

The purpose of this note is to explain the terminology, definitions, and emerging technologies and projects that support the guidance notes. This glossary will be updated from time to time, as new initiatives emerge, and the market develops. In the near term, the main new developments are expected to follow COP26, while others will follow as standards and regulations are developed in the UK, EU and worldwide (one such example being regulation for the procurement of materials).

## Climate Change

A change in global or regional climate patterns, in particular a change that started to become apparent from the mid to late 20th century onwards, attributed largely to the increased levels of atmospheric carbon dioxide produced by the burning of fossil fuels.

Climate change is the catch-all term for the shift in worldwide weather phenomena associated with an increase in global average temperatures.

Reliable temperature records began in 1850 and our world is now about one degree Celcius hotter than it was in the period between 1850 and 1900 – commonly referred to as the "pre-industrial" average.

There is no clear threshold where climate change moves from safe to dangerous. We can expect some disruptions and irreversible losses of natural habitats and resources, even with a 1.5 or 2°C temperature rise. However, with rapid global action to cut greenhouse gas emissions, we can still reduce the likelihood of global temperatures increasing by more than 1.5 – 2°C. If we take no action, global temperatures could increase by 4°C or more by the end of the century.

## Net Zero

Net zero means that any emissions produced would be offset by schemes that would extract an equivalent amount of greenhouse gas from the atmosphere.

Net zero therefore refers to the aim of achieving a balance between the amount of greenhouse gas emissions produced and the amount removed from the atmosphere. There are two different routes to achieving net zero, which work in tandem: reducing existing emissions and actively removing greenhouse gases.

**To 'go net zero' is to reduce greenhouse gas emissions and/or to ensure that any ongoing emissions are balanced by removals.**

## **Active Building Centre (ABC)**

The Centre's vision is to transform the UK construction and energy sectors through the deployment of Active Buildings, contributing to more efficient energy use and decarbonisation.

<https://www.activebuildingcentre.com/>

## **Beyond Zero: The role of negative emissions**

[Tim Kruger & Dr Steve Smith in conversation: "Beyond zero: the role of negative emission - YouTube](#)

## **BRE ([Building Research Establishment](#))**

BRE provides third-party certification which involves the checking, by impartial experts, of manufacturing process and services to ensure that they meet international safety, quality and performance standards. They work with national and local government, commercial and not-for-profit organisation to address the challenges in the built environment: net zero, decarbonisation, climate change, energy efficiency resource efficiency, health and wellbeing, circular economy, and renewable energy.

## **BREEAM Assessment**

BREEAM is a sustainability assessment method for master-planning projects, infrastructure and buildings. It recognises and reflects the value in higher-performing assets across the built environment lifecycle, from new construction to in-use and refurbishment.

BREEAM does this through third party certification of an asset's environmental, social and economic sustainability performance, using standards developed by the Buildings Research Establishment ([BRE](#)). This means BREEAM-rated developments are more sustainable environments that enhance the well-being of the people who live and work in them, help protect natural resources and make for more attractive property investments.

<https://www.breeam.com/>

## **Building Management System (BMS)**

A building management system is a control system that can be used to monitor and manage the mechanical, electrical and electromechanical services in a facility. Such services can include power, heating, ventilation, air-conditioning, physical access control, pumping stations, elevators and lights.

A very basic BMS consists of software, a server with a database and smart sensors connected to an Internet-capable network. Smart sensors around the building gather data and send it to the BMS, where it is stored in a database. If a sensor reports data that falls outside pre-defined conditions, the BMS will trigger an alarm. In a data centre, for example, the BMS might trigger an alarm when the temperature in a server rack exceeds acceptable limits.

Depending on the system, BMS software can be installed as a stand-alone application or integrated with other monitoring programs. More advanced [BMSs](#) can monitor and manage a wide range of building services across multiple platforms and protocols, providing facility administrators with a single, shared view of the facility's operations.

### Carbon Calculator

A [free calculator](#) which translates kWh (Kilo Watt Hours) into CO<sub>2</sub>e (carbon dioxide equivalents). Measures below are typical yearly consumption rates.

1 KW = 1,000 Watts - measures a house

1 MW = 1,000,000 Watts - or 1,000 KW - measures a city

1 GW = 1 billion Watts - measures the world

The world produces 51 billion tons of CO<sub>2</sub>e per year

### Carbon Capture, Usage and Storage (CCUS)

The development of carbon capture, usage and storage (CCUS) in the UK and internationally refers to a chain of different technologies that can keep the carbon dioxide produced by major factories and power plants from reaching the atmosphere and contributing to global warming. The first step is to fit factory chimneys with solvent filters, which trap carbon emissions before they escape. The gas can then be piped to locations where it can be used or stored. Most carbon dioxide will be injected deep underground – where fossil fuel gas comes from in the first place – to be stored where it cannot contribute to the climate crisis. But some could be used to help make plastics, grow greenhouse plants, or even carbonate fizzy drinks. Although CCUS has had a slow start, 30 new projects have been agreed in the past three years.

The options being considered are:

- Prevent: avoid the production of GHG Emissions
- CCUS: Capture GHG Emissions at point of production prior to release into the atmosphere and use these
- CCS: Capture GHG Emissions at point of production prior to release into the atmosphere and store these.
- Carbon Sequestration: remove GHG from the atmosphere

For UK Government guidance on CCUS see: [UK carbon capture, usage and storage](#)

## **Carbon Sequestration**

Another term for Carbon Capture and Storage is carbon sequestration, which is the process of capturing and storing atmospheric carbon dioxide. It is one method of reducing the amount of carbon dioxide in the atmosphere with the goal of reducing the rate and impact of global climate change.

[Carbon Sequestration](#)

## **Carbon Trust**

The Carbon Trust is a team of experts set up to accelerate the delivery of a sustainable, low-carbon economy by helping businesses, governments and organisations across the globe to reduce carbon emissions and increase resource efficiency.

<https://www.carbontrust.com/>

## **Carbon Footprinting Software from the Carbon Trust**

The Carbon Footprint Manager offers a cloud-based reporting tool, supported by the Carbon Trust's expertise, which enables an organisation to measure, manage and reduce its carbon, energy, water and waste footprint.

The tool enables the calculation and recording of direct (Scope 1) and indirect (Scope 2) emissions in accordance with the Greenhouse Gas (GHG) Protocol, along with indirect emissions outside of your organisation (Scope 3).

[Carbon footprinting software | The Carbon Trust](#)

## **CDP**

The CDP (formerly the Carbon Disclosure Project) is an international not-for-profit organisation based in the United Kingdom, Germany and the USA that helps companies and cities disclose their environmental impact. It aims to make environmental reporting and risk management a business norm, driving disclosure, insight and action towards a sustainable economy. Since 2002 over 8,400 companies have publicly disclosed environmental information through the CDP. The CDP is regarded as the gold standard of environmental reporting, with the richest and most comprehensive data set on corporate and city action.

[About us - CDP](#)

## Chapter Zero

A community of non-executive directors to lead crucial UK boardroom discussions on the impacts of climate change. Members are helping ensure their companies are fit for the future and that global net-zero ambitions are transformed into robust plans and measurable action.

It is developing into a global network with over 20 chapters already established or currently being established around the world focusing on principles of climate governance in boards, in collaboration with the World Economic Forum.

[Chapter Zero - The Directors' Climate Forum - Chapter Zero](#)

## Circular Economy

A circular-economy approach means keeping resources in use for as long as possible, extracting the maximum value from them whilst in use, then recovering and regenerating products and materials at the end of their service life.

[https://en.wikipedia.org/wiki/Circular\\_economy](https://en.wikipedia.org/wiki/Circular_economy)

<https://www.repository.cam.ac.uk/handle/1810/261957>

## Climate Change Committee (CCC) UK

The UK Climate Change Committee is an independent, statutory body established under the UK Climate Change Act 2008. The purpose is to advise the UK and devolved governments on GHG emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change.

[Climate Change Committee \(theccc.org.uk\)](https://theccc.org.uk)

## Climate resilience

Climate resilience is the ability to anticipate, prepare for and respond to hazardous events, trends or disturbances related to climate. See Centre for Climate and Energy Solutions:

<https://www.c2es.org/content/climate-resilience-overview/>

## COP26

The UN Climate Change Conference UK held 1-12 November 2021 in Glasgow.

[HOME - UN Climate Change Conference \(COP26\) at the SEC – Glasgow 2021 \(ukcop26.org\)](https://ukcop26.org)

### Embodied Carbon

Embodied carbon is distinct from operational carbon — the carbon that comes from energy, heat, lighting, etc. Embodied carbon refers to the carbon dioxide (CO<sub>2</sub>) emissions associated with materials and construction processes throughout the whole lifecycle of a building or piece of infrastructure.

It includes any CO<sub>2</sub> created during the manufacturing of building materials (material extraction, transport to manufacturer, manufacturing), the transport of those materials to the job site, and the construction practices used.

Put simply, embodied carbon is the carbon footprint of a building project before it becomes operational. It also refers to the CO<sub>2</sub> produced during refurbishment and eventually demolition, including the transport and recycling of waste.

[What is Embodied Carbon? | CarbonCure](#)

[See also: PAS 2080](#)

### Energy Digitalisation Taskforce (EDiT) UK

A new Energy Digitalisation Taskforce was launched in May 2021 by the Department for Business Energy and Industrial Strategy (BEIS), in partnership with Ofgem and Innovate UK, to continue the UK government's focus on modernising the UK energy system, making it more flexible and driving clean growth towards net-zero emissions by 2050.

EDiT will consider the market design, digital architecture and governance of a modern digitalised energy system and follows the influential Energy Data Taskforce, which initiated a wave of energy-data activity across government, the regulator and industry.

This Taskforce, like its predecessor, is run by Energy Systems Catapult.

[Energy Digitalisation Taskforce launches - Energy Systems Catapult](#)

### Energy efficiency

The aim is to achieve the same level of living standards and comfort by using less energy and therefore lowering greenhouse gas emissions. The benefits of energy efficiency are:

- Lower energy costs
- Cleaner use of energy
- Reduced reliance on suppliers

### Energy Performance Certificate (EPC)

An EPC (Energy Performance Certificate) gives an energy efficiency rating, an environmental impact rating, and it will also estimate the energy use, carbon dioxide emissions, lighting, heating and hot water per year, along with the potential annual costs for each.

<https://find-energy-certificate.digital.communities.gov.uk/>

### **Energy Service Company (ESCO)**

ESCOs provide energy services to final energy users, including the supply and installation of energy-efficient equipment, including for building refurbishment. Unlike a traditional energy company, they can also finance or arrange financing for the operation and their own remuneration is tied directly to the energy savings achieved.

[Energy Service Companies \(ESCOs\) | E3P \(europa.eu\)](#)

### **Energy transition**

A sustainable energy transition is a shift from an energy-intensive society based on fossil fuels to an energy efficient society powered by low-carbon and renewable energy sources.

### **European Academies' Science Advisory Council (EASAC) – Decarbonisation of Buildings**

EASAC brings together the national science academies of the EU member states to enable them to collaborate with each other in giving advice to European policy-makers.

The [EASAC Report](#) published in June 2021, argues that a coordinated updating of existing policies, together with some well-targeted and innovative initiatives at EU, national and local levels, could deliver the required reductions in energy needs of existing buildings and decarbonise the EU's energy supplies. It recommends immediate actions during a transition period, with a focus on renovation measures that will maximise greenhouse gas emissions reductions in existing buildings by 2030. It also emphasises the importance of adopting an integrated approach to the decarbonisation of electricity and heat supplies for buildings, industry and the transport sector:

### **Feed-in-Tariff (FIT)**

A UK government scheme that allows you to apply for payments from your energy supplier if you generate your own electricity, for example with solar panels or a wind turbine.

[Feed-in tariffs: get money for generating your own electricity - GOV.UK \(www.gov.uk\)](#)

The Ofgem website has details about the scheme [Feed-in Tariffs \(FIT\) | Ofgem](#)

### **Greenhouse Gas (GHG) Emissions**

Greenhouse gas emissions are emissions of gases that cause climate change by creating a greenhouse effect in the earth's atmosphere. Carbon dioxide emissions from the burning of fossil fuels, principally coal, petroleum (including oil) and natural gas are the chief culprits. However, deforestation and other changes in land use can also contribute. A 2017

survey of corporations responsible for global emissions found that 100 companies were responsible for 71% of global direct and indirect emissions, and that state-owned companies were responsible for 59% of their country's emissions.

Greenhouse gas emissions responsible for global warming include carbon dioxide (80%), methane (10%), nitrous oxide (7%) and fluorinated gases (3%).

The world currently emits around 36 billion metric tons of carbon dioxide each year (2020 emissions were lower due to the COVID-19 crisis).

In the UK, heating buildings is the largest emitter of GHG emissions, this represents 35% of GHG emissions. In the UK, 63% of heating comes from natural gas, the highest percentage in Europe.

[Overview of Greenhouse Gases | Greenhouse Gas \(GHG\) Emissions | US EPA](#)

[Sector by sector: where do global greenhouse gas emissions come from? - Our World in Data](#)

### **GHG Protocol**

The GHG (Greenhouse Gas) Protocol standards are designed to provide a framework for businesses, governments, and other entities to measure and report their greenhouse gas emissions in ways that support their missions and goals.

[GHG Protocol](#)

### **GHG Protocol for Cities**

The GHG (Greenhouse Gas) Protocol for Cities is primarily designed for cities, the GHG Protocol for Cities is working to provide standards and tools that cities need to measure emissions, build more effective emission-reduction strategies, set measurable and more ambitious emission-reduction goals, and track their progress more accurately and comprehensively.

[GHG Protocol for Cities | Greenhouse Gas Protocol](#)

### **Global Sustainability Standards Board (GSSB)**

Responsible for setting globally accepted standards for sustainability reporting. Under its Terms of Reference, the GSSB oversees development of the Global Reporting Initiative [\(GRI\)](#) Standards.

[Global Sustainability Standards Board \(globalreporting.org\)](#)



## **Historic England**

Provides advice on maintaining historical buildings

<https://historicengland.org.uk/>

## **International Energy Agency (IEA)**

Comprising 30 countries, the IEA is committed to shaping a secure and sustainable energy future.

[Carbon capture, utilisation and storage - Fuels & Technologies - IEA](#)

## **Intergovernmental Panel on Climate Change (IPCC)**

The IPCC is the United Nations body for assessing the science related to climate change. It was created to provide policymakers with regular scientific assessments of climate change, its implications and potential future risks, as well as to put forward adaptation and mitigation options.

[IPCC — Intergovernmental Panel on Climate Change](#)

## **London Energy Transformation Initiative (LETI)**

LETI is a network of over 1000 built-environment professionals working together to put London on the path to a zero-carbon future. The voluntary group is made up of developers, engineers, housing associations, architects, planners, academics, sustainability professionals, contractors and facilities managers.

[Home | LETI](#)

## **Operational Carbon**

Operational carbon, is the carbon released from the ongoing operation of the building. Sources will include lighting, power, heating, ventilation, air conditioning, and other infrastructure such as lifts and automatic doors.

[Net zero operational carbon](#)

## **Microgeneration Certification Scheme (MCS)**

It is a requirement of the Domestic Renewable Heat Incentive scheme that all UK heating systems are certified by MCS. MCS is an internationally recognised quality-assurance scheme supported by the Department for Business, Energy & Industrial Strategy (BEIS), formerly known as the Department of Energy and Climate Change (DECC). MCS certifies

both products and installation companies to help ensure that microgeneration products, including from wind, solar and hydro, are installed to a high standard.

[Microgeneration Certification Scheme \(MCS\) | Ofgem](#)

### **Oil & Gas Technology Centre (OGTC)**

The purpose of OGTC is to support the oil and gas industry to develop and deploy technologies to accelerate the transition to an affordable net-zero in the North Sea.

The OGTC co-invests with industry to diversify the North Sea supply chain and create a technology-led, globally competitive supply chain for our future net-zero energy system. Supporting a culture of innovation, they hope to help attract the next generation of engineers and scientists into the energy industry.

They have 3 programmes:

- Emissions reduction
- Integrated energy systems
- Offshore energy 4.0

[OGTC](#)

### **Paris Agreement (2015)**

The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, in December 2015 and entered into force in November 2016. Its goal is to limit global warming to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels.

To achieve this long-term temperature goal, countries aim to cap greenhouse gas emissions as soon as possible, in order to achieve a climate-neutral world by mid-century, in 2050.

[The Paris Agreement | UNFCCC](#)

### **Radio Data Networks (RDN)**

Solutions to monitor, measure, report, control and automate our world. Dealing with flooding, pollution, asset protection, environment, agriculture, industry, road and rail, mining, reducing plastics in the oceans and cutting carbon emissions.

[Radio Data Networks \(radio-data-networks.com\)](#)

### **Scopes 1, 2 and 3 emissions**

Direct and indirect emissions targets are:

- Direct emissions relate to Scopes 1 and 2. Target date: 2027
- Indirect emissions relate to Scope 3. Target date: 2040

Businesses must monitor and report their CO<sub>2</sub> emissions. This is the key first step in reducing them. To do so, companies must classify their emissions using the GHG Protocol Scope 1-3 definitions.

**Scope 1:** direct emissions. From activities owned or controlled by your organisation that release emissions into the atmosphere. Examples of scope 1 emissions include those from combustion in owned or controlled boilers, furnaces, vehicles,

**Scope 2:** purchased energy. Emissions released into the atmosphere associated with your consumption of purchased electricity, heat, steam and cooling. These are indirect emissions that are a consequence of your organisation's activities, but which occur at sources you do not own or control.

**Scope 3:** indirect emissions. Emissions that are a consequence of your actions, which occur at sources which you do not own or control and which are not classed as scope 2 emissions. Examples of scope 3 emissions are business travel by means not owned or controlled by your organisation, waste disposal which is not owned or controlled, or purchased goods and materials.

[What are Scopes 1, 2 and 3 of Carbon Emissions? - Plan A Academy](#)

## Smart Grid

A smart grid is digital technology that allows for two-way communication between the utility and its customers; the sensors along the transmission lines are what makes the grid smart. These technologies will work with the electrical grid to respond digitally to quickly changing electricity demand.

Smart grids become even more relevant when coupled with buildings that not only try to reduce their energy use and CO<sub>2</sub> emissions but actually generate power (or other resources such as clean water) and automatically share those resources with neighbouring properties when they have a surplus, for maximum efficiency.

[What Is the Smart Grid? - Bing video](#)

## Sustainability

Sustainability is a form of intergenerational ethics in which the environmental and economic actions taken by present persons do not diminish the opportunities of future persons to enjoy similar levels of wealth, utility or welfare.

**Sustainable Traditional Buildings Alliance (STBA) Wheel**

This is a free tool, “the responsible retrofit guidance” tool, to help improve energy efficiency in an historic building. The STBA encourages improving efficiencies in the current fabric before embarking on costly capital expenditure projects.

[Guidance Wheel | STBA \(responsible-retrofit.org\)](#)

**UK100**

A UK network of local government leaders across the country have established a Resilient Recovery Taskforce calling on the chancellor to commit to a New Deal for Green Skills and Growth.

[UK100 | Network of highly ambitious local government leaders for cleaner, more powerful communities](#)

<https://www.uk100.org/>

**UN’s (17) Sustainable Development Goals (UNSDGs)**

The UN’s 17 Sustainable Development Goals were published in 2015 with a call to action to end poverty and protect the planet to ensure all enjoy peace and prosperity by 2030.

[THE 17 GOALS | Sustainable Development \(un.org\)](#)

**Water UK Net Zero 2030 Routemap**

Water UK is a trade association which represents the major water companies of the United Kingdom. In November 2020, water companies unveiled a ground-breaking plan to deliver a net-zero water supply for customers by 2030 in the world’s first sector-wide commitment of its kind.

Water UK estimated they could save the emission of 10 million metric tons of greenhouse gas by reaching net zero two decades ahead of the UK government’s legally-binding target of 2050.

[Water UK – Net Zero 2030 Routemap](#)

**Waterwise**

An independent, not-for-profit UK-based NGO focused on reducing water consumption in the UK. They support and challenge governments, industry, customers and others to be innovative and ambitious on water efficiency.

<https://www.waterwise.org.uk/save-water/>

**OFFICIAL TIMELINES - PROPERTY**

1-12<sup>th</sup> November 2021 - COP26

2025 - Phase out sale of gas boilers for newbuilds

Dec 2025 - EPC rating needs to be D or above for private rented properties

2027 - Direct emissions net zero in the Square Mile

2030 – Phase out gas boilers in all homes

2030 - New cars powered solely by petrol and diesel banned. Existing cars will stay on the road

Dec 2030 - EPC rating needs to be C or above for private rented properties

2035 - The UK will cut its carbon emissions by 78% compared with 1990 levels. UK emissions have already fallen 49% since 1990.

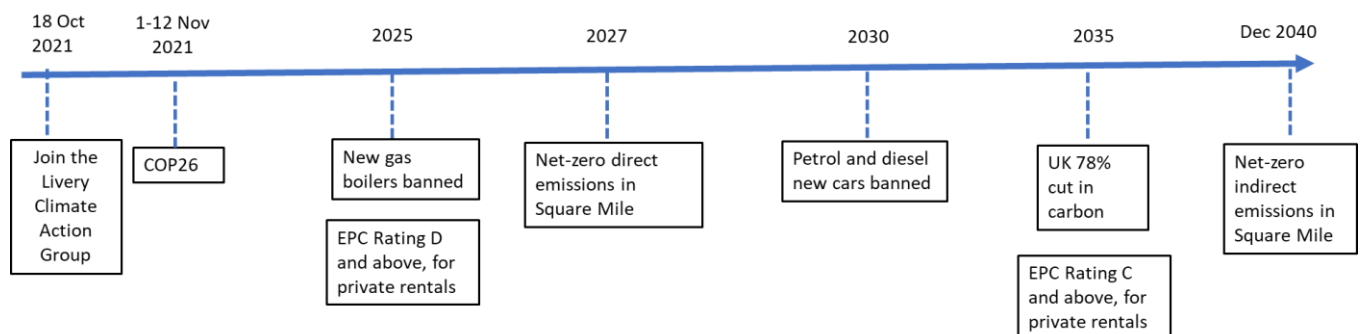
2040 – Indirect emissions reach net zero in the Square Mile

2040 – Net zero in the Square Mile

2050 - Paris Agreement. Global warming reduced to well below 2°C

**Official Property Timelines**

**Description:** These are the milestones known at the time of writing and may change in the future.



Fact checked by:

