

IN FOCUS

How to decarbonise real estate effectively (and why it's essential)

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Without considering real estate, global decarbonisation efforts simply cannot succeed. We explain how investors can quantify the real carbon footprint of real estate, and effectively reduce its impact.



Lina Makrodimitri
Energy and Carbon Lead, Real Estate

Why is decarbonisation important in real estate?

According to the World Green Building Council (WGBC) buildings are responsible for 39% of global energy-related carbon emissions. 28% of this is from operational emissions, i.e. energy to provide heating, cooling and power, and the remaining 11% from materials and construction.

The built environment must undergo significant decarbonisation by 2050 in order to effectively limit global temperature increases to 1.5° Celsius. Additionally, efforts should be made to reduce total carbon emissions after they reach their peak in 2025.

We can do it. We have the technology and expertise to achieve the goal.



What we're short on is time.

This is where investors come in. Investment managers – major stakeholders in the performance of buildings – have a crucial role in driving real and sustainable decarbonisation of real estate assets.

Here, we explore what net zero carbon (NZC) means for real estate investors, how to set targets for NZC, and explain the challenges and opportunities the journey presents.

What is NZC in real estate?

The first challenge in reaching NZC is determining what it means.

There is as yet no accepted definition across the real estate industry. A number of organisations and industry initiatives are seeking to change that.

The UK's Better Buildings Partnership (BBP) is one of them. Schroders Capital was an inaugural member of the BBP Climate Commitment in 2019, committing to achieve NZC by 2050. We also adopted the BBP's definition of NZC.

The BBP describes NZC in real estate as '...when the carbon emissions emitted as a result of all activities associated with the development, ownership and servicing of a building are zero or negative.'

The BBP framework requires signatories to have a holistic approach to NZC, meaning measurement and monitoring of energy and carbon across their operations and investments. This must cover both **operational carbon**, critically covering whole building performance including tenant activities, and assess **embodied carbon** from development, refurbishment and fit-out works.

To comply with this framework decarbonisation goals should be set across all assets under management.

What is needed to achieve NZC?

Achieving NZC will mean that:

The carbon emissions from development, ownership and servicing of all buildings must be reduced to a minimum as a first step.

Then, any residual emissions could be offset via high quality carbon removal projects.

Schroders Capital (SC) real estate published its own net zero pathway in 2020, with a comprehensive list of energy and carbon emissions targets committed to in 2021.

Schroders Capital real estate pathway

Using 2019 as a baseline, SC real estate's NZC pathway set in 2020 includes targets and initiatives that:



Align our portfolios with short, medium and longer term carbon targets to support the Paris Agreement



Prioritise energy hierarchy principles to focus firstly on reducing energy demand and improving efficiency



Address procurement of 100% renewable electricity for landlord-controlled supplies by 2025



Aim for zero waste sent to landfill



Aim to achieve NZC before 2050 (Long-term target)

Ultimately we strive to address **operational** (both landlord and tenant) and **embodied carbon**, across the real estate investment life cycle. Schroders Capital (SC) real estate uses an energy use intensity (EUI) reduction approach. We prioritise EUI reduction across assets to first and foremost tackle energy-hungry operations and optimise energy demand. Greenhouse gas (GHG) emissions intensity can then be tackled via on-site and/or offsite renewable energy supply.

Explaining 'scope' – or what carbon reduction efforts do (and do not) apply to

The real estate NZC pathway applies to all of our direct and indirect investments. NZC achievement involves eliminating emissions across three categories, direct scope 1 and indirect scope 2 and scope 3 emissions:

Scope 1 – Direct emissions - In real estate, this includes fuel combustion within assets for heating, e.g. natural gas combusted in a boiler and GHG emissions from refrigerant use and leakage within a building's cooling and refrigeration systems.

Scope 2 – Indirect emissions from purchased electricity, steam, heat and cooling consumed within the landlord-controlled spaces of assets.

Scope 3 – All other indirect emissions. In real estate, these can be GHG emissions associated with water, deliveries, commuting, business travel, waste, food, construction materials, energy consumed by tenants.

Net zero versus 'carbon neutrality' – the stark differences in ambition and impact

There is a distinction between carbon neutrality and NZC.

Carbon neutrality refers to a state where there is no net increase in global greenhouse gas emissions over a specified period due to the emissions associated with a particular subject during the same period.

NZC is a transformational, long-term commitment. It is often wrongly used interchangeably with 'carbon neutrality'. Targeting NZC is a more ambitious, and as a result, much more impactful approach.

Key differences between carbon neutrality and net zero carbon

	Carbon neutrality	Net Zero Carbon
Boundary	Carbon neutrality has a minimum requirement of covering Scope 1 and 2 emissions, while Scope 3 is just encouraged.	NZC must cover Scope 1, 2, and 3 emissions.
Level of ambition	An organisation does not need to cut its emissions in line with a certain trajectory to be carbon neutral.	To be net zero, an organisation must reduce its emissions along a 1.5°C trajectory across Scope 1, 2, and 3, i.e. an improvement plan of the organisation's carbon emissions on a year-on-year basis is required.
Approach to residual emissions	An organisation must purchase carbon offsets that either result in avoided emissions or carbon reductions (e.g. avoided deforestation and carbon capture and storage on industrial processes, where projects stop emissions being released into the atmosphere).	An organisation must purchase GHG removal offsets that take remaining emissions from the atmosphere and permanently sequester them. GHG removal offsets can come from projects such as afforestation and direct air carbon capture and storage, where emissions are physically removed from the atmosphere.

Source: Briefing: Net Zero for corporates | The Carbon Trust & SBTi: Net Zero standard criteria for corporates.

Real Estate's commitment is specifically to NZC.

NZC requires each fund to reduce emissions in line with a 1.5° Celsius transition to net zero carbon by 2050.

To become net-zero, an asset must tackle at least part of its scope 3 emissions (e.g. energy consumption attributed to tenants, water, waste) on top of its Scope 1 and 2 emissions, otherwise only a carbon neutral status can be claimed.



Implementation – How can real estate investors actually get to NZC?

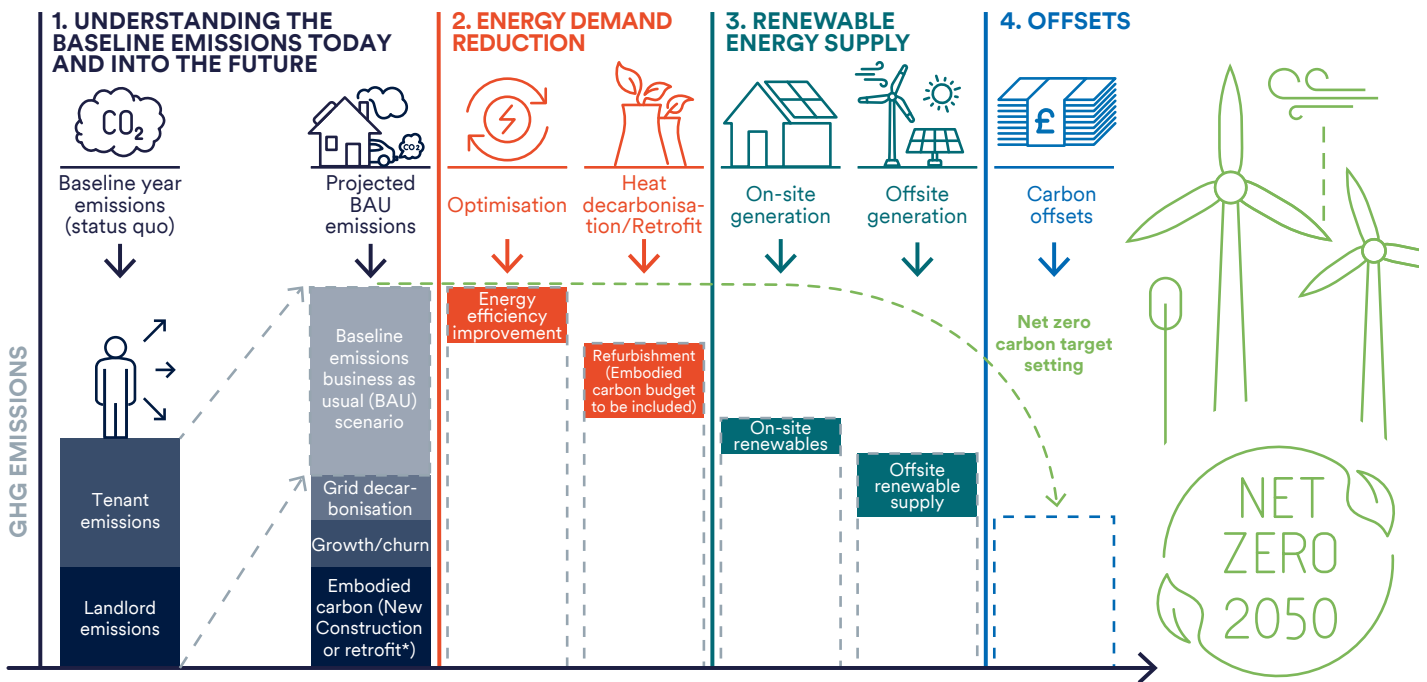
Our net zero carbon pathway process follows a holistic approach:

- ① We follow a hierarchy of actions to implement decarbonisation of a portfolio.
- ② We also benchmark the targets and pathways so performance can be compared at a global level.

SC real estate's NZC analysis focuses on an 'energy use intensity (EUI) reduction first' approach for all assets across portfolios. GHG emissions intensity can then be tackled via on-site and/or offsite renewable energy supply

Our decarbonisation approach is based on an 'asset first' analysis. Asset level performance is first analysed and then aggregated to the fund level.

Hierarchy of actions in implementing decarbonisation of a portfolio



1 Baseline emissions

Firstly, baseline emissions should be established based on combined landlord and tenant energy consumption (either via actual or estimated data). The baseline should be updated in accordance with grid decarbonisation as well as portfolio churn and embodied carbon expected through plans to develop new or retrofit existing portfolio assets.

If there are plans to develop new or implement interventions to existing assets, including installation of onsite renewables, these additions will have their own embodied carbon impact which should be included in the portfolio's carbon performance projections.

2 Energy demand reduction potential

Secondly, the potential for energy demand reduction must be assessed. Projected carbon and energy intensity will be adjusted according to identified refurbishments/retrofitting opportunities.

3 Renewable energy supply

After energy demand reduction opportunities have been thoroughly assessed, carbon offsetting via energy generated through renewables – onsite or otherwise – should be considered in the carbon emissions reduction projections.

4 Carbon sequestration or storage

Finally, funds should seek to offset any residual GHG emissions via high quality GHG offsets which either remove or store carbon.

Benchmarking – Are we moving fast enough?

Benchmarking against a framework can help ensure decarbonisation is on the correct trajectory.

SC real estate assets and portfolios' operational energy and carbon performance are assessed against energy and carbon targets of the Carbon Risk Real Estate Monitor (CRREM).

CRREM provides the real estate industry with transparent, science-based decarbonisation pathways. The pathways are aligned with the Paris Climate Goals; limiting global temperature rise to 2° Celsius with ambition towards 1.5° Celsius. CRREM offers pathways for both 1.5° and 2°C scenarios. We use the 1.5°C pathway.

The CRREM tool requires inputs of a building's energy consumption and associated GHG emissions for the whole building, including both landlord and tenant spaces for the gross internal floor area (GIA). Each asset's intensity-based transition targets are set against the relevant CRREM region and sector pathway, e.g. UK office, France retail high street.

Benchmarking against the CRREM tool helps identify potential improvements needed in a portfolio to mitigate any risks and achieve target outcomes on a timely basis.

Note: We intend to also evaluate our approach in alignment with future anticipated frameworks such as the UK Net Zero Carbon Buildings Standard (UK NZCBS) that aim to establish consistent principles for measuring assets' net zero boundaries, targets, and performance requirements.

When does an asset become stranded?

A question we face on numerous occasions on the implementation of NZC pathways is the risk of asset stranding. The CRREM sector pathways show investors where the carbon and energy intensity of a given asset should be in a given year. If an asset's emissions intensity exceeds the pathway at any time, this year is referred to as 'stranding year', i.e. the asset is at risk of becoming stranded, e.g. a building to possibly become obsolete as it may fail to meet increasingly stringent regulatory requirements.

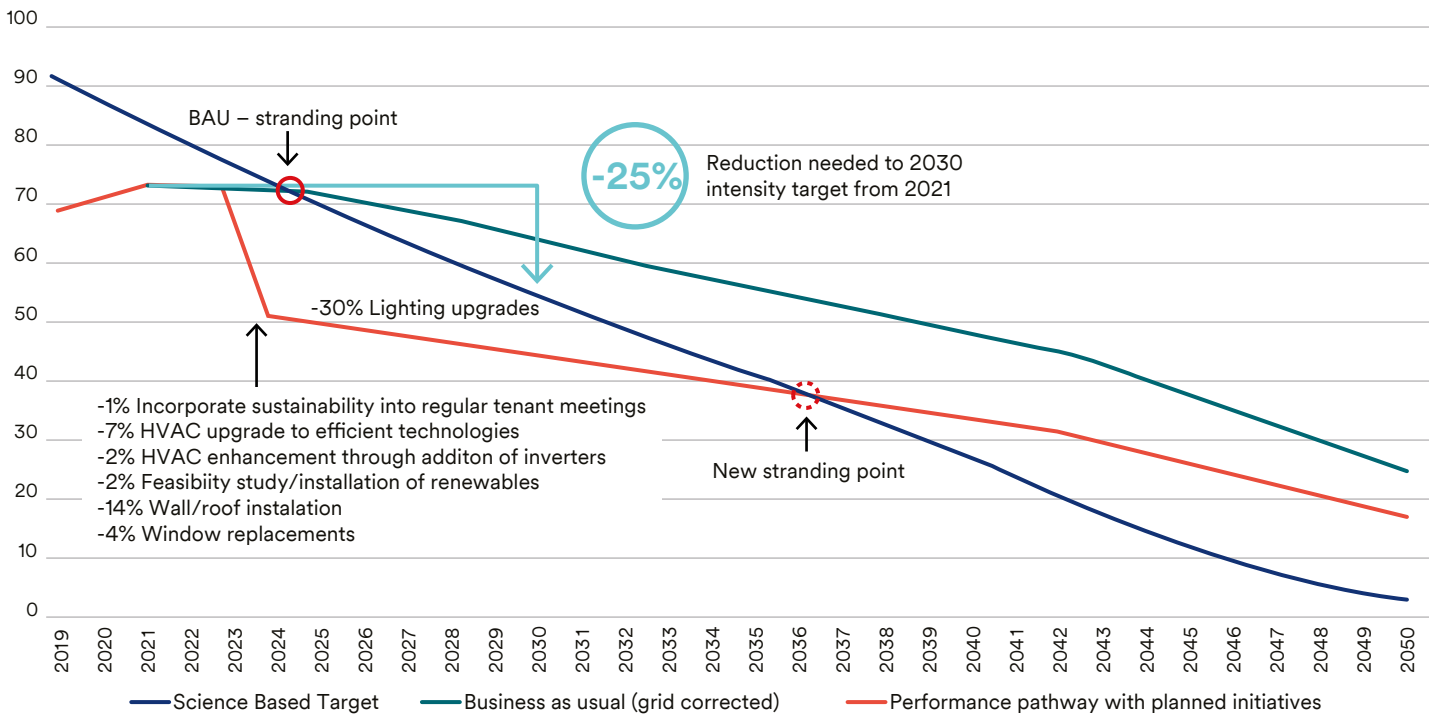
The effects of implementing energy efficiency improvements in single buildings can be modelled into the pathway analysis to show the impact on the stranding year and carbon performance both for an asset or in aggregate for a portfolio. (see example CRREM stranding chart below).

We use 'portfolio value at risk' diagrams that illustrate the total percentage of a portfolio projected to be 'stranded' in any given year. This can represent the cumulative floor area or Gross Asset Value (GAV) of those assets for which their projected carbon intensity is equal to or greater than that of their corresponding decarbonisation pathway over time.



Example CRREM stranding chart

Carbon intensity $\text{kgCO}_2/\text{m}^2/\text{year}$



NB: The sequence in which energy conservation measures are implemented can have a significant impact on their effectiveness. Some energy conservation measures may have a cumulative effect when implemented together. Considering the interdependencies between measures can also optimize their combined impact.

Finally, certain measures may require modifications to existing systems or infrastructure. By considering the sequence, you can ensure that the necessary infrastructure is in place to support subsequent measures. This reduces the risk of retrofitting or rework in the future.

Our approach is to be proactive in managing transition risks associated with the shift to NZC, and assessing those risks ahead of new investments. Where necessary – when repurposing or repositioning assets cannot achieve the transition as planned – we may divest.

Staying at the cutting edge of carbon reduction

SC real estate's NZC analysis approach supports fund managers and clients in achieving NZC goals for real estate now, and in the future. The current approach allows forecasting asset and portfolio performance based on operational energy consumption only. It can't stop there.

We have ambitions to widen our NZC analysis, to include a range of hard-to-quantify aspects of overall carbon footprint. The challenge for us and real estate industry is availability of data.

- **Embodied carbon** is a significant component of life-cycle carbon emissions but it is difficult to accurately estimate, particularly for existing assets. Within our asset level audits and NZC analysis we set out to estimate embodied carbon associated with refurbishment, new development and retrofit interventions in operational assets.
- **Water consumption** is increasingly being monitored across our portfolio assets.
- **Waste generation**, similarly, is monitored by a small number of our assets and must increase.
- **Fugitive emissions (F-gases)¹**: We will also seek to collect data on the amount of refrigerants used across real estate assets. This is now required as part of the CRREM GHG benchmarking.

¹Fugitive emissions (F-gases) are now required as part of the CRREM benchmarking. In 2014 the IPCC estimated building-related emissions from F-Gases at 1/3 to 1/8 of all global F-Gas emissions.

Keys to future success

Integrating and synchronising actions across key contributors to asset performance is a very important principle in the journey toward NZC.

- Close collaboration is important to agree on well-defined, measurable, milestone targets and realistic asset and fund decarbonisation trajectories.
- Progress should be closely monitored and decarbonisation strategies should be updated along with latest legislative developments as well as industry innovative and best practice approaches.
- Broad stakeholder engagement alongside consistent and robust approach to data capture is key to success.
- Interim target data setting and carefully designed monitoring of progress and performance of assets and funds against them is essential to achieve long term ambitions of whole life cycle NZC.
- Finally continuous review of reporting boundaries and improvement of data quality and consistency across a portfolio is integral to a NZC approach.

Closing remarks

We are working to increase the accuracy of our analysis and reporting based on actual data from the buildings we own, manage and operate. We aim to improve quality of our data and increase accuracy of our understanding of our building performance. We have integrated proprietary tools and sustainability considerations into our investment process to continuously review performance and target sustainability improvements through our assets' lifecycle. As always, technology and digital transformation can drive portfolio management and assist decarbonisation.

We are seeking to future-proof our performance by analysing and reporting increasingly on real and actual whole building (both landlord and tenant) data. We seek to measure, monitor and improve our performance against whole life-cycle net zero carbon

targets to also include wider-scope NZC, beyond just operational energy and carbon. Our multi-step NZC process involves regular audit and review of our performance and revisit targets, as we strive to continually review and improve our approach.

By recognizing NZC as an integral part of our strategy, we can proactively leverage its potential to drive positive financial and non-financial outcomes. Embracing NZC as an opportunity allows us to align our assets with evolving market demands, enhance their long-term resilience and mitigate risks associated with climate change to unlock new avenues for value creation in our assets.

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