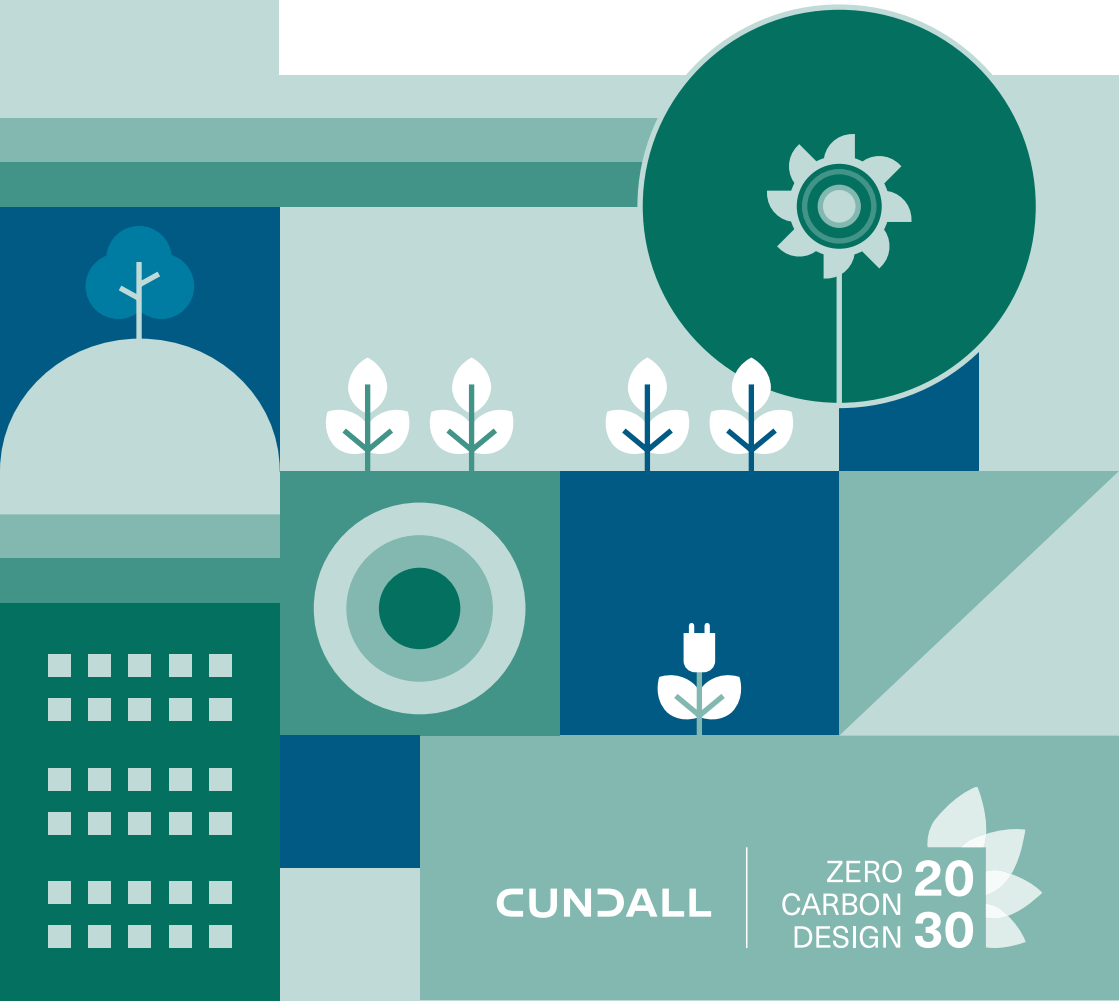
A to Z of NZC

A glossary of sustainability and ESG terms



CUNDALL | ZERO CARBON DESIGN 2030

About Cundall

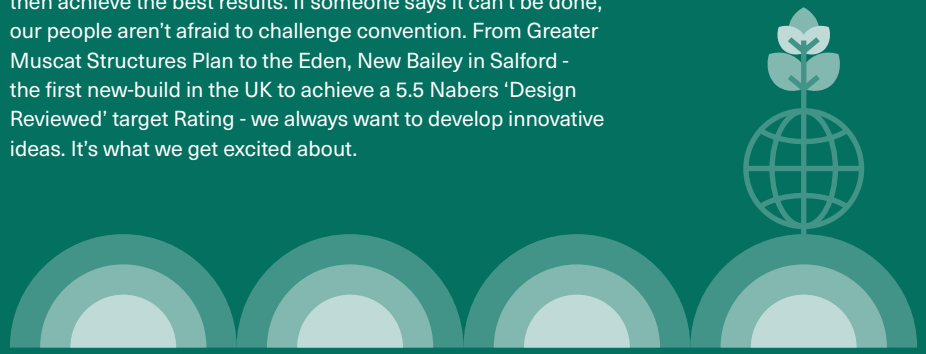
Cundall is a global, independent, multi-disciplinary consultancy delivering sustainable engineering and design solutions across the built environment.

We have 26 offices with 1,000 consulting engineers and designers who are empowered to act with flexibility and agility in response to the local market conditions and practices. We are 100% owned by Partners working in the practice.

As a client you just want the best person for your job. And as an independent, privately owned practice, we always act in the interests of you, our clients, rather than being beholden to shareholders. At Cundall, we really are one global team, with a single-bottom line that gives us the freedom to select people with the right fit, skills and experience for your job.

The quality of our people is one of our biggest strengths. Our clients enjoy working with us and the fact that we consistently win repeat business with 70-80% of them is testament to this.

When it comes to projects, we're known for taking the lead. Our curiosity means we ask the right questions so as a team we then achieve the best results. If someone says it can't be done, our people aren't afraid to challenge convention. From Greater Muscat Structures Plan to the Eden, New Bailey in Salford - the first new-build in the UK to achieve a 5.5 Nabers 'Design Reviewed' target Rating - we always want to develop innovative ideas. It's what we get excited about.



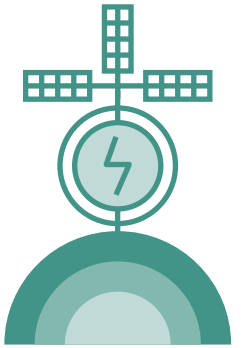
Introduction

To demystify the language around net zero carbon and environmental, social and governance (ESG) in the built environment, Cundall's global sustainability experts have created a glossary of terms most commonly used in our industry.

From technical terms and tools to scientific terminology, assessments and government regulation, this glossary of terms aims to help our clients and the wider industry better understand the language that is driving our ambition to create a more sustainable future for our industry.

It is part of our commitment to Zero Carbon Design 2030, and we know that if we are to succeed in our goal of achieving net zero carbon on all our projects by 2030, then we need to help our clients and the industry on the journey with us.

Index of glossary terms



Gg

geothermal energy
Global Real Estate Sustainability Benchmark (GRESB)
Global Reporting Initiative (GRI)
Global Warming Potential (GWP)
governance
Green bonds
green financing
greenhouse gases (GHG)
greenhouse gas accounting assessment
Greenhouse Gas Protocol
green hydrogen
green steel
greenwashing
grey hydrogen

Hh

heat exchanger
heat pumps
hydroelectricity or hydropower
hydrofluorocarbons

Ii

Integrity Council for the Voluntary Carbon Market (ICVCM)
Intergovernmental Panel on Climate Change (IPCC)
International Energy Agency (IEA)
International Financial Reporting Standards (IFRS)
International Sustainability Standards Board (ISSB)
in-use embodied carbon
ISO (International Organisation for Standardisation)

Kk

Kyoto Protocol

Ll

LETI (originally London Energy Transformation Initiative)
LETI framework
Life Cycle Assessment (LCA)

Mm

materiality assessment
material passport
mitigation

Nn

NABERS (National Australian Built Environment Rating System)
NABERS UK
Nationally Determined Contribution (NDC)
nature-based solutions
net zero carbon

Oo

off-gassing
operational carbon
operational energy

Pp

Paris Agreement
passive thermal performance
Passivhaus
photovoltaics (PVs)
physical climate risk

Qq

qualifying Explanatory Statement (QES)

Rr

reference scenarios
resilience

Ss

science-based targets
Science-Based Target initiative (SBTi)
scope 1 emissions
scope 2 emissions
scope 3 emissions
Securities and Exchange Commission (SEC)
Sequestration
Shared socioeconomic pathways (SSPs)
social impact investments
social value
solar power
solar thermal
Sustainability Accounting Standards Board (SASB)
Sustainable Finance Disclosure Regulation (SFDR)

Tt

Task Force on Climate-Related Financial Disclosures (TCFD)
tidal energy
transitional fund
transition plan
transition risk

Uu

UK Sustainability Disclosure Requirements (SDR)
UNFCCC
upcycling
upfront embodied carbon
urban heat island effect

Vv

Value Reporting Foundation's Integrated Reporting Framework (VRF)
Voluntary carbon market

Ww

water security
Whole life carbon assessment (WLCA)
whole lifecycle carbon emissions
wind power
World Resource Institute (WRI)
World Business Council for Sustainable Development (WBCSD)

Zz

Zero Carbon Design 2030

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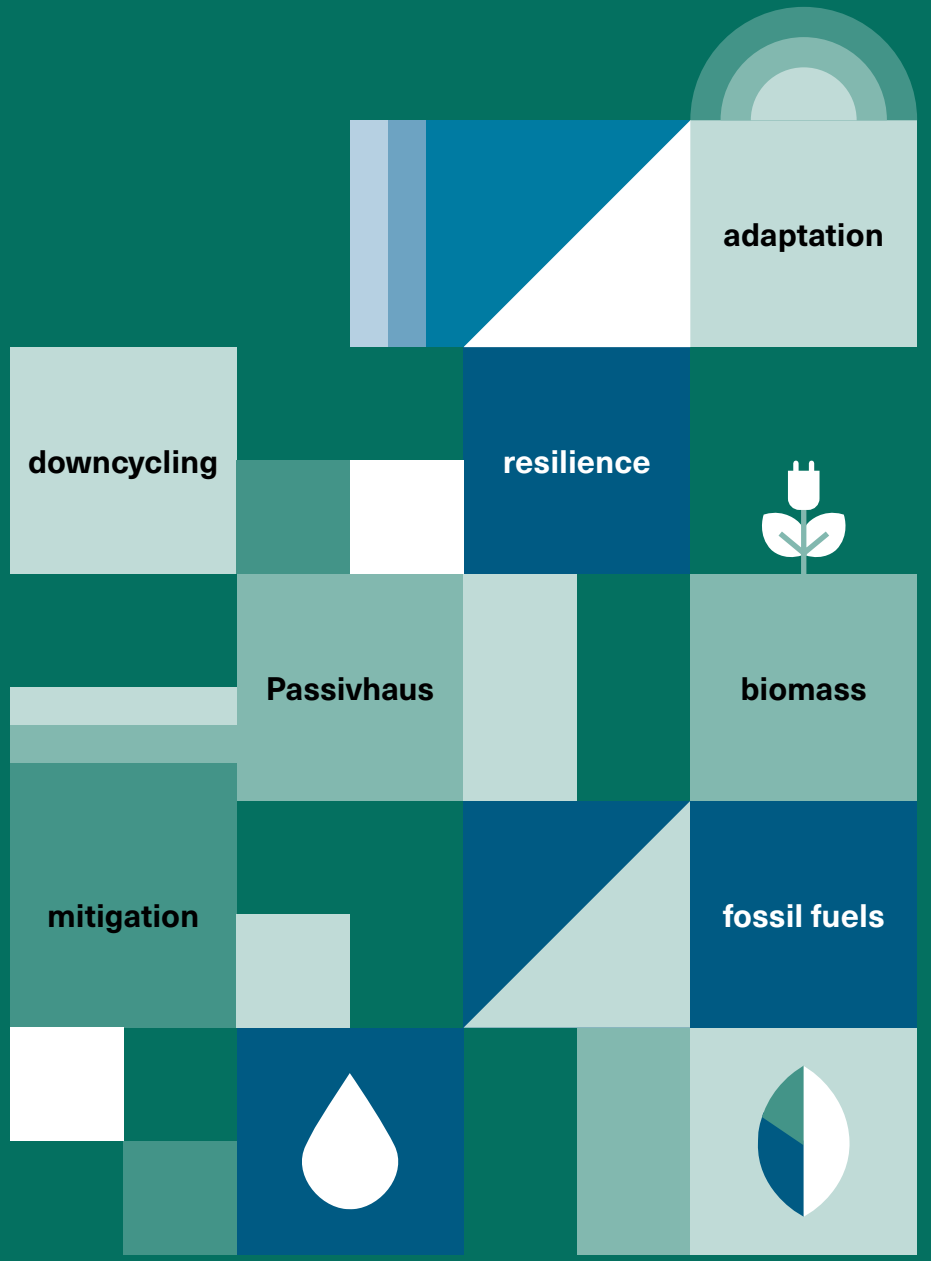
1.5°C
2°C
15-minute cities

A-Z

of NZC


adaptation
downcycling
resilience
Passivhaus
biomass
mitigation
fossil fuels

A

a

Aa

abatement

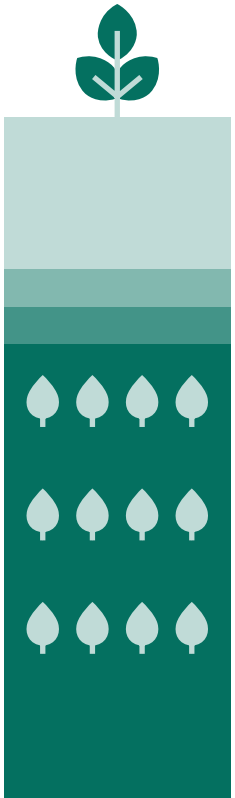
measures to prevent, reduce, or eliminate sources of greenhouse gas (GHG) emissions

Example: Switching to renewable electricity sources is a key form of abatement for urban carbon emissions.

adaptation

preparing for the effects of climate change in order to prepare buildings, towns, cities and infrastructure for the harm or opportunities that arise

Example: It is important for building owners to understand and implement measures to protect assets from increased rainfall and extreme heat waves based on future climate projection.



adaptive capacity

see also resilience, the ability of systems, institutions, organisms and communities to adjust to potential harm, to take advantage of opportunities, or to respond to consequences

Example: The adaptive capacity of an urban community is of particular importance in areas at risk of extreme heat events due to climate change.

Agriculture Forestry Land and Other Uses (AFLOU)

this essential industry sector which involves land clearing is contributing to a quarter of all human-made greenhouse gas emissions – but also has capacity to store carbon in soil and vegetation

Example: AFLOU is key to the global agenda of reducing greenhouse gas (GHG) emissions. Agriculture land that is cleared will contribute to GHG emissions, whereas vegetation that is actively managed and increased can help mitigate climate change.

anthropogenic emissions

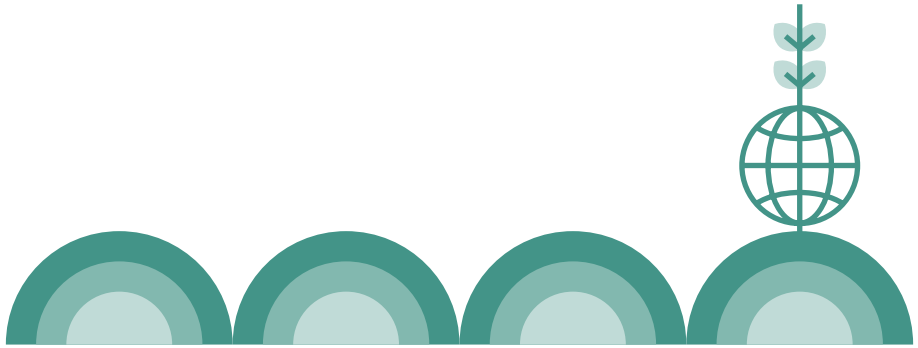
carbon emissions resulting from human activity including industrial processes, fossil fuel energy generation, transport, and land management practices

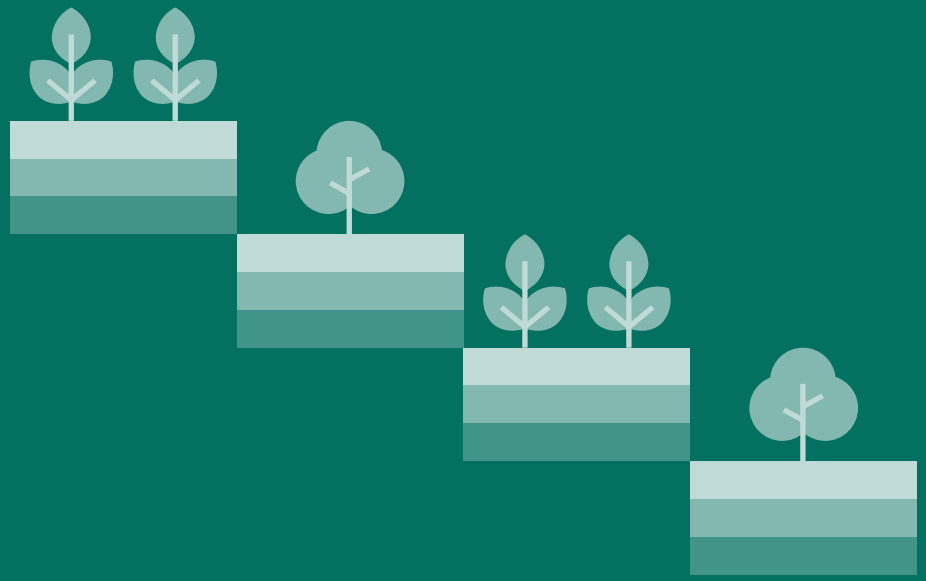
Example: The UK Government's net-zero policy has been criticised because it gives leeway for further anthropogenic emissions.

Australian Carbon Credits Units (ACCU)

a carbon credit issued to an organisation by the Australian Government (the Clean Energy Regulator) with each unit representing one tonne of carbon emission equivalents that are not released to the atmosphere. ACCUs are linked to projects in Australia and typically nature-based

Example: As part of its sustainability strategy, Consolidated Property Services, a commercial cleaning business in Australia, elected to purchase Aboriginal carbon credits that support economic development for Traditional Owners.





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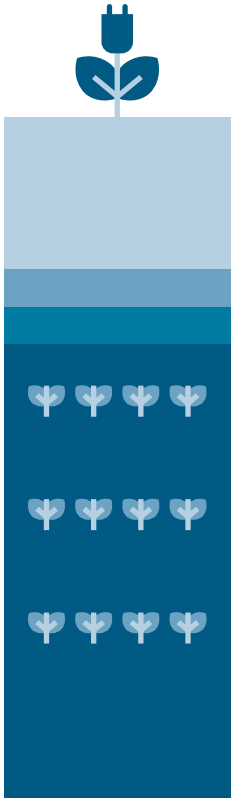

biodiversity
the range of plant and animal species found in a particular habitat

Example: When we design for biodiversity in the built environment, we leave room for nature to thrive in urban areas.

bioenergy
energy generated from the combustion of biomass

Example: Woodchips and pellets are types of biomass fuel that can provide bioenergy through combustion within a biomass boiler to provide hot water.

biomass
organic material produced by living organisms

Example: For the redevelopment of Stopford House in Manchester, Air Source Heat Pumps were provided to complement biomass boilers and reduce reliance on the existing natural gas boilers.

black carbon emissions
sooty black material emitted from gas and diesel engines, coal-fired power plants and other sources that burn fossil fuels

Example: Black carbon, or soot, contributes to poor air quality in urban areas.

blue carbon
carbon stored in the soil and plants in coastal habitats

Example: Urban development poses a huge risk to ecosystems like mangroves and tidal marshes that sequester substantial amounts of blue carbon in the plants and sediment below.

blue hydrogen
produced through the process of steam reforming (combining natural gas and steam), which results in hydrogen and carbon dioxide as a by-product

Example: Blue hydrogen can be used in automated vehicles, such as autonomous taxis, buses, and delivery trucks, as a clean fuel source to power fuel cell vehicles or hydrogen internal combustion engines, reducing carbon emissions compared to traditional hydrogen.

C

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Cc

carbon allowance

also known as an emissions trading scheme, these are tradeable and heavily regulated government permits that allow organisations to emit a certain amount of CO_2 and require emission reduction over time

Example: In Europe, there is a mandatory requirement for energy intensive industries like power generation and aviation, to take part in the carbon allowance scheme known as the Emissions Trading Scheme (ETS).

carbon capture, utilisation, and storage (CCUS)

technologies that enable the capture and reuse of CO_2 emissions from large sources such as power plants or removal of pre-existing CO_2 from the atmosphere

Example: CCUS will play a role in decarbonising industries like steel and power generation. The CO_2 captured as part of this process can be used to make building materials such as concrete and plastics.

carbon credits

see also carbon offsets, are non-regulated credits bought by organisations to offset the CO_2 emissions that occur because of business activities

Example: Common examples of carbon credit projects include reforestation, building renewable energy like hydro, wind and solar farms, and carbon-storing agricultural practices. One carbon credit is equal to one tonne of CO_2.

carbon dioxide equivalent (CO_2e)

also known as carbon equivalent, a unit of measurement used to compare the emissions from various greenhouse gases into metric tonnes or kilograms of carbon dioxide based on their global warming potential (GWP)

Example: The global warming potential (the contribution to climate change) of 1kg of methane equates to 28kg of carbon dioxide and would be expressed as 28kg CO2e in a carbon footprint.

Carbon Disclosure Project (CDP)

a not-for-profit organisation that runs global disclosure programmes for investors, organisations, or cities to manage the environmental impacts of activities

Example: As organisations recognise the responsibility of decarbonisation, there is increasing demand for credible environmental disclosure schemes like the one offered by CPD.

carbon footprint or carbon inventory

the total amount of greenhouses gases that are generated by specific actions, processes, or products. A carbon footprint is typically expressed in carbon equivalents (CO_2e) and includes all greenhouse gases that contribute to climate change

Example: The carbon footprint of the average two-bedroom cottage in the UK is 80 tonnes CO_2e.

carbon insetting

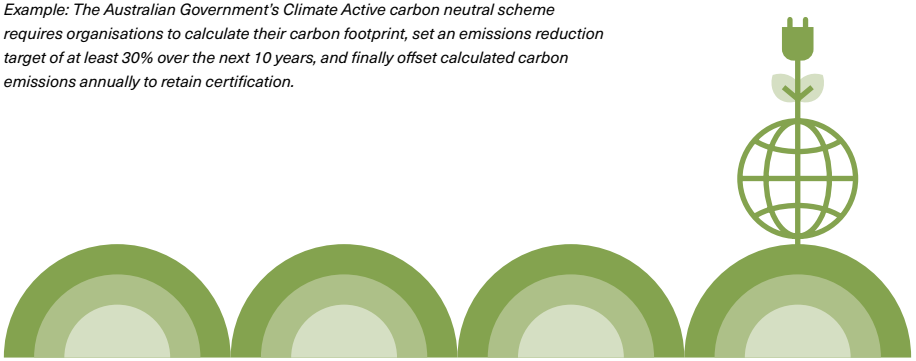
Investing in internal carbon protection and offsetting solutions within an organisation's supply chain to make a positive impact

Example: The Crown Estate has a large-scale carbon insetting strategy for their own assets that encourages biodiversity in their marine and rural estates.

carbon neutral

striking a balance between carbon emissions and absorptions

Example: The Australian Government's Climate Active carbon neutral scheme requires organisations to calculate their carbon footprint, set an emissions reduction target of at least 30% over the next 10 years, and finally offset calculated carbon emissions annually to retain certification.



Cc

carbon offset

see also carbon credits, a certificate for a metric tonne of GHG emissions that are either removed from the atmosphere or avoided altogether through carbon projects. They can be purchased by an organisation to compensate for emissions created elsewhere

Example: The purchase of carbon offsets is a common way for organisations to compensate hard to abate carbon emissions created by business activities such as flights.

carbon pricing

the cost applied to carbon pollution to encourage polluters to reduce the amount of greenhouse gas emissions they emit

Example: Cundall has created its own internal carbon price to help set a budget for offsetting the Scope 1, 2 and 3 emissions created by our business activities.

chlorofluorocarbons

industrial chemicals comprised of carbon, chlorine and fluorine that are believed to be a major cause of ozone depletion and potent greenhouse gases

Example: The production of chlorofluorocarbons has been phased out but can still be found in older refrigeration and air conditioning units which should be replaced with more climate-friendly alternatives.

circularity and circular economy

an economic model based on the reuse and regeneration of materials and products

Example: Project managers, GreenChair, have built a database for unwanted furniture to be reused instead of being thrown out – an example of a circular economy business model.

Cc

climate change

the rapid and long-term shift in average weather patterns across the world caused by greenhouse gases released to the atmosphere through human activities such as burning fossil fuels

Example: The construction sector contributes to climate change through greenhouse gas (GHG) emissions released from electricity and gas used in buildings, building materials and construction activities.

climate change risk disclosure

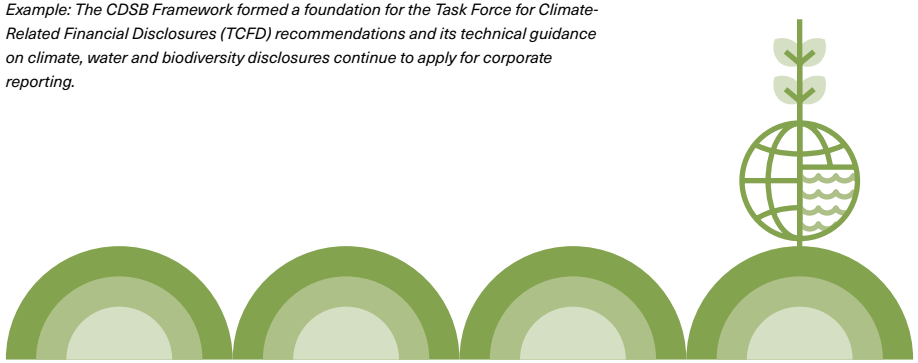
documents that cover how climate change is addressed in corporate governance and financial matters, these are typically linked to global frameworks like the Taskforce for Climate Related Financial Disclosures (TCFD) and the International Financial Reporting Standards (IFRS)

Example: From 2024, the Corporate Sustainability Reporting Directive's (CSDR) mandatory climate-related risk disclosures will require companies in the European Union to communicate to investors about the sustainability-related risks and opportunities they face.

Climate Disclosure Standards Board (CDSB)

now part of the International Sustainability Standards Board (ISSB), an international organisation that was committed to furthering corporate reporting of environmental and social information with the same rigour as financial information

Example: The CDSB Framework formed a foundation for the Task Force for Climate-Related Financial Disclosures (TCFD) recommendations and its technical guidance on climate, water and biodiversity disclosures continue to apply for corporate reporting.



climate emergency

the need for urgent action to reduce or halt climate change and its impacts

Example: In the UK, 95% of the population live in areas where local authorities have declared a climate emergency.

climate hazards

the risks of climate related disaster such as cyclones, drought, tropical storms and flooding

Example: The rise in global temperatures leaves the built environment particularly vulnerable to climate hazards like floods and heatwaves, because among other things, they can result in structural damage, disrupt supply chains, and compromise occupant health and safety.

Climate Risk Real Estate Monitor (CRREM)

a tool to help the global real estate industry to measure their pollution and emissions, and align with the Paris Agreement's trajectory to 2050

Example: Portfolio owners should demonstrate that their assets are 'Paris Proof' by utilising methodologies such as the Carbon Risk Real Estate Monitor (CRREM).

Climate risk and vulnerability assessment (CRVA)

an assessment of the likelihood of current and future climate hazards

Example: Climate risk and vulnerability assessments are undertaken to evaluate potential climate risks for large masterplanning projects like Oman's Greater Muscat Structure Plan.

Conference of the Parties (COP)

the decision-making body of the United Nations Framework Convention on Climate Change (UNFCCC) which encourages intergovernmental policy on climate change

Example: Held in the UAE in December 2023, COP28 was the 28th United Nations Climate Change conference.

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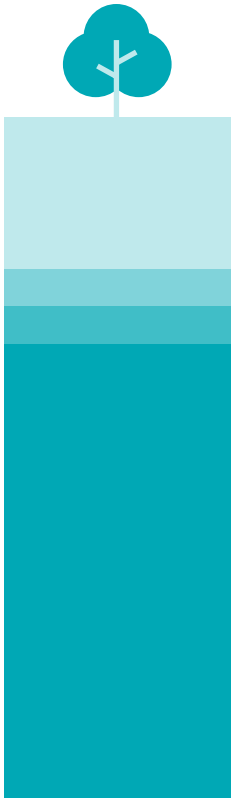

decarbonisation pathway

a bespoke pathway that maps out decisions and actions to reduce emissions over time

Example: To maintain the value of your assets and achieve net zero, it is recommended to build a decarbonisation pathway into your sustainability strategy.

deforestation

purposeful clearing of forested land

Example: One of the disadvantages of widespread use of timber as a building material is its links with deforestation.

disclosure

public reporting about an organisation's Environmental, Social and Governance (ESG) performance

Example: Due to take effect in 2024, the International Sustainability Standards Board (ISSB) has released frameworks for mandatory disclosure of climate-related risks that could impact a company's cash flows and capital over time.

double materiality

the process of reporting how an organisation is impacted by climate change issues, with equal emphasis on how they are impacting society and the environment

Example: Cundall works with asset owners to conduct double materiality assessments that review their strategy and practices and ensure they are not financing projects that have a negative impact on the environment.

downcycling

to recycle waste in a way that the resulting product is of a lower quality and functionality than the original item

Example: While downcycling has less of a positive impact than upcycling, when it comes to construction waste, all forms of recycling are preferred to landfill.

E

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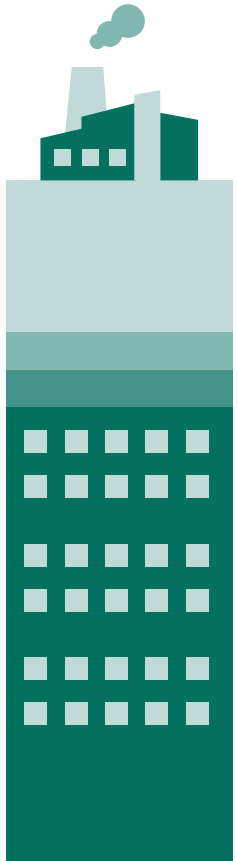


embodied carbon

the supply chain carbon emissions of the materials and construction processes throughout the lifecycle of buildings

Example: Embodied carbon is a critical aspect of the global sustainability Carbon Assessment Tool that Cundall developed for the Hong Kong Construction Industry Council, which now acts as a gatekeeper for the disclosure of embodied carbon data for materials used on site.

Emission Reduction Fund (ERF)

An Australian government scheme for incentivising emissions abatement and creation of Australian Carbon Credit Units (ACCU)

Example: Formally known as the Emission Reduction Fund (ERF), the Australian Carbon Credit Unit scheme provides incentives to reduce emissions or store carbon.

Emissions Trading Scheme (ETS)

a carbon emissions trading scheme which caps the total level of greenhouse gas emissions and creates a carbon price to incentivise decarbonisation

Example: Since it began in 2005, the European Union's Emissions Trading Scheme (ETS) has successfully contributed to reducing emissions from sectors like heat and electricity generation, aviation and maritime transport .

emissions trajectories

A projection of the level of greenhouse gas (GHG) that an entity emits, based on current and proposed practices and policies

Example: The global GHG emissions trajectory is a particularly important indicator of increases in global temperatures.

Ee

end of life carbon

carbon emitted during demolition or deconstruction and processing of materials for reuse, recycling or final disposal

Example: End of life carbon should be considered from the planning and design stage, targeting a longer building life and promoting circular principles through demolition and construction waste work flows where possible.

energy intensity

energy consumption per unit of gross domestic production, it can be applied to buildings and expressed as per square metre floor area

Example: The built environment must recognise that we cannot truly achieve net zero as an industry unless the buildings we design operate at the minimum energy intensity and do not rely on the decarbonisation of the national grid or renewable energy procurement.

Energy Use Intensity (EUI)

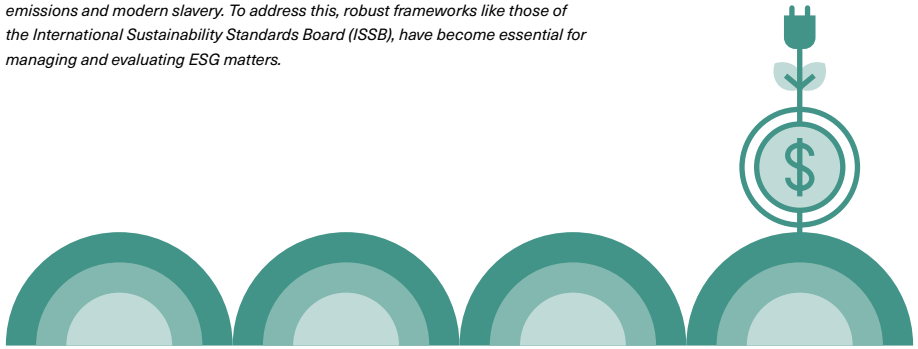
annual amount of energy used per building area

Example: Based of the type of building, the EUI differs, for example, hospitals and data centres have a higher EUI due to the equipment inside them.

environment, social and governance (ESG)

a set of aspects to measure and improve an organisation's impact on the planet, society and governance

Example: ESG covers a wide scope of risk and ethical responsibilities like carbon emissions and modern slavery. To address this, robust frameworks like those of the International Sustainability Standards Board (ISSB), have become essential for managing and evaluating ESG matters.



environmental reporting

communication of information relating to an organisation's impact on the natural environment across indicators like emissions, waste, water consumption and biodiversity

Example: An Environmental Impact Assessment is a key part of environmental reporting for a proposed development.

environmentally sustainable design

design to reduce negative impacts on the environment while improving building performance and benefiting the health and well being of building occupants

Example: Environmentally sustainable design can include conserving water and optimising site use, building space and material use.

EU Sustainable Finance Framework

An EU-wide regulation that mandates Europe-operating companies and investors to take ESG considerations into account when making investment decisions

Example: The EU Sustainable Finance Framework is applicable to any financial market participant with more than 500 employees, including real estate investment trusts and insurers.

EU Taxonomy

a classification system to help investors understand whether an economic activity is sustainable

Example: The EU Taxonomy covers economic activities related to the buildings sector including installation, maintenance and repair of renewable energy technologies, and regulation and control of the energy performance of a building.

F

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fossil fuels

fuels including coal, oil and gas formed from the underground decomposition of prehistoric plants and animals

Example: Heat demand currently represents over 40% of UK energy consumption by the end user, with the vast majority coming from fossil fuels such as natural gas.

fluorinated gases

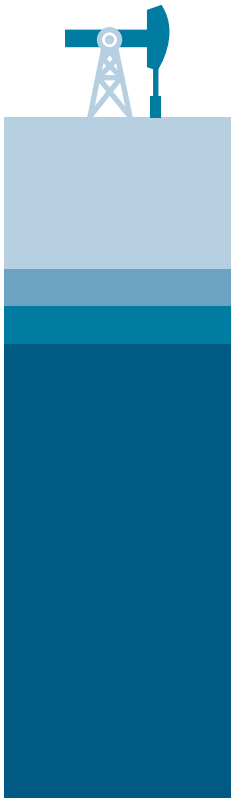
or F-gases, are synthetic gases

Example: Refrigeration, air conditioning and heat pump equipment are some of the largest sources of F-gas emissions.

fugitive emissions

the intentional or unintentional release of greenhouse gases in the environment

Example: According to a study by the Institute for Energy Economics and Financial Analysis, fugitive emissions are highly underreported and better assessment is required to correct this.



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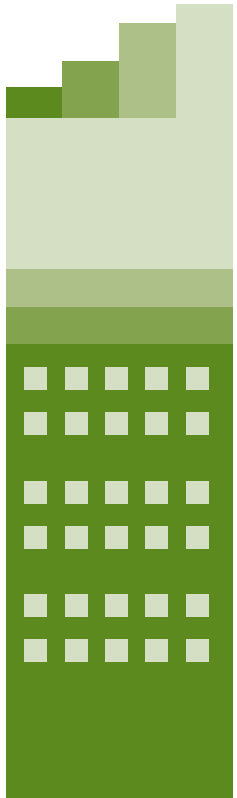


geothermal energy

renewable energy continuously produced by heat in the Earth's crust

Example: Hot springs, geysers, steam vents, underwater hydrothermal vents and mud pots are all examples of geothermal energy that can be captured and used to heat or generate electricity.

Global Real Estate Sustainability Benchmark (GRESB)

a global rating tool that assesses and benchmarks the ESG performance of real and infrastructure asset portfolios and provides actionable and transparent data to financial markets and investors

Example: A property portfolio with a high GRESB ranking is likely to be well-managed, future-fit and support occupant wellbeing – all key indicators for entities that have a strong commitment to ESG.

Global Reporting Initiative (GRI)

an international non-profit framework for sustainability reporting that helps organisations to understand and communicate their impacts on people, the environment, and the economy

Example: The GRI is developing reporting standards for 40 different sectors, with industries like mining, food and beverage, banking, utilities and renewable energy, prioritised based on their sustainability impacts.

Global Warming Potential (GWP)

a measure of how much thermal energy the emissions of one tonne of any specific gas will absorb over a period relative to the GWP of one tonne of CO_2

Example: The global warming potential of steel made from a blast oxygen furnace is higher than ones made on an electric arc furnace by 1.54 kg CO^2/kg of steel.

governance

a process for decision making within an organisation

Example: Increasingly, Real Estate Investment Trusts are reporting and disclosing their environmental performance to demonstrate good governance.

Green bonds

a type of fixed-income instrument specifically earmarked to raise money for climate and environmental projects

Example: Green bonds are one of the main instruments for sustainably financing construction projects that have sustainability targets.

green financing

A loan or investment that flows from the public, private and not-for-profit sectors to environmental issues

Example: Green financing prompts property owners to make their buildings greener by incentivising investment in sustainable projects like renewable energy, sustainable transport, waste and waste-water treatment, and reforestation.

greenhouse gases (GHG)

also referred to as “carbon dioxide equivalents”, gases in the earth’s atmosphere that trap heat and raise temperatures across the surface of the planet, both land and ocean

Example: Carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride are all examples of greenhouse gases that contribute to climate change according to the Intergovernmental Panel on Climate Change (IPCC) and the Kyoto Protocol.

greenhouse gas accounting assessment

see also “carbon footprint” and “carbon inventory”, the total amount of greenhouses gases that are generated by specific actions, processes or products, typically expressed in carbon equivalents (CO^2e). Includes all greenhouse gases that contribute to climate change

Example: A greenhouse gas accounting assessment can be used to help calculate an entity’s carbon footprint.

Gg

Greenhouse Gas Protocol

comprehensive global standardised framework that is widely used to measure and manage greenhouse gas (GHG) emissions from private and public sector operations

Example: The Greenhouse Gas Protocol defines all aspects of carbon accounting, including which greenhouse gases must be reported, how a boundary is set and what Scope 1, 2 and 3 emissions mean for an organisation.

green hydrogen

or renewable hydrogen, is hydrogen derived using renewable energy through electrolysis of water (the process of splitting water into hydrogen and oxygen)

Example: Green hydrogen that is produced from renewable energy sources such as wind, solar and hydroelectric power, offers an alternative to fossil fuels as a way of generating power for buildings and decarbonising the transport sector.

green steel

the manufacturing of steel without the use of fossil fuels

Example: Green steel can be produced using furnaces powered by green hydrogen or renewable electricity. It has a reduced carbon footprint and can have a number of applications including the production of wind turbines, solar panels and electrical equipment.

greenwashing

making unsubstantiated claims regarding a company’s commitments and actions around sustainability

Example: We must make minimum performance targets on upfront embodied carbon and operational energy for all projects, not just counting and offsetting, which is greenwashing at its most basic.

grey hydrogen

a product of a methane source like natural gas, made when the gas is heated with steam to produce a mixture of carbon monoxide and hydrogen

Example: Grey hydrogen is currently the most commonly produced form of hydrogen and the least environmentally friendly.

H

h

heat exchanger

system that allows heat to transfer from one liquid or gas to another

Example: Heat exchangers are more environmentally friendly than traditional cooling systems because they use natural processes to transfer heat, use eco-friendly cooling fluids and allow for the repurpose of waste heat.

heat pumps

a device that extracts heat from the air, ground or water, then transfers the thermal energy to where it is needed

Example: The need to phase out fossil fuel heating systems like gas boilers has led to an increase in demand for alternative technologies like heat pumps.

hydroelectricity or hydropower

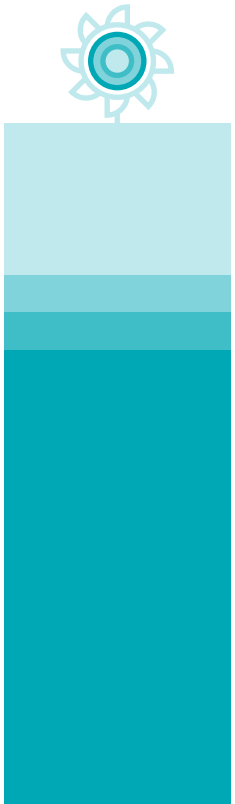
renewable energy generated by altering the natural flow of a river using a dam

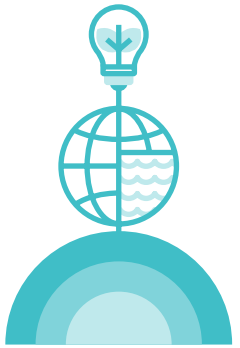
Example: One sixth of the world's electricity is created using hydroelectric means, making it the world's most significant form of renewable energy.

hydrofluorocarbons

synthetic gases primarily used as refrigerants

Example: An industry-wide phase out of hydrofluorocarbons is a necessary part of the push toward net zero carbon design in the built environment.





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Integrity Council for the Voluntary Carbon Market (ICVCM)

an independent governance body for the voluntary carbon market

Example: The Integrity Council for the Voluntary Carbon Market aims to set global benchmarks for carbon offsets and credits.

Intergovernmental Panel on Climate Change (IPCC)

the United Nations body set up to assess the science related to climate change

Example: In 2023, the IPCC's 6th Synthesis report called for greater investment in adaptation as well as scaling up for financial flows to mitigation.

International Energy Agency (IEA)

Paris-based autonomous intergovernmental organisation that provides policy recommendations, analysis and data on the entire global energy sector

Example: The International Energy Agency forecasts that renewables will become the largest source of global electricity generation by early 2025.

International Financial Reporting Standards (IFRS)

a global accounting baseline to which jurisdictions can add additional building blocks to meet their specific requirements for mandatory reporting

Example: IFRS S1 sets out how an entity can prepare to disclose its financial information about sustainability-related risks and opportunities.

International Sustainability Standards Board (ISSB)

set up by the International Financial Reporting Standards (IFRS) Foundation, the ISSB sets global standards of sustainability disclosures with a focus on investors and financial markets

Example: The International Sustainability Standards Board helps companies in their sustainability reporting across global markets.

in-use embodied carbon

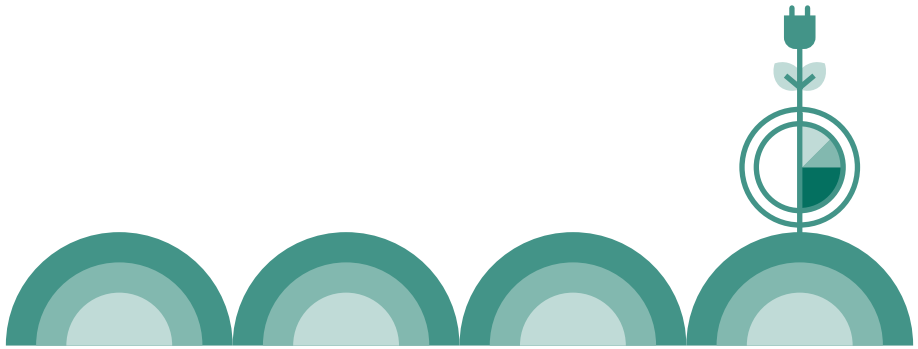
carbon emissions that result from the replacement, maintenance and repairs of materials in a building

Example: The maintenance and replacement scenario of a PVC Protection Wall at NHS Greater Glasgow and Clyde Radionuclide Dispensary contributed to the building's in-use embodied carbon of 6,244kg CO_2e.

ISO (International Organisation for Standardisation)

internationally agreed standards that cover almost every product, process or service imaginable

Example: The ISO Standards for life-cycle assessments (LCAs) and climate resilience serve as norms for the environmental consideration of products, services and projects in the built environment.



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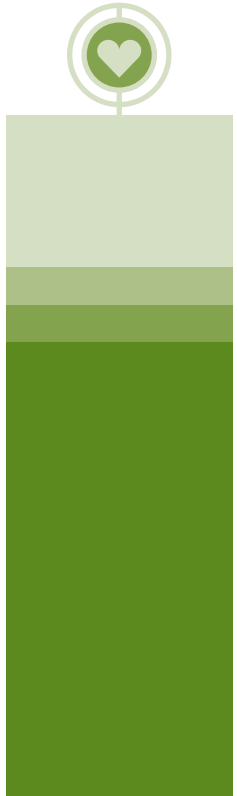
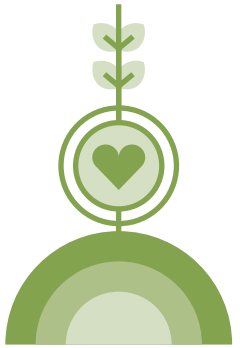
Kyoto Protocol

a binding emissions target that committed industrialised nations and economies to reduce greenhouse gas emissions, the treaty was superseded by the Paris Agreement in 2015

Example: In 2022, the Kyoto Protocol had its 25th anniversary and was deemed the first international treaty to legally commit to cutting greenhouse gas emissions.





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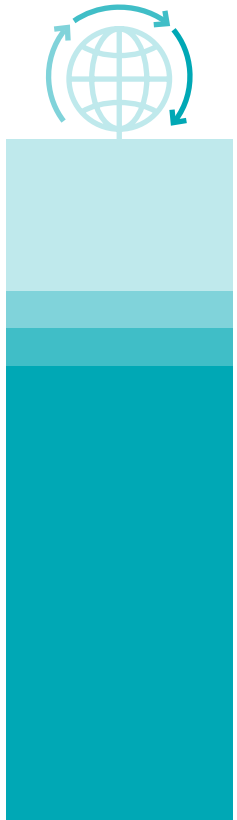


LETI (originally London Energy Transformation Initiative)

a voluntary network of built environment professionals, working together to put the planet on the path to a net zero carbon future

Example: LETI's Climate Emergency Design Guide outlines the requirements for new buildings to ensure our climate change targets are met.

LETI framework

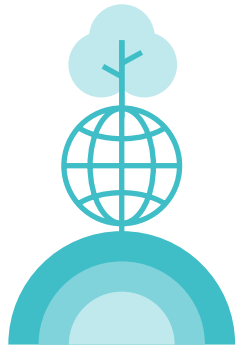
framework for collecting and reporting building performance data, which is simple and prioritises reporting basic information well, rather than complex information badly

Example: The LETI framework for new net zero carbon buildings aims to tell planners, policymakers, and local and central government what to expect.

Life Cycle Assessment (LCA)

an environmental assessment that evaluates the effect a process or product has on the environment over its whole life, from cradle to grave

Example: Life Cycle Assessment tools can help the client and design team select the most carbon efficient solutions over extending a building's life cycle by focusing on elements like circular economy, disassembly and reuse, minimising waste and building life expectancy.



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materiality assessment

process which identifies the ESG issues that are the most relevant and critical for an organisation

Example: Cundall's materiality assessment process identifies and prioritises the most significant social and environmental risks and opportunities from our standpoint and for our key stakeholders.

material passport

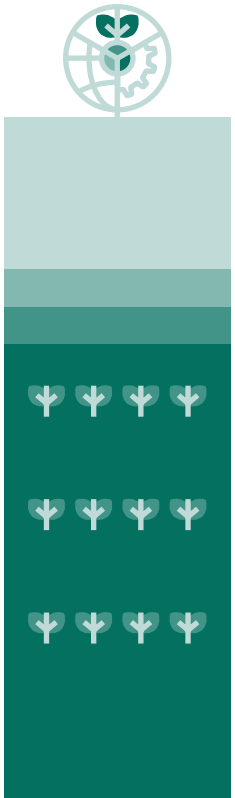
a digital document that lists information about the constituents of a product, building or piece of infrastructure, enabling them to be assessed for suitability against environmental criteria

Example: The detailed data in a material passport is key to understanding which parts of a building can be reused and recycled at end of life.

mitigation

an intervention to make something less serious or severe

Example: The Task Force on Climate-Related Financial Disclosures (TCFD) necessitates organisations to publish mitigation strategies for climate change using tools such as the Climate Risk Real Estate Monitor (CRREM).



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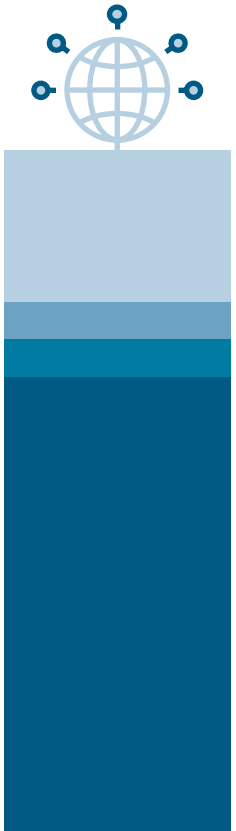


NABERS (National Australian Built Environment Rating System)

Credible, reliable building audit and benchmarking system for energy, water, waste, embodied carbon and indoor environment quality developed in Australia

Example: Vicinity Centres undertakes annual NABERS Energy ratings of more than 65 of its retail centres located in Queensland, NSW, Victoria, Tasmania, South Australia and Western Australia to monitor asset performance and plan ongoing improvements.

NABERS UK

system for rating the energy efficiency of office buildings across England, Wales, Scotland and Northern Ireland, launched in 2020

Example: Eden, New Bailey was the UK's first new build building to achieve a 5.5 NABERS 'Design Reviewed' Target Rating.

Nationally Determined Contribution (NDC)

a national government-led climate action plan to cut emissions and adapt to climate impacts

Example: Since the Paris Agreement was signed in 2015, all 195 countries have made climate declarations in the form of Nationally Determined Contributions.

nature-based solutions

actions to protect, sustainably manage or restore natural ecosystems

Example: The 12-storey green wall of Eden, New Bailey is a nature-based solution that helps mitigate air pollution levels with more than 355,000 plants.

net zero carbon

carbon emissions created are balanced by either prevention or capture and storage of the same quantity of CO_2e

Example: The GenZero Schools Research Project in England brought together expertise from across the industry to create digital models of two 'kit-of-parts' prototype secondary schools that would set the standard for the net zero carbon schools of the future.

O

o

off-gassing

the release of harmful chemicals in vapor form

Example: The smell of new carpet is a symptom of off-gassing, where the materials emit VOCs (Volatile Organic Compounds), which are harmful to human health.

operational carbon

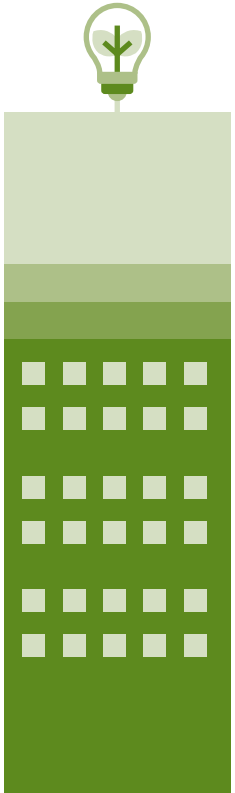
carbon emissions produced by building services and systems because of the use of a building

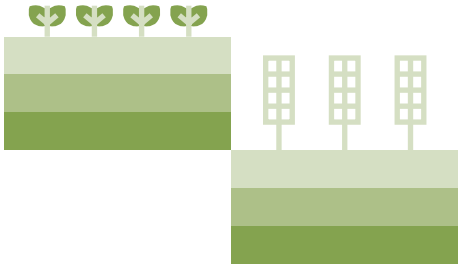
Example: The operational carbon of a building over a 60-year design life, is between 6 to 15 $kgCO_2e/m^2$.

operational energy

energy needed to run buildings

Example: The energy used to run systems like space and water heating, space cooling, lighting equipment and appliances, is operational.





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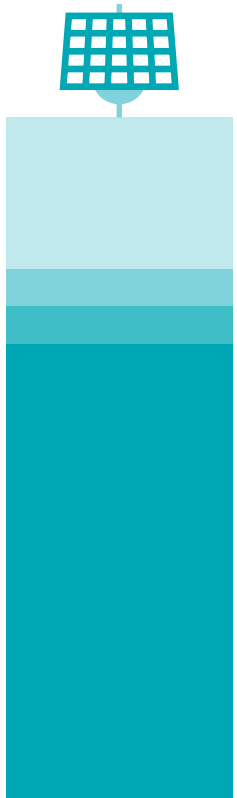


Paris Agreement

a legally binding international treaty on climate change that aims to keep global temperature rise to well below 2 degrees centigrade above pre-industrial levels and pursue efforts to limit the increase to 1.5 degrees centigrade

Example: A growing number of countries, communities and organisations have set net zero carbon targets and commitments that are in line with the Paris Agreement.

passive thermal performance

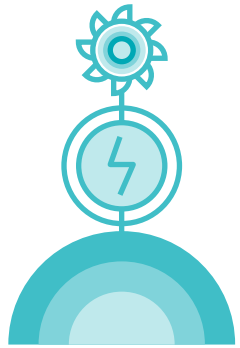
the degree to which materials, physical orientation and construction approaches control indoor temperature at comfortable levels without the use of mechanical heating or cooling

Example: Insulation improves the passive thermal performance of a building by minimising the heat exchange with the outside environment .

Passivhaus

certification system focussing on delivering robust quality buildings that meet low energy targets supporting net zero carbon whilst also focussing on build quality, comfort and indoor air quality

Example: Passivhaus, with its emphasis on a fabric-first approach to attain optimal energy efficiency and human comfort, benefits occupants as well as the wider community, because when buildings use less energy it reduces the strain on national energy supplies.



Pp

photovoltaics (PVs)

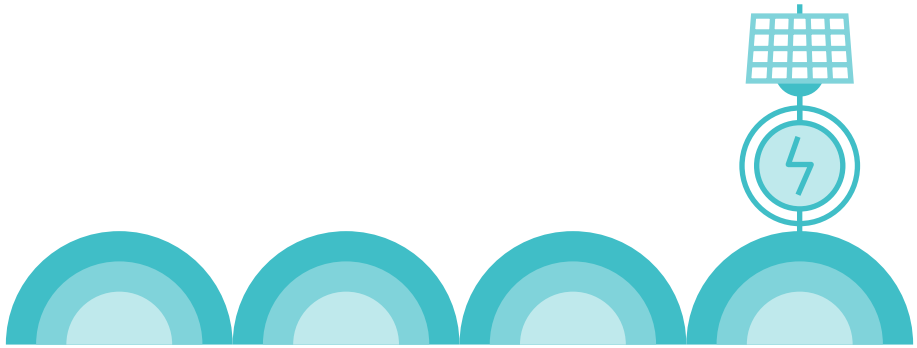
panels that capture the sun's energy and convert it into electricity, these are typically located at roof level, integrated into a building façade, or free-standing, and can be used to reduce grid energy demand in a building or export green electricity to the grid

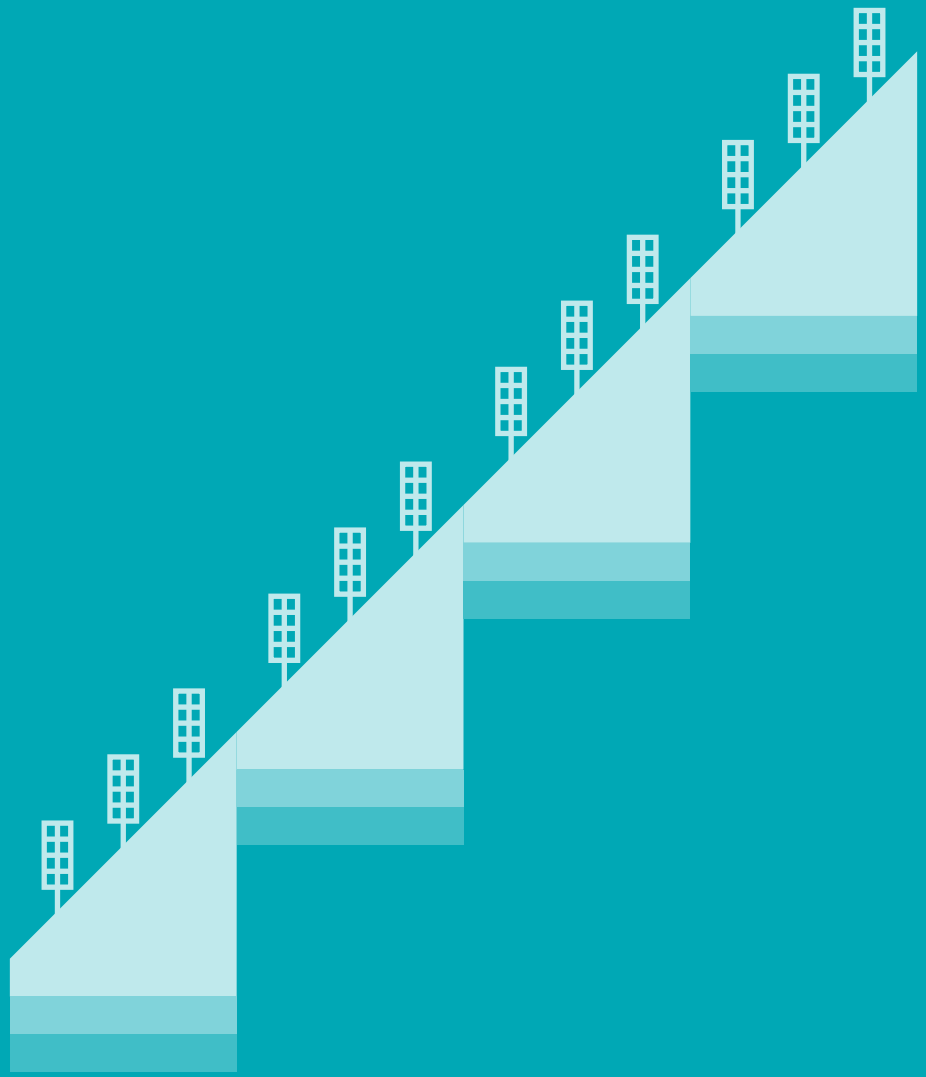
Example: The Maritime Academy, one of the UK Department for Education's first net zero carbon schools, has rooftop PVs that help generate power for the entire school. This meets the Department for Education's requirement that all new schools must be fitted with photovoltaics.

Physical climate risk

risks resulting from climate change that can be event-driven (acute physical risk) or from longer-term shifts in climate patterns (chronic physical risk)

Example: Acute physical risks arise from weather-related events such as storms, floods, drought or heatwaves, which are increasing in severity and frequency. Chronic physical risks arise from longer-term shifts in climate patterns which could lead to sea level rise, reduced water availability, biodiversity loss and changes in soil productivity.





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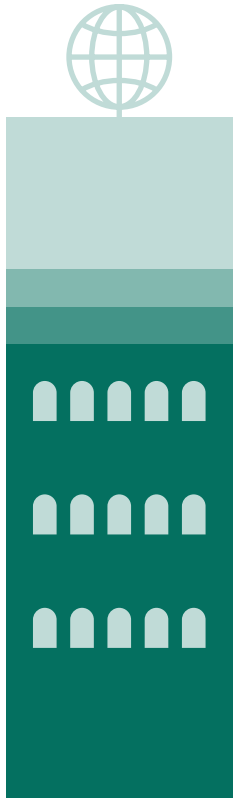
Qq

Qualifying Explanatory Statement (QES)

an official statement that contains all the required information on the carbon neutrality of an organisation

Example: Cundall's Qualifying Explanatory Statement demonstrates that in 2021, Cundall achieved carbon neutrality for its global operations for 20 offices.



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reference scenarios

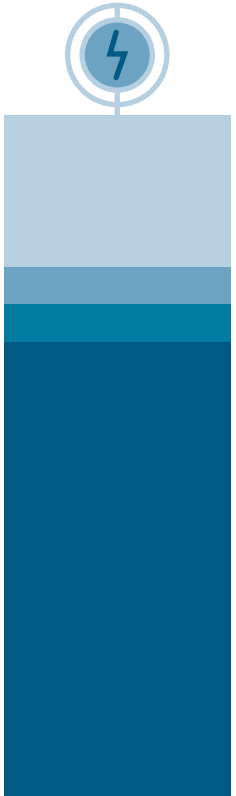
a set of agreed-upon and widely used projections of future emissions, with accompanying socioeconomic narratives and estimates, which are a crucial input for climate scenario analysis

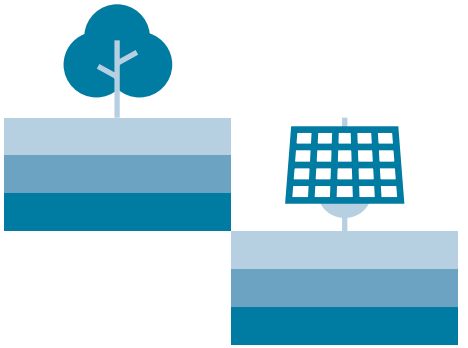
Example: The European Commission uses the EU Reference Scenario as a key analysis tool for topics of energy, transport and actions for climate change.

resilience

see also adaptive capacity, the ability of a complex socio-ecological system to maintain essential processes and characteristics in the face of challenges or shocks

Example: To protect lives and livelihoods from the effects of climate change, we need to increase the resilience of the built environment.





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Ss

science-based targets

pathways for organisations to reduce their carbon emissions to meet the goals of the Paris Agreement

Example: Landsec has already achieved its science-based target after being the first commercial property company to have its carbon reduction target approved by the Science Based Targets initiative (SBTi) back in 2016.

Science-Based Targets initiative (SBTi)

evaluates and publicly endorses organisational carbon emission targets to promote best practices in reducing emissions towards net zero in line with climate science and the Paris Agreement

Example: SBTi is supporting building sector companies to urgently cut emissions and transform their business models to align with a 1.5°C climate change trajectory.

scope 1 emissions

direct emissions that are owned or controlled by a company

Example: Emissions from combustion in a company's boilers and equipment are scope 1.

scope 2 emissions

indirect greenhouse gas (GHG) emissions associated with the purchase of electricity, steam, heat or cooling

Example: The use of purchased electricity, where the electricity used to power a building has been generated elsewhere, is an example of scope 2 emissions.

scope 3 emissions

all other indirect greenhouse gas emissions that occur due to the activities of an organisation, but which it has no direct ownership or control over

Example: The use of sold products, business travel, and extraction and production of purchased materials and fuel are scope 3 emissions.

Securities and Exchange Commission (SEC)

Regulation body for the United States investment market, its mission is to protect investors and promote fairness in the market

Example: Like the EU's Sustainable Finance Disclosure Regulation, the SEC will require companies to provide accounts of their greenhouse gas (GHG) emissions and the environmental risks they face.

sequestration

the act of removing carbon, in the form of carbon dioxide, from the atmosphere

Example: Timber buildings store carbon that is sequestered by the forests that the timber comes from, however trees take years or even decades to reach maturity and the resource is depleted quicker than it is replenished, so it is not always the most sustainable choice.

Shared Socioeconomic Pathways (SSPs)

climate change scenarios that set out alternative trajectories for a future with and without climate policies

Example: There are five Shared Socioeconomic Pathways (SSPs) that describe greenhouse gas emission scenarios with alternative climate policies, ranging from SSP1, the most sustainable trajectory, to SSP5, where we continue to rely on fossil fuels.

social impact investments

a fund that provides finance to organisations addressing social and/or environmental needs with the explicit expectation of a measurable social, as well as financial, return

Example: The Climate-KIC provides opportunities for start-ups in the sustainability sector to connect with social impact investors to obtain seed funding.

Ss

social value

the wider impacts of projects and programmes including the wellbeing of individuals and communities, social capital and the environment

Example: Cundall's Offsetting Pilot Project provides social value to educational facilities by helping to decarbonise existing schools, educate students on the importance of sustainability, and trial an alternative pathway for the UK construction industry to offset its emissions within the local community.

solar power

a renewable energy source where sunlight is converted into electricity

Example: CURA, Japan's first commercial net zero high-rise building, will be equipped with onsite solar power.

solar thermal

panels that capture the sun's energy and convert it into heat, these can be used for heating and hot water within a building, and are typically located at roof level or free-standing

Example: Solar thermal is commonly used to heat domestic hot water and swimming pools.

Sustainability Accounting Standards Board (SASB)

part of the International Sustainability Standards Board (ISSB), this non-profit organisation is dedicated to developing sustainability accounting standards and helping corporations disclose that information to investors

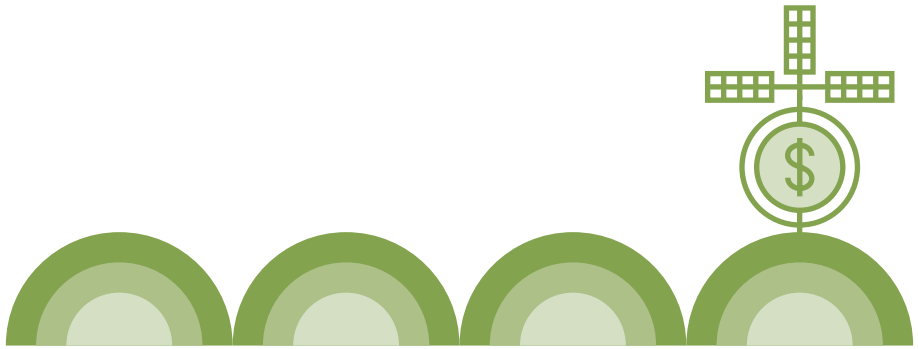
Example: The 77 industry-based standards created by the Sustainability Accounting Standards Board (SASB) were developed using industry-based research, participation from companies, investors and subject-matter experts, and oversight from an independent SASB Standards Board.

Ss

Sustainable Finance Disclosure Regulation (SFDR)

European regulation introduced to improve transparency in the market for sustainable investment products

Example: Real Estate Investment Trusts will need to meet new disclosure and reporting rules under the SFDR.



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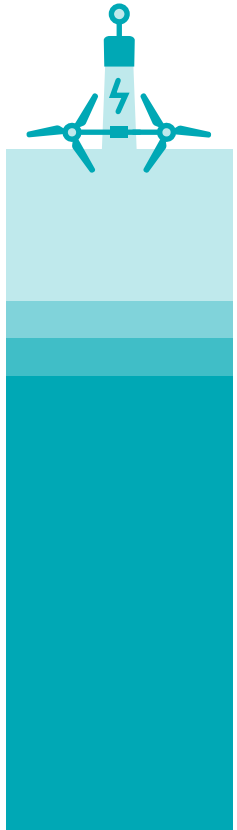

Task Force on Climate-Related Financial Disclosures (TCFD)

framework to improve and increase reporting of climate-related financial information. It was absorbed into the International Financial Reporting Standards (IFRS) since mid-2023

Example: Many major property investment trusts have engaged with the TCFD to support their ESG strategy and enhance their credibility as socially responsible entities.

tidal energy

a form of renewable energy produced by harnessing the natural rise and fall of ocean tides

Example: The proposed Merseyside Tidal Power Project, which includes a plan to build a dam across the Mersey Estuary in Liverpool UK, will help prevent future inland flooding due to sea level rise and high tides, and generate enough clean electricity to power one million homes.

transitional fund

a fund that supports the transition toward climate neutrality

Example: Transition funds like the European Commission's Just Transition Fund, aim to provide funding for decarbonisation and mitigation activities in areas most likely to suffer from the effects of climate change.

transition plan

a time-bound action plan that clearly outlines what an organisation will do to achieve a sustainable business or portfolio

Example: Cundall has a transition plan for achieving net zero carbon on all our projects by 2030.

transition risk

the potential risks due to the uncertainty of shifting to a net zero carbon economy

Example: Businesses should begin reshaping their business processes to mitigate the transition risks of moving to moving from a carbon reliant economy to a net zero economy.

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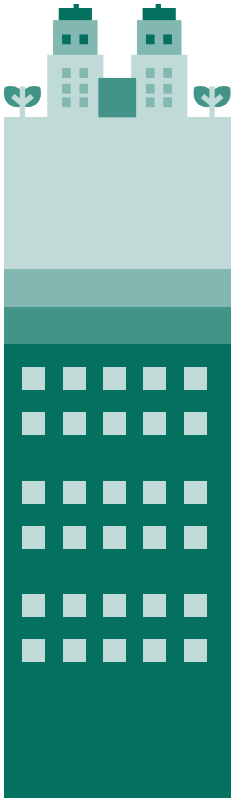

UK Sustainability Disclosure Requirements (SDR)

a set of sustainability-related disclosures and additional rules regarding sustainable investing for the UK

Example: The UK Sustainability Disclosure Requirements (UK SDR) has been created to drive transparency and consistency for sustainable investment products for UK-based companies.

UNFCCC

the United Nations Framework Convention on Climate Change

Example: The UNFCCC reports show that the built environment offers one of the best opportunities for rapid emissions reductions.

upcycling

creating something new from something no longer in use and giving it a new function

Example: The toner from end-of-life printer cartridges can be upcycled to replace some of the asphalt in tarmac for roads.

upfront embodied carbon

emissions caused in the materials production and construction phases of the lifecycle before the building or infrastructure begins to be used

Example: Traditional hot rolled asphalt has a higher energy requirement during construction, the change to warm mix asphalt reduces this requirement and the overall upfront embodied carbon of the material.

urban heat island effect

the accumulation of heat in urban areas due to the combination of lack of green space and shade trees and the way concrete, metals and stone absorb and then re-radiate the sun's heat

Example: The urban heat island effect can be reduced by minimising paved areas, and introducing soft landscaping and planting. This reduces temperatures and consequently improves the environmental quality of spaces for occupants and residents.

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Value Reporting Foundation's Integrated Reporting Framework (VRF)

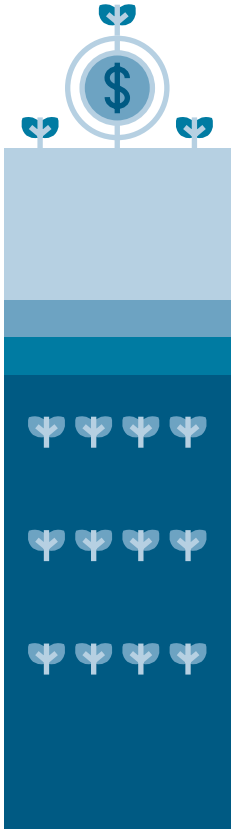
a resource provided by the International Financial Reporting Standards (IFRS) Foundation to help corporations coordinate concise communication about their strategy, governance, performance and outlook

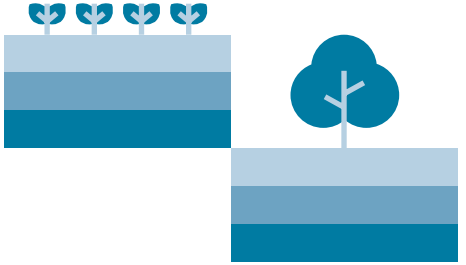
Example: The VRF helps corporations prepare integrated reports on their ESG commitments and strategy for shareholders.

voluntary carbon market

marketplace where organisations can buy and sell carbon credits

Example: Projects that prevent deforestation or build renewable energy, are two types of carbon credits often supported by voluntary carbon markets like the EU Emissions Trading Scheme and the Australian Climate Active Carbon Neutral Standard.





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Ww

water security

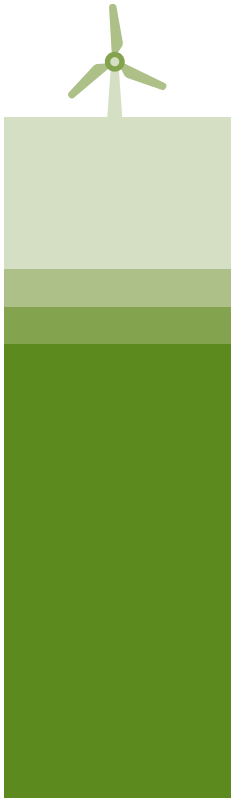
the need for a reliable supply of clean, safe drinking water

Example: Increases in extreme weather events like drought and flash flooding can have a dramatic effect on water security for affected communities. In Oman, the Greater Muscat Structure Project has a policy that enables a three-day emergency supply of water in case of water scarcity for Muscat's population, which is predicted to increase to 2.7 million people by 2040.

Whole life carbon assessment (WLCA)

a standard to establish consistency and accuracy of carbon measurements in the built environment

Example: The Royal Institute of Chartered Surveyors (RICS) has recently published updated Whole Life Carbon Assessment Guidance that has been authored by decarbonisation experts within the industry, including Lee Leston Jones, Partner at Cundall. This second edition aims to create 'world-leading' standards for carbon measurement across the built environment.



Whole lifecycle carbon emissions

emissions from all lifecycle phases, encompassing both embodied and operational carbon together

Example: A report by the World Business Council for Sustainable Development (WBCSD), estimates that for a modern building, over its whole lifetime, 50% of emissions are due to its embodied emissions, with 32% upfront embodied emissions, and 19% use stage and end-of-life emissions.

wind power

a renewable energy source that harnesses wind energy to generate electricity

Example: Cundall is part of the delivery team for The Crown Estate's ZeroFour innovation park at Montrose on Scotland's northeast coast. The masterplan aims to support the development of green economies like offshore wind power.

World Resource Institute (WRI)

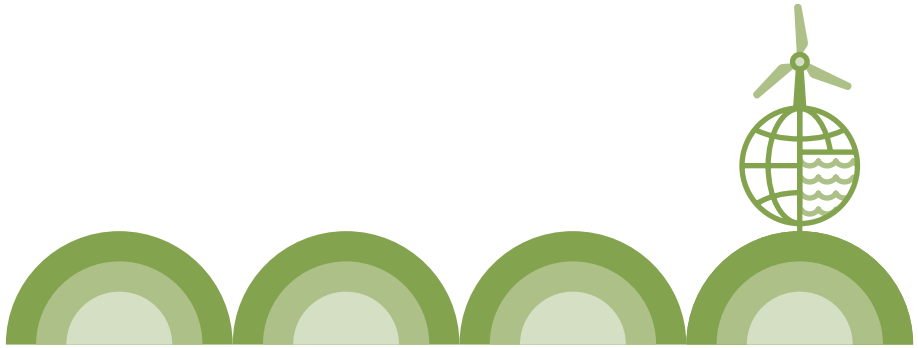
organisation that works to meet people's essential needs, protect nature and stabilise the climate

Example: The Zero Carbon Building Accelerator is a tool built by the WRI to help cities reduce carbon emissions and meet climate goals.

World Business Council for Sustainable Development (WBCSD)

network where members learn from other leading companies to push their sustainability journey forward

Example: WBCSD brings together leading companies from across the industry to transform the built environment towards one that is net zero, circular, healthy, inclusive and resilient.



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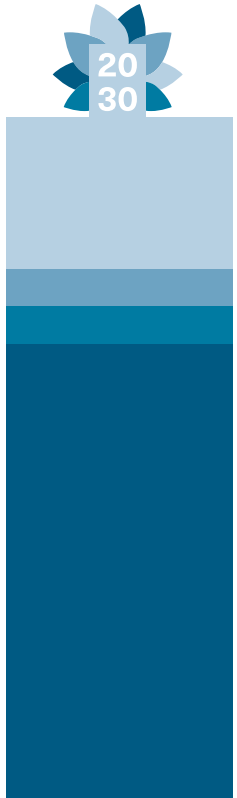
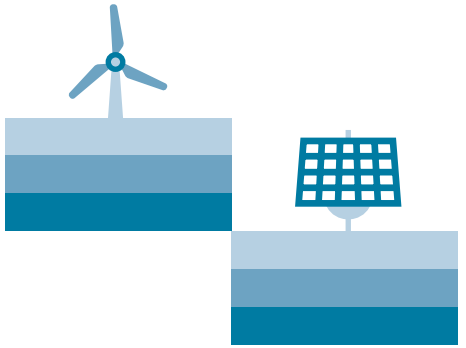
Zz

Zero Carbon Design 2030

Cundall's commitment to only work on projects where they are delivering net zero carbon by 2030

Example: To achieve our Zero Carbon Design 2030 goals, we will collaborate with clients and the industry to deliver energy and carbon solutions necessary to minimise the impact of global temperature rises and bring them back in line with 1.5°C over the next few decades.





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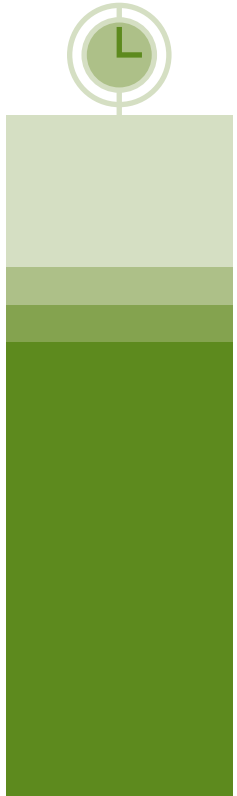


1.5°C

refers to the aspirational target temperature set by the Paris Agreement to limit global temperature rise to no more than 1.5°C compared to pre-industrial times

Example: Sustainability experts and scientists warn that the 1.5°C target will be unattainable if industries carry on 'business as usual'.

2°C

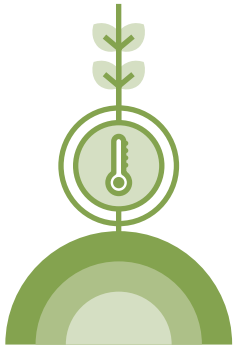
set out in the Paris Agreement, this is the internationally agreed temperature that must not be exceeded if we are to prevent the irreversible effects of climate change

Example: The entire building and construction supply chain must decarbonise by 2050 to minimise global temperature rise to 2°C or below and avoid permanent environmental damage.

15-minute cities

concept in which most daily necessities and services, such as work and shopping, can be reached within 15 minutes travel

Example: The 15-minute city model has been key to the development of Paris in recent years, with 66% of the public spaces now dedicated to the movement of public transport so that all the main amenities are at a sustainable and attainable distance.




abatement
social value
wind power
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