The net zero glossary

23 definitions to explain net zero for organisations, states and regions

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Net Zero

At global level, net zero emissions are achieved when emissions of greenhouse gases (GHGs) from human activities to the atmosphere are balanced by anthropogenic removals, meaning withdrawal of GHGs from the atmosphere as a result of deliberate human activities over a specified period (IPCC, SR15).

Although there is no standardised definition of the concept at corporate level to date, EcoAct relies on most robust and scientifically sound approaches (SBTi) to define it. Accordingly, for an organisation, **being net zero means (1) having reduced its GHG emissions in line with a 1.5°C trajectory and having come as close to zero emissions as possible and (2) having extracted from the atmosphere an amount of CO_2 equivalent to the residual emissions of the specified period.** Removal can be done either through direct removal (scope 1) or by contractual removal (purchase of carbon credits from projects that remove CO_2 from the atmosphere).

According to science, we must limit global warming to 1.5 degrees centigrade to avoid catastrophic impacts of climate change. This requires global Net Zero be achieved around 2050. Achieving this goal will only be possible if corporate net zero strategies include decarbonisation aligned with scientific consensus and encompass the full value chain of business activities.

Carbon Neutrality

At global level, carbon neutrality is defined as a state in which CO_2 emissions are balanced by CO_2 removals over a specified period (IPCC, SR15).

At corporate level, the term is often used with a different meaning. The PAS 2060, the most widely used standard at international level, defines **carbon neutrality as the achievement of the previously defined emissions reduction target, combined with the purchase of carbon credits to offset residual emissions over a specified period.** The ISO 14068 standard currently under definition and expected in 2023 should use a similar definition.

At EcoAct we consider carbon neutrality as an intermediate recurring goal ensuring that corporate efforts are consistent with the achievement of the global net zero goal. Accordingly, we strongly recommend organisations to claim their carbon neutral only if they have **(1) previously defined a long-term science-based net-zero strategy, (2) achieved a reduction target consistent with a 1.5°C trajectory** over the specified period, and (3) met the requirements of the current standard.

Greenhouse Gases (GHGs)

These are gases that absorb part of the sun's rays and redistribute them in the form of radiation in the Earth's atmosphere, a phenomenon known as the "greenhouse effect". More than forty greenhouse gases have been identified by the IPCC. However, only 7 GHGs are targeted by the Kyoto Protocol, namely: CO_2 (carbon dioxide), CH_4 (methane), N_2O (nitrous oxide), HFCs (hydrofluorocarbons), PFCs (perfluorinated hydrocarbons), SF_6 (sulphur hexafluoride), and NF_3 (nitrogen trifluoride). CO_2 is the main anthropogenic greenhouse gas, and is produced during the combustion of fossil fuels (oil, coal) and biomass.

Note: although the term "CO_2 emissions" is commonly used, in most cases the term "GHG emissions" should be used to refer to all gases responsible for global warming.

GHG assessment or "carbon footprint"

Measuring the "carbon footprint" of an organisation, product or service is the first step when building a climate strategy. It is an assessment of GHG emissions in a prescribed time frame and should be measured using a standardised and internationally recognised calculation methodology such as the GHG Protocol or ISO 14064.

Any company, organisation, national or local authority, or individual person can calculate their carbon footprint.

GHG emissions monitoring Scopes

The Greenhouse Gas Protocol defines three “Scopes” or boundaries of emissions that relate either directly or indirectly to an organisation, state or region, but which all need to be taken into account when measuring a total footprint.

Scope 1 or direct GHG emissions:

These are GHG emissions from fuel combustion, vehicles, and fugitive emissions (such as refrigerants or nitrogen fertilisation) that are within the organisation or state’s direct control.

Scope 2 or electricity indirect GHG emissions:

These are GHG emissions related to the production of electricity, heat, and steam purchased by the organisation or state.

Scope 3 or other indirect GHG emissions:

Also refered to as "value chain" emissions, these are other indirect GHG emissions, not included in Scope 2, related to the organisation or region’s wider activities but that come from GHG sources owned and/or controlled by others. This includes emissions indirectly related to the use of consumer goods and associated transport, waste treatment, and the travel of employees and visitors. The GHG Protocol defines 15 categories of Scope 3 emissions.

Carbon Budget

A carbon (or emissions) budget is the upper limit of GHG emissions that can be emitted in order to avoid exceeding maximum concentration levels of GHGs in the atmosphere over a given period of time. These concentration levels are set with the goal of reducing the rate of global warming. So in order to limit global temperature increases, cumulative GHG emissions over a defined period of time must be equal to or below the carbon budget.

1.5°C Trajectory

A 1.5°C trajectory constitutes a path to follow from now until 2050 to reduce GHG emissions and respect carbon budgets in order to limit global warming to 1.5°C. For organisations, one of the most widely-used approaches today is to define a trajectory that is compatible with the Science Based Target initiative (SBTi).

Science-based target (SBT)

Launched in 2015 by WWF, CDP, World Resources Institute (WRI) and the UN Global Compact, the SBTi encourages organisations to voluntarily set a GHG emissions reduction target that is aligned and consistent with scientific recommendations on climate change. Organisations can decide to set their own SBT that is compatible with the global 1.5°C or well below 2°C trajectories, as set out by SBTi.

Reduced GHG emissions

This is a measured or estimated reduction in GHG emissions associated with the activities of a state, region or organisation through changes in consumption and production choices.

All public and private actors, organisations, and individuals can commit to reducing their GHG emissions by changing their consumption (food, housing, transport, energy) or production (energy, industry, etc.) habits, in particular by reducing their use of fossil fuels. Reduced GHG emissions are considered in companies' carbon accounting; they may also come from investments made by companies to reduce emissions outside of their monitoring scope.

Avoided GHG emissions

This is an estimate of the GHG emissions that are avoided in relation to a baseline situation or scenario. Beyond the organisational scope, companies, regions and states can help avoid GHG emissions by proposing low-carbon solutions via their products, services or strategies for consumers and/or citizens.

However, these avoided emissions cannot be counted by the organisation to demonstrate either carbon neutrality or Net Zero.

Negative GHG emissions

When a state, region or organisation sequesters (captures and stores) more GHG emissions than they produce annually, the difference between the recorded annual emissions and the sequestered emissions is represented by negative GHG emissions. By removing CO_2 from the atmosphere, negative emissions help compensate the effects of surpassing the carbon budget.

Residual GHG emissions

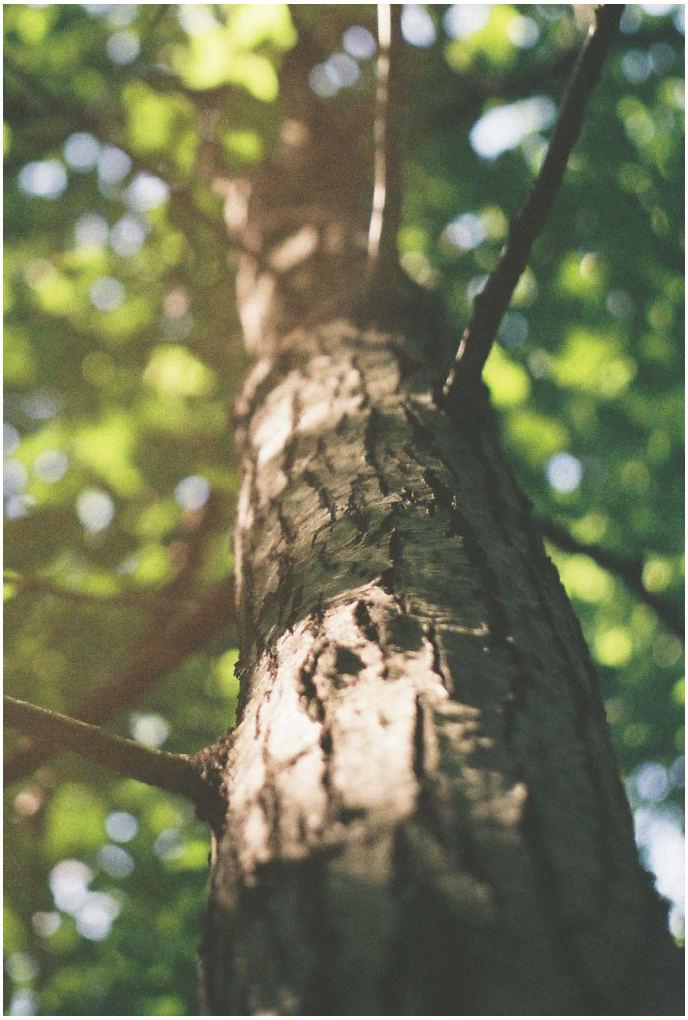
When efforts are made to reduce emissions, the residual emissions are those that remain. These are calculated when a revised footprint is completed and any offset or sequestered emissions are deducted.

The voluntary carbon market

Few organisations will be able to reach zero emissions within their monitoring scope (certainly in the short term). However, an organisation can finance voluntary actions to reduce emissions and reinforce carbon sinks (as defined below) beyond its scope.

To do this, they can purchase verified carbon credits from the voluntary carbon market. The voluntary carbon market is separate from emissions trading compliance schemes like the EU-ETS and provides the private sector with a means to take additional voluntary action on their residual emissions as well as to demonstrate support for international sustainability and social impact projects.

The market consists of a number of project developers, credit retailers and brokers and has its own standards, registries and a wide variety of projects.



Carbon offsetting

This is an action that neutralises the residual GHG emissions of an organisation or territory by financing GHG emissions reduction projects or GHG sequestration projects beyond its monitoring scope, in particular through the purchase of carbon credits. For every one tonne of carbon emitted, one carbon credit will need to be purchased.

Carbon offsetting mechanisms play a role in our global Net Zero goals in two ways: by financing GHG emission reductions on the one hand and by strengthening natural (forests, land use, oceans) or technological (negative emission technologies such as direct air capture, bioenergy crops, etc) carbon sinks on the other.

CO_2 sequestration

This is the capture and long-term storage of CO_2 from the atmosphere through natural or technological carbon sinks.

Carbon sinks

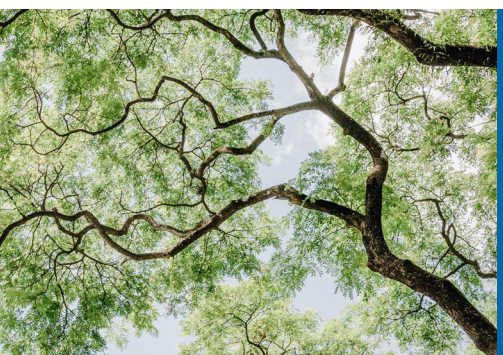
These are reservoirs (natural or artificial) that absorb carbon circulating in the biosphere. By helping to reduce the amount of atmospheric CO_2, carbon sinks influence the climate by slowing global warming. Natural carbon sinks include oceans, soil and flora (forests, peat bogs, grasslands) while artificial carbon sinks refer to technologies that actively extract carbon from the atmosphere.

Negative emissions technologies

Despite reductions in fossil fuel consumption and associated emissions, residual GHG emissions may remain into the future. Negative emission technologies are carbon capture and storage technologies that eliminate these residual emissions in order to limit global warming.

The environmental integrity of offsetting

The environmental integrity of any purchase of carbon credits is vulnerable to scrutiny and based on ensuring additionality*. In terms of emissions reductions, projects that provide carbon credits for offsetting need to ensure that one tonne of GHGs is accurately calculated and allocated to one carbon credit, sold only to one buyer. If this is not the case and there is risk of double-counting of credits, additionality is called into question, the integrity of the carbon neutral claim lost, and ultimately, progress towards global climate targets impacted.



*The term “additionality” is often used when discussing environmental integrity. It essentially determines whether or not an intervention really has an effect. Simply put, emissions reductions measures are considered “additional” when an intervention is deemed to be causing the reductions and if the carbon reductions would not have occurred anyway.

Nature-based solutions

Nature-Based Solutions (NBS) to climate change address challenges such as climate change, access to water, social and economic development and disaster risk by putting nature and people at the heart of the solutions. These are measures specifically focused on ecosystems, and designed to combat climate change and its consequences through their preservation and restoration.

Blue Carbon

Blue Carbon refers to nature-based solutions that centre around coastal ecosystems, such as mangroves, salt marshes and seagrass beds (e.g. Posidonia, kelp forests). These particular ecosystems have exceptional carbon sequestration capabilities.

Certification bodies for carbon credits

To ensure environmental integrity in the carbon market, standards such as VERRA or the Gold Standard define, in consultation with the various actors in the carbon market, the quality requirements for carbon credits generated by GHG emission reduction or sequestration projects. Compliance with these standards is ensured by certification bodies that assess projects against rigorous criteria.

The International Carbon Reduction and Offset Alliance (ICROA) is an association that brings together international actors engaged in carbon reduction and offset, and proposes good practice codes that define the minimum requirements that all actors providing carbon credits must meet.

ICROA International Carbon Reduction & Offset Alliance

Gold Standard®

American Carbon Registry

CLIMATE ACTION RESERVE

VERRA

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Your partners for positive change.

EcoAct, an Atos company, is an international consultancy and project developer, dedicated to helping businesses and organisations succeed in their climate ambitions. We simplify the challenges associated with environmental sustainability, remove complexity and empower individuals and teams to deliver bespoke solutions for a low carbon world.

Our experience tells us that climate action and commercial performance are no longer mutually exclusive. Our mission is to lead the way in delivering sustainable business solutions that deliver true value for both climate and client.

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