Torridon
your construction cost partner

Understanding carbon in our buildings

A quick guide to the different types of carbon in our built environment →

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Introduction

Lots of people are talking about carbon, but are we all saying the same thing? I've realised that the more that carbon becomes a popular topic, the more it seems to be misunderstood.

This quick guide will give a very quick definition of some of the different types of carbon and how they relate to our built environment:-

Carbon footprint

Embodied carbon

Biogenic carbon

Operational carbon

Avoided, sequestered, and offset carbon

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Carbon footprint

A Carbon Footprint measures the total greenhouse gas emissions caused directly and indirectly by a person, organisation, event, building, or product.

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Embodied carbon in construction

Embodied Carbon refers to the CO2 emissions associated with materials and construction processes throughout the lifecycle of a building or infrastructure.

- Extraction from source
- Transportation
- Manufacturing process
- Construction process
- Replacement / refurbishment
- Demolition of existing
- Disposal or reuse

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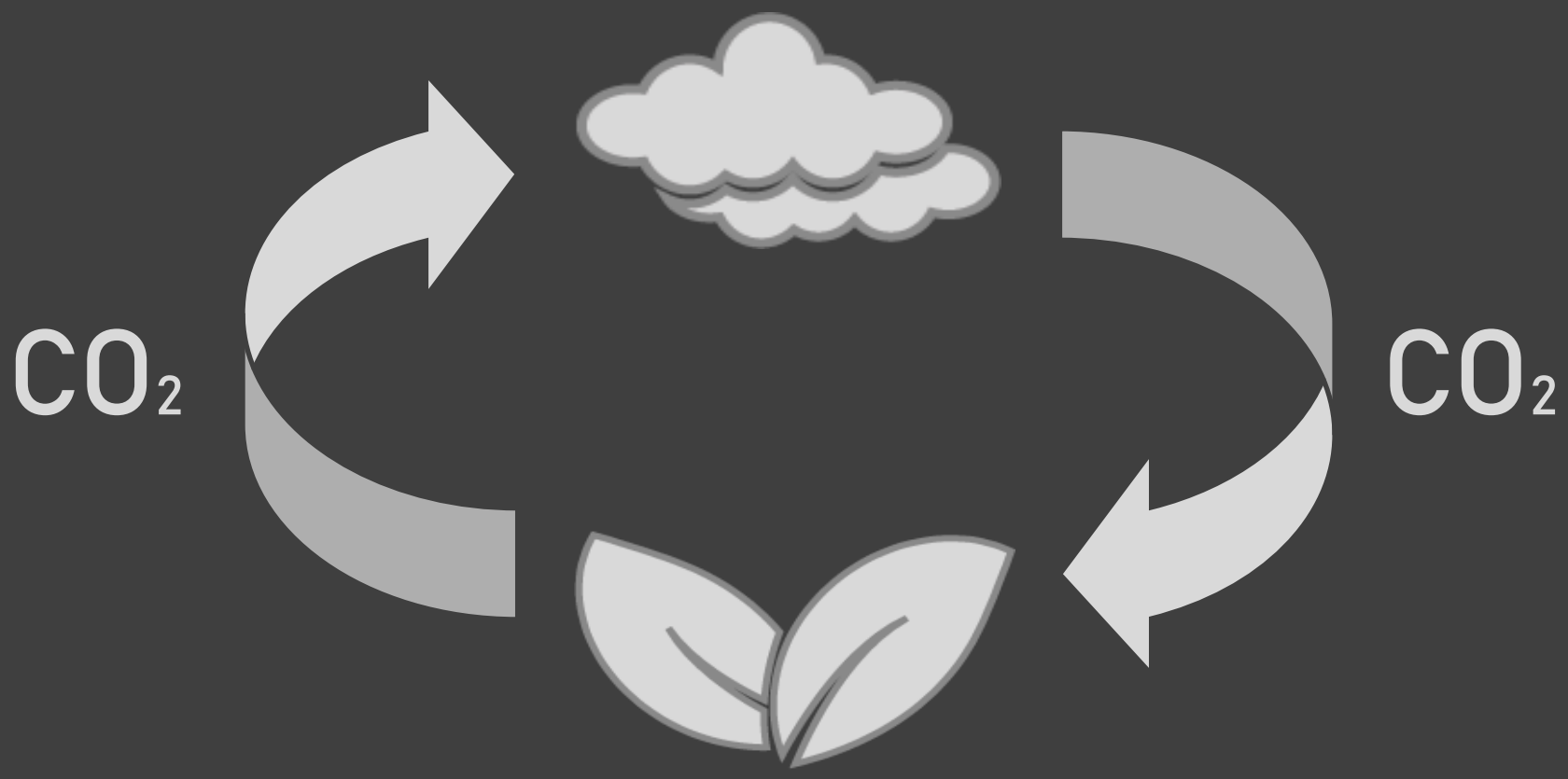
Biogenic carbon: the natural cycle

Biogenic Carbon is the carbon exchanged naturally between the biosphere and the atmosphere, like CO2 absorbed by plants and trees during photosynthesis.



INSIGHT

Biogenic carbons are debated for their carbon-neutral status. While they are renewable, the time taken for new biomass to absorb CO2 (often decades) challenges their effectiveness as a short-term solution to climate change. However, they are still a more sustainable option compared to fossil fuels and, when combined with other renewable sources, contribute to a cleaner future.

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Operational carbon: energy in use

Operational Carbon involves the emissions from the energy used to heat, cool, and light buildings. It's a key factor in a building's total carbon impact when considered over the life span of the building.

Avoided, Sequestered, and Offset Carbon

These terms refer to carbon reduction strategies:

Avoided Carbon

Prevents emissions

Sequestered Carbon

Involves capturing (and treating or long term storing of) CO2 in soils, plants and the ocean

Offset Carbon

Compensating emissions through external projects

Measuring carbon emissions

Carbon emissions are quantified in terms of carbon dioxide equivalent (CO2e). This measurement considers the global warming potential of various greenhouse gases, translating them into a common scale based on the impact of CO2.

It allows for a comprehensive assessment of an entity's environmental impact, encompassing all emitted greenhouse gases, not just CO2.

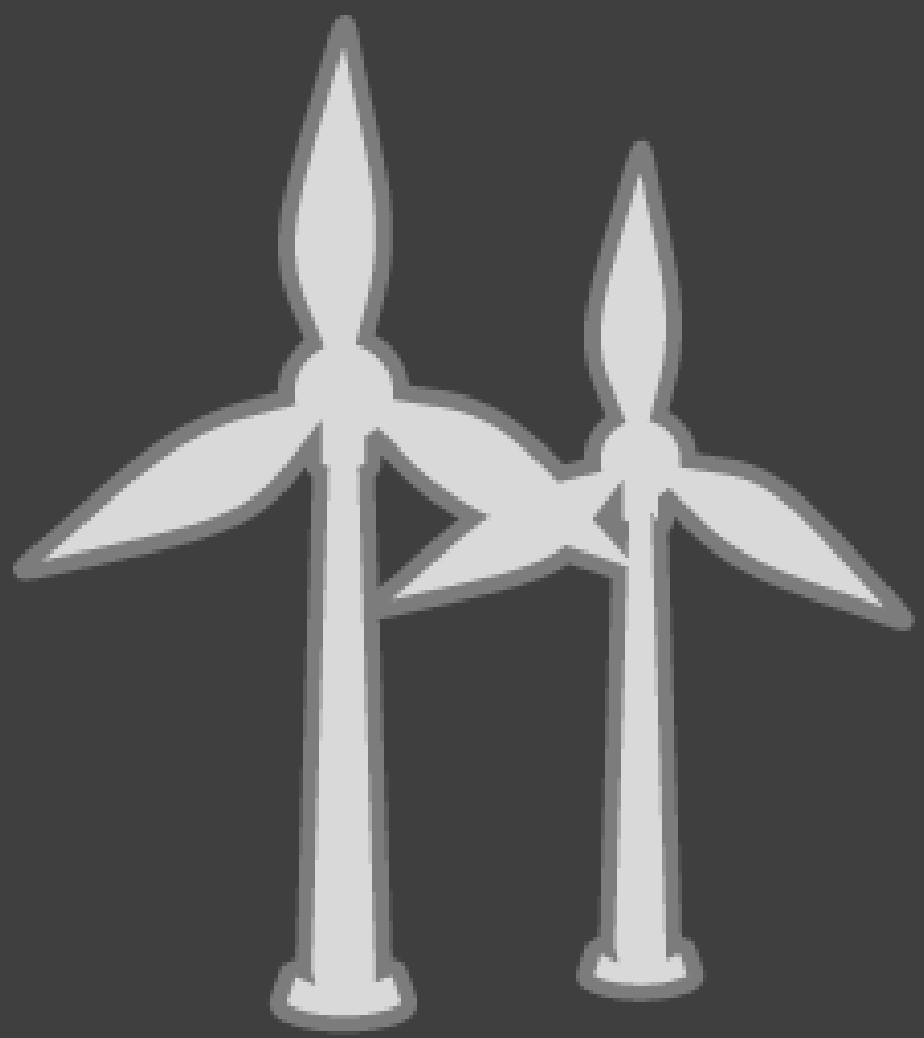
Key methods for measuring carbon include:

- Direct monitoring of emissions sources
- Lifecycle assessments for buildings
- Estimation models for indirect emissions

Decarbonisation

Decarbonisation in the built environment focuses on reducing carbon emissions in construction and building operations. It's key to achieving a sustainable development and can be achieved by:-

- Implementing sustainable building practices
- Utilising energy-efficient materials and technologies
- Integrating renewable energy sources
- Designing for minimal energy consumption in heating, cooling, and lighting
- Reducing embodied carbon in construction materials



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