenarios 2021

Embodied carbon

Total embodied carbon emissions have risen by 5%, in the period 2018-2024, this measured against Roadmap projections of a 20% fall.

As part of this 2025 update to the Roadmap it was necessary to use revised data sources due to changes in data availability and the discontinuation of funding for previous data platforms. This change has led to a revision to historic baseline values. Whilst these changes have been relatively small for the majority of years, a more significant change in embodied emissions is noted in this instance due to reduced granularity of data, a reduction of 6-9 $MtCO_2e$/year is indicated between 2014 and 2018. As 2018 is taken as the baseline for measuring ensuing reductions to 2024 this has meant changes are calculated from a lower than previously measured starting point, 58.1 $MtCO_2e$ vs 67.0 $MtCO_2e$ This will have somewhat exaggerated the poor performance in our efforts to reduce embodied carbon across all sectors over the last six years.

Following a fall in embodied carbon emissions in 2020, predominantly due to the Covid-19 pandemic, there was a subsequent rise by 2022 to a level higher than that seen before the pandemic. There has been a small reduction since then, to 61.3 $MtCO_2e$ in 2024, still some way above embodied emissions of 58.1 $MtCO_2e$ measured for 2018.

Although the carbon intensity of each individual category of construction activity continued to slowly decline from 2018-2024, overall output was seen to increase. In addition, the mix of activities shifted gradually towards a more carbon intensive mix of construction types, specifically more buildings and specialised construction activities with less civil engineering as a proportion of the overall sector output. Consequently, the average carbon intensity of construction activity was seen to rise.

Embodied carbon emissions have increased in the domestic and infrastructure sectors and reduced in the non-domestic sector however it is likely that these shifts are largely driven by the amount of activity;

- In the domestic sector, embodied carbon emissions rose by 5% in the period 2018 to 2024 when the Roadmap targeted a reduction of 33% over the same period. With even greater reductions needed from 2025 onwards this only highlights the massive shortfall in performance seen so far.
- Embodied emissions in the infrastructure sector have also risen, by 27% since 2018, when projections targeted a small reduction of 5%. In fact, since 1990 embodied carbon emissions for infrastructure have risen by over 20%, projected figures indicate a 25% reduction was needed to keep on track.
- The non-domestic sector has shown some fall in embodied carbon, by 4% since 2018, but this is a long way short of the 11% emissions reduction targeted. With significant reductions of over 37% in embodied carbon needed in the next six years from 2024-2030, current projections demonstrate an ever growing need to accelerate and improve performance across this sector. As noted, this reduction can be seen to be a result of reduction to output in this sector: following the pandemic, this sector has not rebounded in the same way as that other sectors.

Overall, the average embodied carbon intensity of the sector's work has reduced by less than 1.5%/yr since 2000. There is no indication that the long-standing underlying trend is going to change substantially in the short term, despite announcements about future investment in some key individual material production facilities. The overall trend in embodied carbon in the immediate years ahead will likely continue to be driven by what types of assets are being built. Unless the sector either substantially changes what is being built (e.g. much more materially efficient designs, more reuse or large shifts in material choice), or changes the types of assets being constructed, it is uncertain that there will be any significant reductions in embodied carbon any time soon.

We cannot continue with business as usual.

Policy Context

With a new Government taking over in mid-2024, progress on policies critical to decarbonising the built environment have begun to have an impact, with some early reforms and new ideas for long-neglected policy areas.

Following the 2024 General Election, the Labour Government injected renewed momentum into climate and housing policy, signalling intent to tackle the UK's inefficient, high-carbon buildings. Initial reforms such as moves to simplify retrofit schemes, boost energy efficiency investment, and remove barriers to onshore wind, show encouraging ambition and a willingness to take action where previous administrations stalled.

However, the welcome rhetoric has not yet translated into clear action and industry is still waiting for critical policy decisions to be taken. Despite some progress, the built environment remains under-regulated relative to its climate impact as the UK's second largest source of emissions after surface transport. Long-term coherence and clarity on pending policy reforms, and consistency through political and fiscal pressures will determine whether early ambition translates into delivery.

UKGBC has continued to coordinate industry alignment, brief Ministers and officials, and provide evidence-based tools that demonstrate how strong built environment policy can accelerate growth and decarbonisation.

Existing homes and buildings

The Government's Warm Homes Plan marks a major policy reset, doubling investment in home retrofit from the previous government and committing to higher minimum energy efficiency standards across rented tenures.

- Progress includes the launch of an overarching retrofit strategy 'The Warm Homes Plan', with reformed EPCs and strengthened delivery plans.
- Minimum Energy Efficiency Standards (MEES) for private and social landlords. Funding for heat pumps, social housing retrofit, and local authority schemes has been stabilised and in some cases expanded. These measures provide welcome momentum after years of policy uncertainty.
- Delivery remains the critical test. Achieving the scale of retrofit and electrification required (installation of 2.5 million heat pumps by 2030 and over 9 million by 2035) will demand much higher levels of investment and an expanded, skilled workforce.
- Currently missing from the Plan are robust incentives for the 'able-to-pay' owner-occupier market, comprehensive financing and fiscal measures (such as low interest loans, green mortgages, and stamp duty reforms), and electricity pricing that makes low-carbon heating viable for all.
- Progress on energy-use reduction for commercial buildings also remains stalled following an unimplemented 2021 consultation on Minimum Energy Efficiency Standards (MEES), leaving a major gap in accountability and progress across non-domestic property.

Make home upgrades an easy choice

UKGBC has campaigned to protect and expand retrofit funding, published the *Retrofit Investment Calculator* to evidence the economic case, and developed tools such as our *Stamp Duty Incentive Calculator* to demonstrate the need for fiscal incentives to drive a long-term retrofit market. We continue to call for:

- Mandatory operational energy disclosure for large commercial buildings.
- Diverse finance mechanisms to unlock private investment and drive consumer demand.
- Locally-led retrofit and place-based approaches.

New builds

The Labour Government's early commitment for all new homes and places to be sustainable, climate-resilient, and nature-positive set a strong direction. But we are still waiting to see the details of implementation, such as updates to building regulations, planning reform, and embodied carbon policy, which will define success.

- The previous Government published the Future Homes and Building Standards (FHS) consultation at the end of 2023 which made progress towards ensuring new homes will be free from fossil fuel heating. The new Government has since indicated commitment to mandatory solar panels for the majority of new buildings.
- However, the two options offered within the FHS consultation were weak and did not reach the level of ambition we need for homes to be truly sustainable. The publication of the standard and subsequent implementation timelines have also been delayed, which results in emissions that could have been avoided.
- Meanwhile, embodied carbon, which is responsible for up to half of new buildings' lifecycle emissions, still lacks regulation. Recent consultations on carbon products and the promise of a circular economy strategy provide glimmers of progress, but without mandated whole life carbon assessments and limits in Building Regulations, the UK risks missing its carbon targets.

Deliver truly sustainable new builds

UKGBC has convened cross-industry coalitions to press for stronger outcomes in the FHS, responded to consultations on embodied carbon and circularity, and engaged directly with officials on solar requirements and materials policy.
Our next priorities are:

- Mandating whole life carbon assessments for all major developments.
- Introducing embodied carbon limits through Building Regulations.
- Developing a follow-on from the Future Homes Standard which is truly sustainable.
- Ensuring the Circular Economy Strategy delivers concrete policy levers for reuse, repair, and material efficiency.

Planning reform

Planning remains one of the most powerful levers to align climate, nature, and development. The Government's Planning and Infrastructure Act was created to accelerate development and reduce delays, but has not done enough to engrain climate and nature priorities into every decision.

- There were early actions from the new Government to unblock onshore wind and strengthen strategic planning, these are welcome. Investment in planning capacity also signals recognition of the system's importance in delivering national infrastructure and housing targets.
- Despite this, the Planning and Infrastructure Act misses the opportunity to ensure that every planning decision contributes positively to the UK's climate and nature objectives. The absence of a statutory climate purpose risks perpetuating inconsistencies and conflicts within local plans, and the streamlining of environmental protections could also undermine commitments to restore biodiversity and ecosystems.

Make new developments high quality, well-connected, and green

UKGBC has played a coordinating role, working with industry, NGOs, and parliamentarians, to champion a climate and nature duty throughout the parliamentary stages of the Planning and Infrastructure Bill, submitting amendments and consultation responses, and supporting local planning authorities to integrate sustainability more effectively.
Our upcoming priorities are:

- Advocating for a statutory climate duty across planning and infrastructure decisions.
- Supporting the emerging Climate Devolution Bill to empower local authorities with resources and duties to deliver local net zero and resilience plans.

Closing Remark

The Net Zero Whole Life Carbon Roadmap for the UK built environment showed the scale of action required to achieve net zero by 2050 and demanded a 24% reduction in emissions by 2024. However, this progress report reveals only a 14% decrease being made, a significant shortfall. Rapid action is imperative and can only be achieved through focused and ambitious industry and political leadership. We must now reduce emissions more than three times as fast if we are to return to our trajectory to net zero by 2027, emphasising the urgency to bridge the gap between aspiration and actual emissions reductions. UKGBC will continue to work with our members, industry, and Government to act at speed and scale.

This research has been prepared and published by the UKGBC team. We would like to give special thanks to the following stakeholders for their time and contributions which have helped inform this work.

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CALLS TO ACTION

1. **Make retrofit a national priority.**
   Scale up home and commercial retrofit through long-term policy certainty, diverse financing mechanisms, and workforce investment so upgrading buildings becomes simple, affordable and routine.

2. **End fossil fuel heating in new buildings.**
   Stop locking in future emissions by ensuring all new homes and buildings are built with low-carbon, future-ready heating systems as standard.

3. **Mandate whole life carbon assessment and regulation**.
   Require whole life carbon assessments for all major developments and introduce embodied carbon limits through Building Regulations to drive consistent, measurable reductions.

4. **Accelerate grid decarbonisation and connection reform.**
   Deliver a clean, resilient electricity system by 2035 and remove barriers to grid connections so electrification delivers real carbon savings.

5. **Embed climate outcomes across planning, design and delivery.**
   Ensure every planning decision, investment choice and construction project actively contributes to Net Zero, nature recovery and long-term resilience.