

The term "carbon" is widely used as a shorthand expression to refer to multiple greenhouse gases. Within these explainer guides, we've chosen to use the term "carbon" as a proxy for "carbon dioxide equivalent" (CO₂e). CO₂e describes the aggregated global warming potential of multiple greenhouse gases in a common unit.

Net Zero Carbon Buildings and Infrastructure Explainer Guide

This Explainer Guide covers key principles of net zero carbon buildings and infrastructure



WHAT ARE NET ZERO CARBON BUILDINGS AND INFRASTRUCTURE?

Defining net zero carbon for the construction industry is a complex topic, so before doing so, it's useful to get an overall understanding of the term 'net zero carbon'. This can be defined as:

Net Zero Carbon - 'Net zero means that the total greenhouse gas (GHG) emissions would be equal to or less than the emissions removed from the environment. This can be achieved by a combination of emission reduction and emission removal' ([ONS](#)). Within net zero, the approach is always to maximize emissions reduction first before offsetting the remainder.

To apply this definition to built assets, UKGBC has worked to provide greater clarity by building industry consensus on a high-level definition, titled [Net Zero Carbon Buildings: A Framework Definition](#). The framework also focuses on two further concepts of net zero buildings that can be readily measured and mitigated today – Net Zero Carbon Construction and Net Zero Carbon Operational Energy.

Net Zero Carbon - Construction: 'When the amount of carbon emissions associated with a building's product and construction stages up to practical completion is zero or negative.'

Net Zero Carbon - Operational Energy: 'When the amount of carbon emissions associated with the building's operational energy on an annual basis is zero or negative.'

WHY IS IT IMPORTANT?

[The Paris Climate Agreement](#) represented a turning point in efforts to tackle climate change, with a commitment to limit increases in global temperatures below 1.5°C and decarbonise the global economy by the second half of this century. Aiming for net zero is a tangible pathway and goal that organisations, governments and individuals can aim for to reduce their emissions.

WHAT IS THE ROLE OF THE BUILT ENVIRONMENT?

UKGBC's [Net Zero Whole Life Carbon Roadmap for the Built Environment](#) illustrates that the UK Built Environment is currently responsible for (i.e., has direct control over), 25% of total UK greenhouse gas emissions. If surface transport (vehicle emissions) is included within the scope of the built environment, the total share of UK emissions increases to 42%.

To meet this challenge the [World Green Building Council](#) launched the global [Advancing Net Zero campaign](#) which [calls on](#) businesses, organisations, cities, states and regions to ensure that all new buildings must be net zero operational carbon by 2030, with a 40% reduction in embodied carbon, and that all buildings (including existing) are net zero in both embodied and operational carbon by 2050. UKGBC also have a corresponding [Advancing Net Zero](#) campaign to further this work in the UK. This programme supports the [Race to Zero's Built Environment 2030 Breakthrough](#), which sets a sector goal for 100% of projects (new and existing) to be net zero carbon across the whole life cycle by 2050.

Delivering a low carbon, high performance built environment will reform the way we design, construct and operate our buildings and infrastructure. Both new and existing projects will need to radically reduce the amount of carbon emissions emitted.

FURTHER RESOURCES

- UKGBC: [Advancing Net Zero](#)
- UKGBC: [Net Zero Carbon Buildings Framework](#)
- UKGBC: [Whole Life Carbon Roadmap](#)
- WorldGBC: [Advancing Net Zero](#)