

CORPORATE CARBON NEUTRALITY, NET ZERO: WHAT ARE WE TALKING ABOUT?

By [Amaury de Balincourt](#), [Laurène Branaa](#) and [Solenn Petit](#)

Introduction

In the last few months, particularly under the momentum of COP 26, countries have been announcing their carbon neutrality or Net Zero objectives. The same is true for companies, such as the Business Ambition for 1.5°C¹, through which thousands of companies are committing to achieve carbon neutrality. Some of them even claim to have already reached their neutrality objective.

But what does this goal of neutrality mean for a company, and can a company or organization claim to be carbon neutral or Net Zero?

These notions of neutrality can be complex and subject to multiple interpretations, and therefore deserve to be clarified. Several organizations have already tackled the subject (ISO, SBTi, ADEME, Net Zero Initiative, etc.) to propose standardized definitions, as well as methodologies and guidelines to assist companies in building and monitoring their carbon neutrality & Net Zero contribution objectives.

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Executive summary

Good practices to adopt in businesses

1	Scope 1+2+3	Build a complete and robust Scope 1+2+3 greenhouse gas (GHG) emissions report.
2	Contribution to carbon neutrality	Do not claim to be " <i>carbon neutral</i> " but talk about " <i>contribution to carbon neutrality</i> ".
3	Ambitious decarbonization strategy	Define an ambitious and coherent decarbonization strategy, based on verified methodologies and in line with scientific trajectories.
4	Action plan that involves different activities	<p>Build an action plan that distinguishes:</p> <ul style="list-style-type: none"> ▪ Actions to reduce the company's direct and indirect emissions (scope 1+2+3); ▪ Actions aimed at reducing the emissions of other parties, by marketing products or services that reduce GHG emissions or by financing reduction projects, for example; ▪ Actions to expand carbon sinks.
5	Offsetting used wisely	Offset only those emissions that cannot be reduced by the company, and choose these offsetting mechanisms carefully, giving preference in particular to labelled carbon credits linked to natural carbon sequestration and having environmental (preservation of biodiversity, soil, etc.) or social co-benefits.
6	Transparent & accurate communication	Communicate regularly, transparently and accurately, on the company's GHG emissions (scope 1+2+3), reduced emissions, avoided emissions and sequestered emissions, explaining the calculation methods and benchmarks used.

Carbon neutrality is necessary to meet the Paris Agreement targets

The IPCC² defines the concept of carbon neutrality as "the situation in which net anthropogenic CO₂ emissions are offset on a global scale by anthropogenic CO₂ removals over a given period of time.³" This is also referred to as zero net CO₂ emissions.

The various IPCC scenarios on the evolution of these emissions until 2100 estimate that it is **necessary to reach carbon neutrality by 2050 in order not to exceed the warming targets** set by the Paris Agreement.

This balance is indeed necessary to stabilize the temperature increase, but it should be noted that **the limitation below a certain temperature is linked to cumulative emissions** (= stock), and not only to annual emissions (= flux) (see the box "Understanding the carbon cycle"). It is, therefore, **necessary to reduce greenhouse gas emissions rapidly**. Otherwise, cumulative emissions will reach too high a threshold, and carbon neutrality will occur in a world where the temperature will have already increased by well over 2°C!

Carbon neutrality primarily implies a drastic reduction in GHG emissions, as well as an expansion in carbon sinks

There are several options to stock carbon:

- **Biological absorptions**, thanks to the management and restoration of forests (afforestation, reforestation), soils (e.g. *4 per 1000 Initiative*) or ocean ecosystems (*Coastal blue carbon*, e.g. algae, mangroves);
- **Technological solutions** (*Carbon Dioxide Removal*, or CDR), such as bioenergy with carbon capture and storage (BECCS), direct carbon capture and storage in the air, or enhanced weathering.

As the French Agency for Ecological Transition (ADEME) stated in its opinion on carbon neutrality⁴, published this year, **these techniques are effective if they sequester carbon long enough to create a carbon sink**. Beyond carbon absorption, a carbon sink is defined as a system that absorbs more carbon than it emits. This differentiates, for example, a forest, which stores carbon over a long period of time, from agricultural production, which releases carbon once the harvest is complete.

However, the capacities of global carbon sinks, even with a significant increase in their size, **cannot compensate for the current level of emissions**, which means that actions to reduce emissions must be prioritized, and that drastic decarbonization is needed to even out the carbon sinks.



Understand the Carbon Cycle

Before the **pre-industrial era**, **CO₂ emissions were mainly of natural origin** - volcanic activity, forest fires, animal & human respiration. These emissions evened out with the amount absorbed by forests and oceans. Therefore, the amount of CO₂ in the atmosphere varied little.

With the rise of the **industrial era**, the burning of fossil fuels and the development of intensive agriculture, the cumulative **emissions of greenhouse gases have drastically increased**. The natural carbon sinks, notably biomass and ocean, are no longer able to absorb all the additional carbon. This carbon accumulates in the atmosphere and contributes to the greenhouse effect, causing global warming.

This **additional carbon stock compared to the pre-industrial era is therefore directly linked to additional degrees of warming**. Thus, limiting global warming below a certain degree implies limiting the amount of CO₂ present in the atmosphere, without forgetting the other greenhouse gases. Being carbon neutral is therefore not enough to limit global warming: it is an objective to balance the flows, which must be reached quickly to maintain the amount of CO₂ in the atmosphere below a certain threshold (= limiting the stock of carbon present in the atmosphere and thus limiting the temperature).

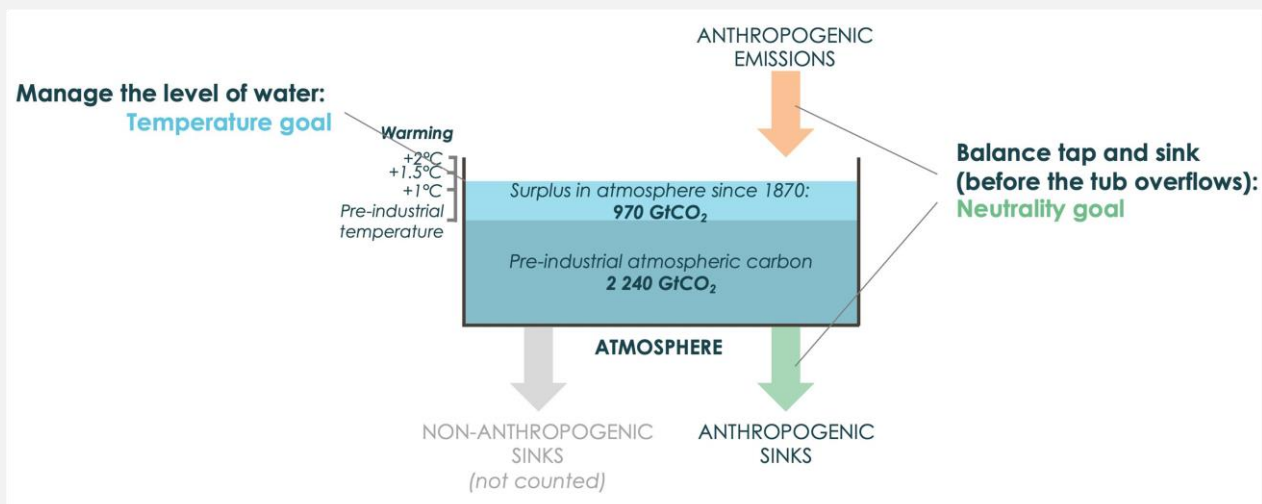


Illustration of CO₂ flows on a global scale: the atmosphere can be compared to a pre-filled bathtub, with water playing the role of carbon naturally present in the atmosphere before the industrial era. The tap represents the emissions that raise the level in the bathtub, while the siphon represents the CO₂ absorptions. Limiting the warming below a certain temperature means preventing the bathtub from overflowing.

Source: Carbone 4, Net Zero Initiative referential, 2020

IPCC distinguishes several neutrality concepts:

- **Carbon Neutrality** or Net Zero CO₂ emissions, concerns only net CO₂ emissions
- **Net Zero** or Net Zero Emissions, concerns all greenhouse gas emissions

Carbon sequestration is the absorption of CO₂ from the atmosphere to another sink (biomass, ocean, ...). Other greenhouse gases, such as methane or nitrous oxide, can't be absorbed in this form. The objective is therefore to balance CO₂ emissions and sequestrations.



CO₂ emissions are the main cause of global warming today. However, emissions of other greenhouse gases from human activities (livestock, agriculture, waste treatment), CH₄ and N₂O in particular, also contribute to global warming. Taking them into account allows us to be more ambitious and thorough on all emissions related to human activities.

Few organizations distinguish between these concepts and the term "carbon neutrality" is often used to refer to both. Net Zero and Carbon Neutrality are therefore global objectives to which all players, companies particularly, must contribute. Several guidebooks provide methods to guide them in their efforts to reduce emissions. However, not all these guidelines are equal and may be subject to interpretation.

2

A need for uniform definitions and standards at all levels

An abundance of commitments from multiple players around the carbon neutrality concept

Many players (governments, companies, financial institutions, etc.) have now embraced the concept of carbon neutrality and are making commitments to meet the objectives of the Paris Agreement.

The **196 signatory countries are coordinating through their Nationally Determined Contributions (NDCs)**, which should enable them to meet the set targets. In France, for example, it is the National Low Carbon Strategy (*Stratégie Nationale Bas-Carbone - SNBC*) that sets these contribution objectives for 2050.

Cities and regions are involved in achieving these goals by setting commitments at their level. The **C40 network**⁵, for example, brings together the mayors of nearly 100 cities around the world. Their goal is to collaborate and implement measures to "halve the emissions of their cities within a decade". The **Under2 Coalition**⁶ **brings together regions and states** representing nearly 43% of the world's economy and is committed to keeping the global temperature increase well below 2°C while striving to reach 1.5°C. Both initiatives are part of the **UN's Race to Zero Campaign**⁷, which brings together a multitude of actors committed to achieving Net Zero emissions by 2050.

Insurers and pension funds have created the **Net Zero Asset Owner Alliance**⁸, which is also part of the Race to Zero Campaign. It brings together numerous institutional investors who plan to reduce the carbon footprint of their respective portfolios until they reach carbon neutrality by 2050. Last April, 43 banking institutions from 23 countries also formed the **Net Zero Banking Alliance**⁹, which has the same goals. It now includes more than 80 institutions.

Finally, companies are also required to align with these goals. Many companies are now presenting their GHG emission reduction targets and announcing their desire to achieve carbon neutrality, at their level, within a given timeframe. To reinforce this commitment, some of them have decided to join global initiatives, such as the **Business Ambition for 1.5°C**¹, supported by the United Nations Global Compact, SBTi and We Mean Business, which includes more than 960 companies to date and has also joined the Race to Zero Campaign.

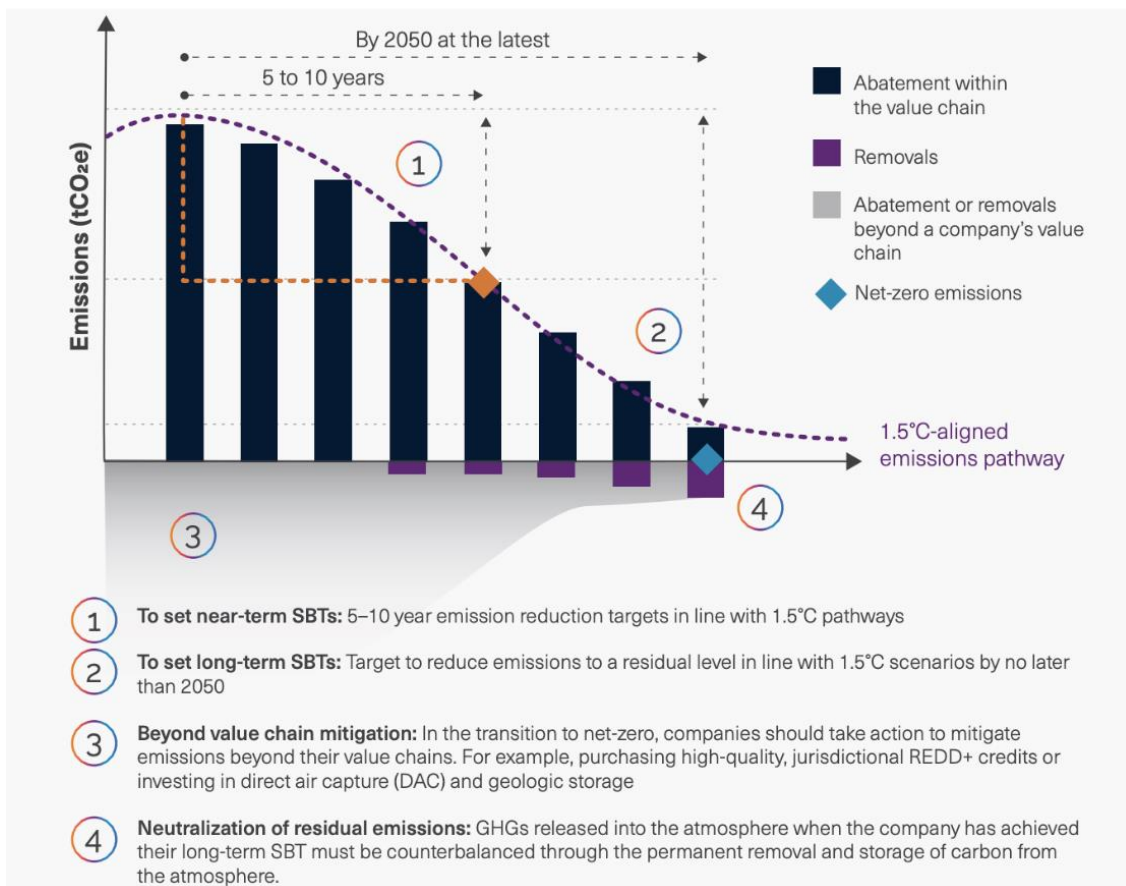


These commitments are, at first glance, a good sign. The complexity lies in how these companies intend to achieve these neutrality objectives. For example, while some companies present an **ambitious action plan, aiming primarily at reducing emissions from their own activities**, others announce that **they will make massive use of carbon offsetting mechanisms** without showing any relevant prior reduction actions. It, therefore, seems necessary and **urgent to develop a single reference framework to prevent the effects of greenwashing**, harmonize practices and support companies in their efforts.

Organizations are currently working on proposals to harmonize definitions and methods

Several initiatives aimed at companies have been developed to meet this need.

The **Science Based Targets (SBTi) initiative**, developed in 2015 by the Carbon Disclosure Project (CDP), the NGO WWF, the think tank World Resources Institute and the United Nations Global Compact, has set itself the task of helping companies to define GHG emission targets in line with the Paris Agreement. To date, **more than 1,000 companies have already set their targets following this benchmark** based directly on the work of the IPCC². The idea is to build a low-carbon pathway for the next 5-15 years to be in line with the Paris Agreement. More recently, **SBTi has gone even further by developing the Net-Zero Standard¹⁰**, which aims to provide a framework for companies wishing to achieve Net Zero. The SBT Net Zero methodology adds a long-term pathway towards carbon neutrality.



Source: Net-Zero Standard by SBTi, figure 2 "Key elements of the net-Zero Standard"

The **Net Zero Initiative (NZI)¹¹ project**, initiated in June 2018 and led by the Carbone 4 consultancy in collaboration with companies, also proposes a reference framework to help organizations define their carbon neutrality contribution objective. In particular, NZI insists on the global vision of Net Zero and the notion of an **organization's contribution to the planetary effort** (in response to the individual vision, on the scale of an organization)ⁱ. The levers at the level of an organization are summarized in three pillars: "I reduce my GHG emissions", "I reduce the emissions of others", "I increase carbon sinks".

At the international level, the work around the **ISO 14068 standard**, launched by the International Organization for Standardization (ISO) at the beginning of 2020, aims to "promote a common understanding of carbon neutrality and methods to contribute to it, at public and private organizations' level". It is expected to be released in January 2023. France, through French Agency for Standardization (AFNOR¹²), is participating in this workgroup with 59 other countries.

Finally, the **French Agency for Ecological Transition (ADEME)**, in its opinion on carbon neutrality⁴, **specifies the priority actions to contribute to carbon neutrality** at the corporate, territorial and individual levels.

However, **there is still no consensus**; these attempts at standardization face several criticisms and the different visions of the players, and several points of divergence stand out.

3 What are the main points of divergence today?

1. The scope of GHG emissions to be taken into account

There is still no consensus on the scope of the GHG emissions that should be taken into account when setting a company's reduction targets.

The project conducted within the International Organization for Standardization (ISO) is a very good example. The French group working on this project has adopted an ambitious position on the subject, reflecting the compatibility of the future standard with the Paris Agreement. In particular, **the group is calling for the standard to focus on the organization, taking into account all of its direct and indirect emissions (scope 1+2+3ⁱⁱ)**, and to **take into account the emissions avoided** through the sale of the company's products and services, reflecting the organization's contribution to decarbonizing the ecosystem. In contrast to these ambitions, the dominant position within ISO wants to apply this standard to a much broader scope (organization, products, events, etc.) and prefers the notion of **"transparent neutrality"**: scope 3 emissions may not be taken into account if this is clearly stated.

ⁱ To better understand how the Net Zero standard of the SBTi and the Net Zero Initiative are linked, consult the following article: [link \(in French\)](#).

ⁱⁱ To better understand the concepts of scopes, [consult this page by Carbon Trust](#).



The **rather scientific vision of the French position**, which is shared by other players working on carbon neutrality, such as SBTi or NZI, is confronted with a **"market" vision** that wants to ensure that this standard will be used voluntarily and widely.

2. The temporality of the objectives set

First of all, we observe that the neutrality objectives announced by the various players and initiatives are **not all aimed at the same deadline**: although many of them are aligned with the timeline set by the Paris Agreement, i.e., 2050, some players present more ambitious objectives, and others post-2050 objectives.

The pathways presented to achieve this neutrality also vary in terms of precision and thoroughness. Some organizations show **intermediate goals and clear steps**, every five years for example, while others only announce a final objective at 30 years. However, the phasing of decarbonization goals is essential, it allows the company to ensure that the actions taken are going in the right direction and are sufficient to meet the goals set. In case of deviation, the company can quickly review its intermediate objectives and adapt the actions to be carried out in order to finally reach its longer-term goal. A precise plan and regular monitoring allow the company to better distribute its efforts over time while ensuring that it is always in line with its long-term objectives. For more coherence, these environmental objectives and the associated timeframes must be directly linked to the objectives set by the company's global strategy.

3. Voluntary offset mechanisms and how to use them

Voluntary carbon offsetting can be adopted by any type of player. It consists of **financing projects to reduce, sequester or avoid greenhouse gas emissions**.

To be validated as such, a project **must meet four criteria**:

- **Measurability**: the methodology for measuring avoided, sequestered or reduced GHG emissions must be validated by an independent third party;
- **Verifiability**: GHG emissions from the project must be audited annually;
- **Permanence**: emissions must be avoided, reduced or sequestered for a specified and sufficiently long period;
- **Additionality**: the emissions avoided, sequestered or reduced must be assessed against a baseline scenario, and would not have occurred without the funded project.

The impact of a project is measured and allows the creation of carbon credits. One carbon credit represents 1 ton of CO₂ equivalent (CO₂eq), which is reduced, avoided or sequestered thanks to the project. These carbon credits can then be purchased by players wishing to offset their emissions.



Emissions absorbed, avoided or sequestered?

For a company, we refer to avoided emissions when it is outside the scope of its activities. It may involve producing low-carbon solutions and services for their users, or financing third-party low-carbon or sequestration projects.

Unlike reduced, eliminated or sequestered emissions, avoided emissions are not directly accounted for in a conventional greenhouse gas balance sheet. They are dependent on a solid baseline scenario, which allows for a comparison of the number of emissions if the project, service or solution had never existed.

The difference between **absorbed and sequestered emissions is physical and independent of the company's scope of activity**. Sequestered emissions are those absorbed over a sufficiently long period (several years, decades).

Take action on direct and indirect emissions throughout the value chain of its activity

Produce / offer low carbon solutions / low-carbon services

Finance projects for third parties outside its scope of activity, low-carbon projects

Avoided emissions

Source: "Avoided emissions: what are we talking about?", ADEME, January 2020

In November 2019, **ADEME published five best practices for voluntary carbon offsetting**, including the choice of labelled projects¹³. In France, the government and the Institute for Climate Economics (I4CE) developed the low-carbon label (Label Bas Carbone)¹⁴ in 2018 to certify these carbon credits. On a larger scale, the Gold Standard¹⁵ developed by the WWF is widely used.

Historically, **offsetting mechanisms have been the subject of much criticism**. One of them concerns how some of these carbon credits are used today. For example, **some companies use offsets on a massive scale to proclaim themselves carbon neutral** but do not seek to reduce their emissions sufficiently beforehand. Moreover, the **prices associated with these carbon credits** vary greatly and can be extremely low. For example, the average price per ton of CO₂eq in 2015 for voluntary offsetting in France was 4.2€ⁱⁱⁱ, while the carbon tax in France is currently 44.6€ per ton!

ⁱⁱⁱ I4CE, VOCAL Project - Potential and determinants of the voluntary demand for carbon credits in France, 2017.

Another criticism is that **these mechanisms do not sufficiently differentiate between avoided & negative emissions**. However, this is not the case: avoided emissions are assessed based on a reference scenario and represent a smaller increase in emissions compared to an initial situation (e.g., a renewable energy project avoids emissions since, compared to a reference scenario using fossil fuels, emissions will be lower); negative emissions correspond to real sequestration of carbon in the atmosphere. The NZI standard proposes, for example, to account separately for these two types of emissions.

4. The semantics to be used

ADEME warns against the terms used by certain organizations, events or products when they claim to be "carbon neutral". It insists on the fact that **the very concept of neutrality is only relevant on a global scale**. It "cannot be directly transposed to a sub-regional territory, a company or a citizen⁴". It supports this assertion with **three arguments**, which are found in the Net Zero Initiative's reference framework:

- Arithmetic neutrality, which consists of simply adding up negative emissions related to offsetting, does not make physical sense and risks creating a standstill among players once zero is reached;
- Actions taken to achieve arithmetic neutrality generally miss a large part of the emissions. Indeed, accounting for GHG emissions on a scale other than national or global risks to focus only on direct emissions (scope 1+2) when they usually represent only a small part of a company's total emissions (scope 3 missed);
- The potential for balancing emissions and sequestration is uneven across sectors. Some sectors have greater reduction potential, thanks to more mature technologies and/or greater sequestration potential.

Although these players cannot claim to be carbon neutral according to ADEME, they can, however, **contribute to this objective of neutrality, which has been globally set and applied to different nations**, notably by the SNBC in France. This linguistic distinction is welcomed by several organizations and companies, such as the French financial markets regulation authority (AMF)¹⁶ and NZI, which notably validate the thoroughness associated with the approach. Others question these discussions and fear that it will **demotivate economic players who have been committed for a long time**.

In any case, in France, Article 12¹⁷ of the Climate and Resilience Law already **provides a framework for advertising "carbon neutral" products and services**. The methods for offsetting the residual GHG emissions of the products concerned will be set by decree.



I Care's opinion: how should a company embrace the concept of carbon neutrality?

Several organizations working on carbon neutrality agree on one key point: this goal only makes sense at the global or state level, coordinated through the Paris Agreement. A **company alone cannot be carbon neutral, but it can contribute to the objective of global neutrality**, and communicate accordingly.

The **contribution to carbon neutrality must involve first and foremost the reduction of its own direct and indirect emissions** (scope 1+2+3). A company must therefore set strong & coherent reduction targets for a **timeframe of less than 2050** as well as a precise pathway for achieving them. This pathway must include **intermediate targets**, phased in overtime, to allow regular monitoring and rapid adjustment if necessary. To ensure the robustness and consistency of the targets set with the global ones, a company can rely on globally-approved methodologies such as **SBTi** or **ACT¹⁸ (Assessing Low Carbon Transition)**.

The company's operations must be reviewed to enable it to participate in a low-carbon world, **not only by being compatible with the low-carbon transition but also by enabling it to be encouraged and sustained**. In this sense, the company can help avoid emissions by offering products that reduce the emissions of its customers.

Lastly, a company can also **participate in the projects' financing, located outside its value chain**, to reduce the emissions of other players or increase carbon sinks. These offset emissions must be calculated carefully and transparently, and a distinction must be made between avoided emissions and additional absorptions (carbon sinks). The choice of offset projects is also important, including:

- Respect the "Do No Significantly Harm" principle, i.e., adopt a global approach that aims to limit all of the company's environmental impacts (biodiversity, resource exhaustion, pollution, etc.) and not just its GHG emissions;
- Favouring nature-based solutions with environmental (preservation of biodiversity, soils, etc. in addition to CO₂ sequestration) and social co-benefits, but also participating in the financing of technological solutions (CCS^{iv}/CCU^v), which are ultimately necessary to achieve the planetary objectives.

Today, **companies have a central role to play in achieving global climate objectives**. But not all companies, depending on their sector and activities, will have to undertake the same efforts to reduce GHG emissions. This is why a company must think beyond its emissions and, once the reductions have been maximized in its value chain, participate in the global effort to decarbonize all sectors.

^{iv} CCS - Carbon Capture and Storage

^v CCU - Carbon Capture and Utilization



Sources

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¹⁸ Official website of ACT (Assessing Low Carbon Transition) methodology

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HQ: 28, rue du 4 septembre, 75002, Paris, France

