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CLIMATE AND ENERGY

Climate Mitigation (Decarbonisation and Carbon Removal)

A GETTING STARTED GUIDE

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ABOUT THIS SERIES

This guide is part of our series of Getting Started Guides that supports your company to develop an embedded sustainability strategy. Each guide tackles a specific sustainability sub-issue and explores what your company needs to do to support the resilience of the environmental and social systems around you.

In each guide, we address relevant trends, system thresholds, key concepts, key actors, and key resources. We also offer guidance on how to address the impacts of decisions and activities in your operations and value chains as well as developing credible goals and outlining key corporate actions and internal targets that can help to provide clarity on the work ahead.

We recommend you read the first guide in the series, Getting Started Guides: An Introduction, which explains our overall approach and the value of setting a clear strategy anchored in your company's most material issues. It also explains how you can leverage process-based interim targets to clearly outline and track the specific actions that your company needs to take to achieve its high-level goals.

A complete list of focus areas and sub-issues can be found in our guide Scan: A Comprehensive List of Sustainability Issues for Companies.

This guidebook addresses **Climate Mitigation (Decarbonisation and Carbon Removal)**, which is part of the broader sustainability issue topic of Climate and Energy.
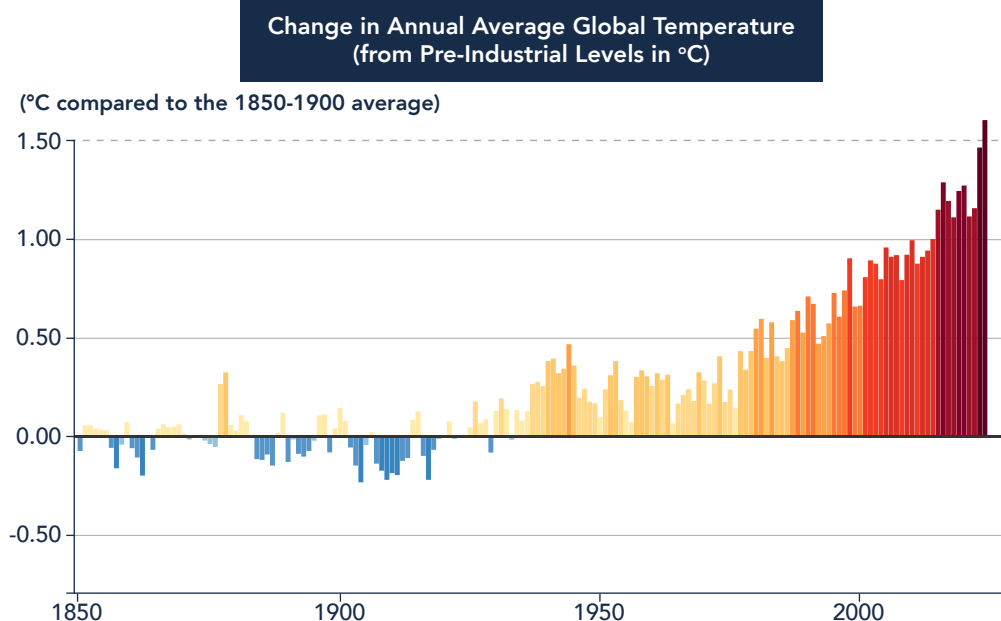
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SETTING THE STAGE –
THE NEED FOR CLIMATE MITIGATION

Human activities have fundamentally altered our climate. The burning of fossil fuels, large-scale deforestation, sweeping land use changes, and other activities have released vast amounts of greenhouse gases (GHGs) that trap heat into our atmosphere and cause long-term increases in global temperatures. Even more so, the impacts of climate change are becoming increasingly complex and difficult to manage, with increased extreme weather events such as droughts, fires, and floods having compounding adverse effects on people and the planet.

Over the long term, climatic shifts will impact the availability of key resources, including water and food, resulting in financial loss, nature loss, and competition for scarce resources. These changes will intensify pre-existing inequities as the most vulnerable bear the brunt of the impacts. They also threaten cascading social and political impacts that heighten societal instability.

The findings from the Intergovernmental Panel on Climate Change (IPCC) are clear: if we hope to avoid the most catastrophic effects of climate change, we will need to take decisive action to limit long term global average temperature rise to 1.5°C. Alarmingly, we exceeded 1.5°C of warming on an annual basis for the first time in 2024, and while a single year above 1.5°C does not constitute breaching the limit, there is a 47% chance the 5-year average from 2024-2028 will be above the 1.5°C limit. With emissions continuing to rise, we are on track for more than a 3°C rise in global heating by 2100.

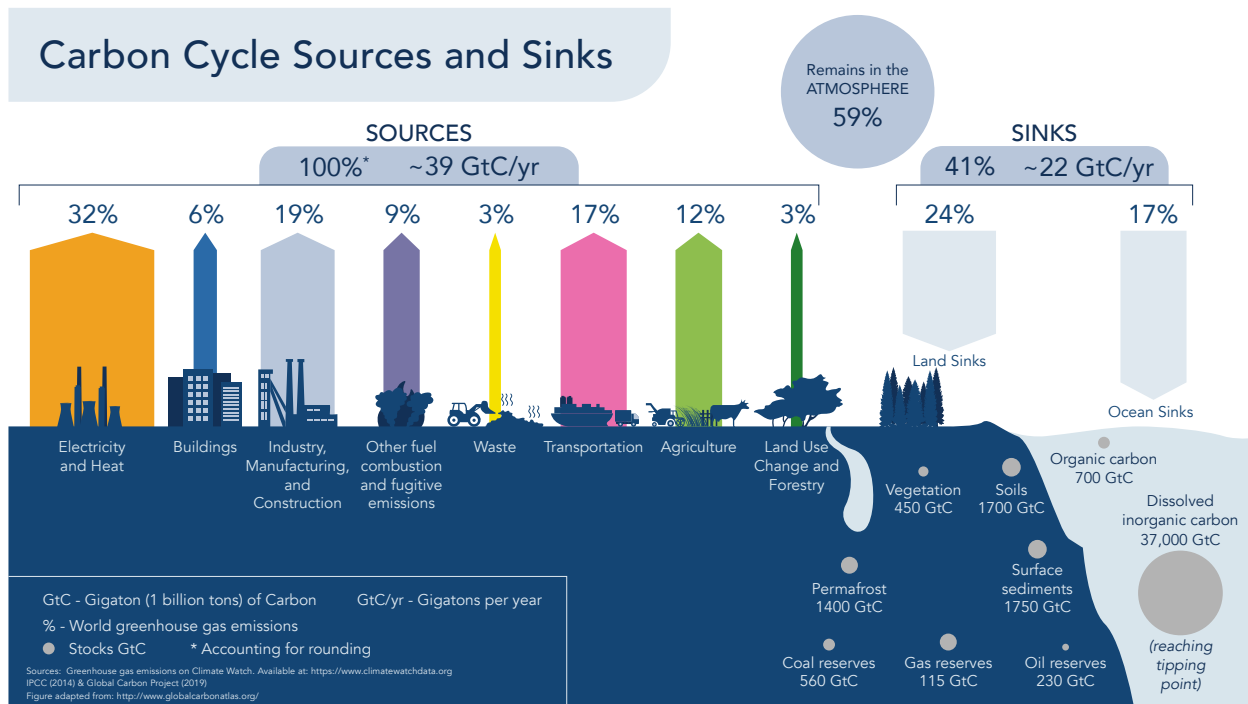**Change in Annual Average Global Temperature (from Pre-Industrial Levels in °C)**

(°C compared to the 1850-1900 average)

Note: Average calculation from HadCRUT5, NOAAGlobalTemp, GISTEMP, ERA5, JRA-55 and Berkeley Earth climate datasets

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We no longer have time for incremental action. We need urgent and transformative climate mitigation. There are two broad paths forward:

First is decarbonisation – we need to reduce emissions sources. Globally, the largest source of greenhouse gas (GHG) emissions is related to energy, making up three-quarters of total GHG emissions. As depicted below, key human-driven carbon sources come from electricity and heating; industrial processes such as cement production; transportation; agriculture practices; waste; and land use change such as deforestation.

Carbon Cycle Sources and Sinks

Remains in the ATMOSPHERE 59%

SOURCES 100%* ~39 GtC/yr

32%	6%	19%	9%	3%	17%	12%	3%
Electricity and Heat	Buildings	Industry, Manufacturing, and Construction	Other fuel combustion and fugitive emissions	Waste	Transportation	Agriculture	Land Use Change and Forestry

SINKS 41% ~22 GtC/yr

24%   17%

Land Sinks

Ocean Sinks

Vegetation 450 GtC
Soils 1700 GtC
Organic carbon 700 GtC
Dissolved inorganic carbon 37,000 GtC
Permafrost 1400 GtC
Surface sediments 1750 GtC
Coal reserves 560 GtC
Gas reserves 115 GtC
Oil reserves 230 GtC
(reaching tipping point)

GtC - Gigaton (1 billion tons) of Carbon   GtC/yr - Gigatons per year
% - World greenhouse gas emissions
● Stocks GtC   * Accounting for rounding
Sources: Greenhouse gas emissions on Climate Watch. Available at: https://www.climatewatchdata.org
IPCC (2014) & Global Carbon Project (2019)
Figure adapted from: http://www.globalcarbonatlas.org/

Adapted from Global Carbon Atlas

Reducing these emissions relies on a transition from powering our world with fossil fuels to renewable energy. It also requires reducing the overall amount of energy we use through both efficiency and behavioural measures. We need to transition to an economy that is not only decarbonised but that demands less materials and energy. This is a critical constraint that has implication for all business functions from operations to marketing.

The second mitigation pathway involves carbon removal. While reducing emissions is crucially important, the IPCC cautions that reaching our climate goals will also require removing emissions that have already been released into the atmosphere. This will require understanding and utilising carbon sinks, which broadly refer to "anything that absorbs more carbon than it produces", while the overall process of carbon removal and storage is called carbon sequestration. As depicted in the figure above, land and oceans have been essential natural carbon sinks – soil, vegetation, permafrost, and other components of natural systems historically absorbed and stored around half of all human-produced carbon emissions. Unfortunately, land use changes and ocean heating and acidification have compromised these processes and drastically reduced their effectiveness as carbon sinks.

To maintain a 1.5°C trajectory, it will be necessary to increase the available carbon sinks that can actively remove CO2 from the atmosphere and store it long-term (ideally, for centuries or millennia).

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Staying below 1.5 Degrees Celsius of Global Temperature Rise
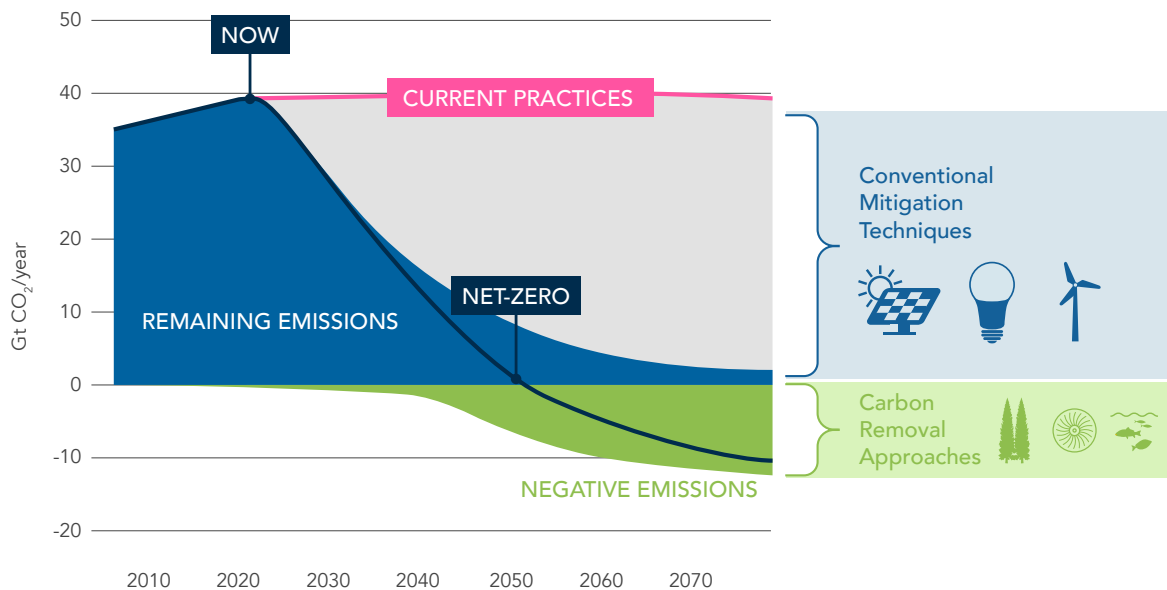
Adapted from World Resources Institute

This will require investments in biological or geochemical processes known as Carbon Dioxide Removal (CDR). There are many forms of CDR, but not all are practical. Common technological solutions include removing CO2 from the atmosphere with processes known as direct air capture and storage (DACCS). Another involves growing biomass to sequester CO2, then burning it as fuel and re-capturing the CO2 for storage. This is called bioenergy with carbon capture and storage (BECCS). However, most technological approaches remain unproven and expensive. They currently provide less than 0.1% of total CDR. Scaling them up to a meaningful level would require massive amounts of energy, materials, and land, which in itself has a carbon impact that is rarely accounted for.

Nature-based solutions (NbS) may offer a more practical path toward drawing down atmospheric carbon. They capture carbon in plants, soils, and seabeds while, ideally, also generating vital co-benefits for local communities and ecosystems. The main drawback is that carbon stored in biomass has the potential to be quickly released back into the atmosphere. For NbS projects to be credible, they need to consider the amount of carbon stored, the

durability of that carbon storage, and the potential impacts on local communities. To learn more about the principles of credible NbS see Nature Market Principles. Or for implementation guidance, see Assessing the Benefits and Costs of Nature-Based Solutions for Climate Resilience and Decision Making in a Nature-Positive World.

THE RISK TO BUSINESS

The immense costs of climate destabilisation are difficult to account for. Yet, we know they are increasing rapidly. Reported disaster losses from extreme weather have increased by sevenfold since the 1970s, and in just the last decade, extreme events attributable to climatic change have cost $2 trillion. However, this is only a fraction of the massive economic damages expected over the coming decades. The Potsdam Institute estimates that by 2050 we will face annual global damages from climate change between $19-59 trillion.

No business will be immune to these climate impacts. The direct consequences of physical climate risks are becoming increasingly apparent to businesses. They will damage assets and value

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chains through increasing material costs, supply chain disruptions, declining labour productivity, and more. They will also affect the communities and ecosystems businesses are embedded in and dependent on. For example, inflationary pressures on food, increased risk of vector-borne diseases, mass migration, and heightened political tensions all threaten social stability.

Transition risks related to the shift toward a low-carbon economy are equally compelling. As more people and governments experience destructive climate impacts, societal expectations for business action on climate have and will continue to rise. While some jurisdictions are experiencing an ESG backlash and deregulatory movements are threatening to slow the transition, the pressures for businesses to act responsibly persist. Companies continue to face public and investor scrutiny on how they are addressing their impacts on climate. They will need to adapt to new regulatory environments as governments around the world implement new policies to tackle climate change.

PHYSICAL RISKS	TRANSITION RISKS
Physical risks related to the physical impacts of climate change include:	Transition risks related to the transition to a net-zero, climate-resilient future include:
• Damage to assets and supply chain disruptions • Impacts on employee health from extreme temperatures • Availability of water and other inputs for business needs • Disruptions from drought, flooding, forest fires, and other extreme weather events	• Policy changes, such as carbon pricing and changing disclosure requirements • Technological changes and technology substitution • Reputation and litigation risks, such as changing customer demands and social acceptance of corporate transition strategies • Market risks, such as changing supply and demand for products and services

To avoid the worst impacts of climate change and drive the transition to a just and climate-resilient future, businesses need to do their part. Often, this is framed as taking action to halve emissions by 2030 and reaching net zero by 2050 or earlier.

50% reduction in emissions by 2030

Net zero emissions by 2050

CO_2

2030   →   **2050**

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However, given the urgent need to mitigate climate risk and delay climate tipping points, commitments to net zero alone will not be enough. Credible action will require deep emission reductions combined with scaling major investments in drawing down atmospheric carbon levels through proven methods. Ultimately, companies need to transform their business models to run on renewable energy, make careful use of resources to meet human needs, and find ways to remove and store carbon.

Note: Sustainability issues are generally systemic issues, because they are deeply interconnected and rooted in complex environmental, social, and economic systems. In these guides, a system threshold is defined as the point at which the resilience of an environmental, social, or economic system becomes compromised. This occurs when the total impacts imposed on the system exceed its capacity to assimilate those impacts.

SYSTEM THRESHOLD

Scientists have identified 16 tipping elements in Earth's climate system, such as rapid glacier melt, forest dieback, and thawing permafrost. Once triggered, they will become self-perpetuating, creating feedback loops that drive warming far beyond human caused emissions. The resulting climate system destabilisation would be disastrous to systems adapted to our current climactic conditions.

At current warming levels, 5 of these tipping elements are possible, but none are likely. This is expected to change with temperatures increasing faster than expected and crossing 1.5°C for the first time in 2024. If Earth maintains a long-term average temperature above the this level - which is expected over the next 5 to 10 years - then 4 of these 5 tipping elements will become likely, and 5 more will become possible. As we approach our climate system's threshold, each 0.1°C degree of warming greatly increases the risk of triggering tipping points and the speed at which they are likely to unfold.

### KEY TOPICS ASSOCIATED WITH CLIMATE MITIGATION

- Reducing or eliminating greenhouse gas emissions (scope 1, 2, & 3)
- Energy efficiency
- Reducing energy use
- Renewable energy
- Energy storage
- Carbon dioxide removal
- Climate justice
- Understanding and addressing historical emissions
- Loss and damage compensation

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KEY CONCEPTS IN CLIMATE MITIGATION

For a more in-depth information on the fundamentals of climate change, carbon emissions, and other key concepts, explore the Embedding Project's Addressing Scope 3: A Start Here Guide.

Climate change, as described by the United Nations Framework Convention on Climate Change (UNFCCC), is a "change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable periods."
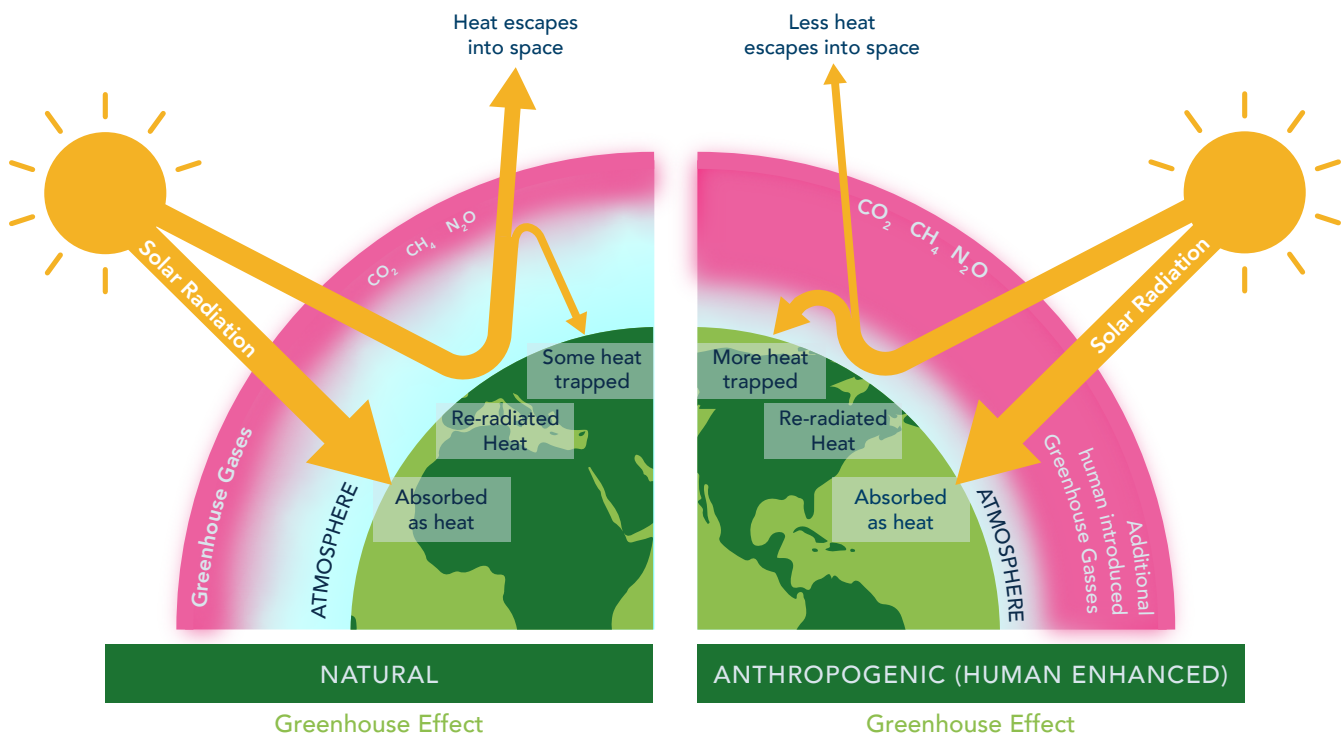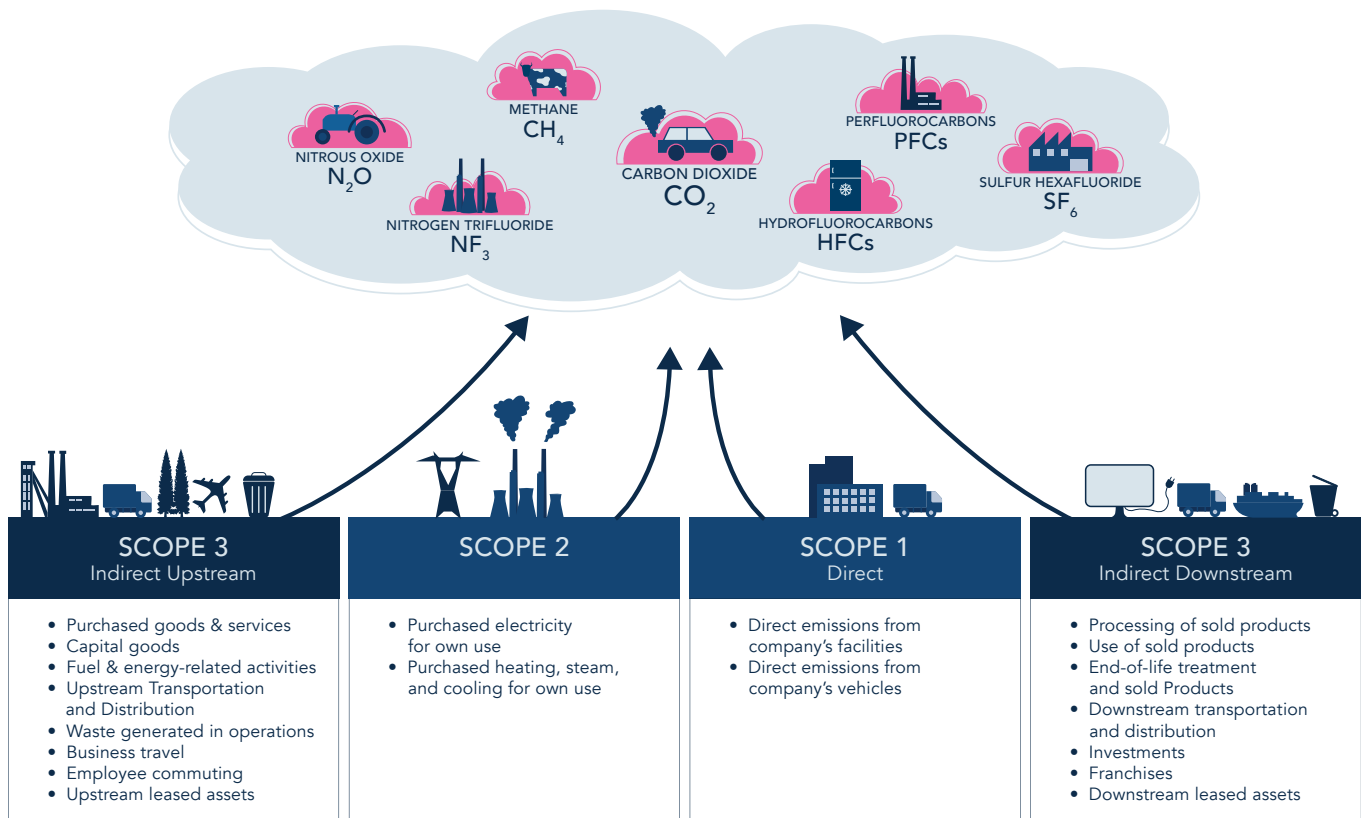

The greenhouse effect: How human-enhanced greenhouse gas emissions contribute to global climate change. Embedding Project.

Climate mitigation, as described by the IPCC, refers to "human intervention[s] to reduce emissions or enhance the sinks of greenhouse gases." This includes decarbonisation, which refers to the reduction of GHG emissions through a range of actions such as renewable energy; energy efficiency and conservation; and carbon removal.
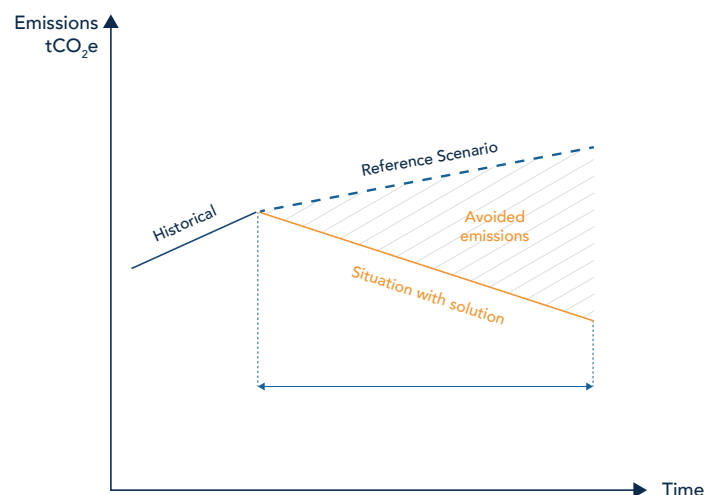
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CARBON FOOTPRINTS

Carbon footprint is a term used to describe the total amount of greenhouse gas emissions — typically measured in metric tons — associated with a product, service, process, activity, or a company. It can either measure carbon dioxide emissions or carbon dioxide equivalent, which aggregates all greenhouse gas emissions into one metric.

The world's most widely used set of greenhouse gas accounting and reporting standards is the Greenhouse Gas Protocol (GHG Protocol). The GHG Protocol's corporate standard delineates between direct and indirect sources of emissions and defines three different Scopes: Scope 1, Scope 2, and Scope 3 to clarify boundaries of control and accountability over the various emissions sources.

| NITROUS OXIDE N_2O | METHANE CH_4 | NITROGEN TRIFLUORIDE NF_3 | CARBON DIOXIDE CO_2 | PERFLUOROCARBONS PFCs | HYDROFLUOROCARBONS HFCs | SULFUR HEXAFLUORIDE SF_6 |

| SCOPE 3 Indirect Upstream	SCOPE 2	SCOPE 1 Direct	SCOPE 3 Indirect Downstream
• Purchased goods & services • Capital goods • Fuel & energy-related activities • Upstream Transportation and Distribution • Waste generated in operations • Business travel • Employee commuting • Upstream leased assets	• Purchased electricity for own use • Purchased heating, steam, and cooling for own use	• Direct emissions from company's facilities • Direct emissions from company's vehicles	• Processing of sold products • Use of sold products • End-of-life treatment and sold Products • Downstream transportation and distribution • Investments • Franchises • Downstream leased assets

More recently, the World Resources Institute, which established the GHG Protocol, advanced the idea of a new voluntary metric for avoided emissions, known as Scope 4. **Scope 4 emissions** are emissions avoided when a product is used as a substitute for other goods or services, fulfilling the same functions but with a lower carbon intensity. Currently, Scope 4 emissions do not count against net-zero targets. Where relevant, companies are encouraged to share estimates of avoided emissions as a way to inform product or service choices rather than as an indication of their own climate mitigation efforts.

Emissions tCO₂e

Reference Scenario

Historical

Avoided emissions

Situation with solution

Time

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NET-ZERO, OFFSETS, AND INSETTING

According to the IPCC, **net zero emissions** are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period.
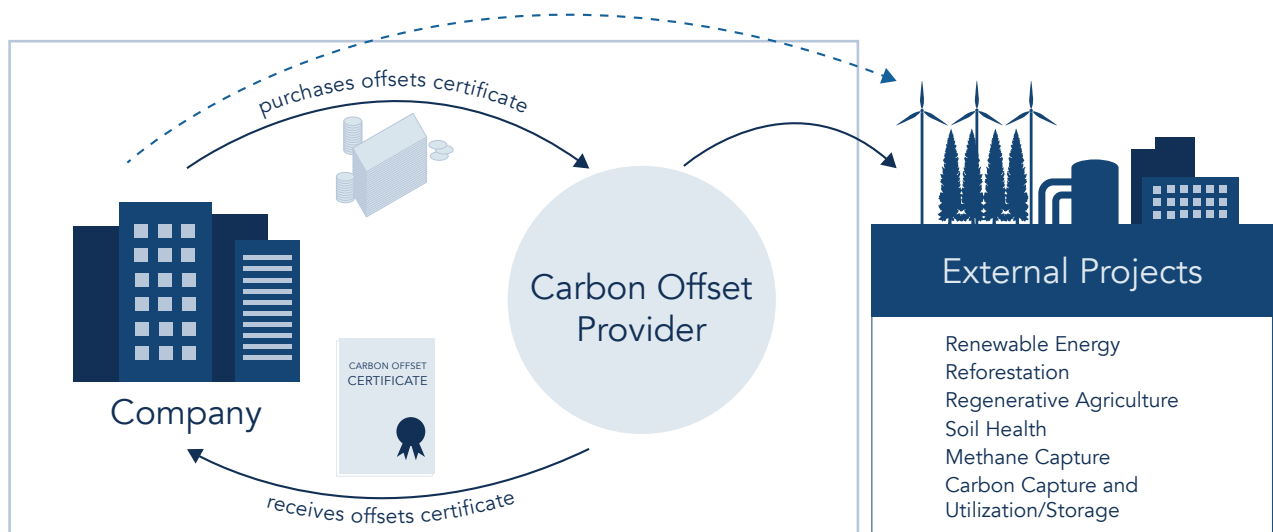

Net Zero

emissions produced — carbon removed
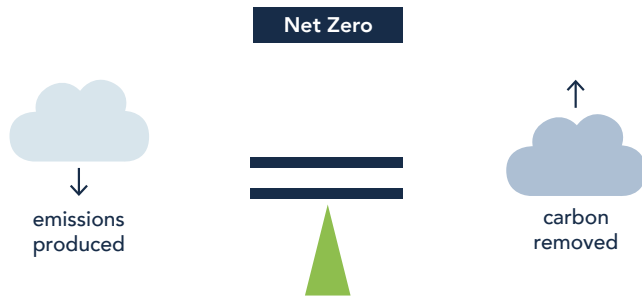
The Science-Based Targets Initiative (SBTi) – currently the leading organisation for setting and validating science-based targets on GHG mitigation – requires net-zero goals to align with stabilising the global temperature increase at 1.5°C, in line with the Paris Agreement. The SBTi's Corporate Net-Zero Standard (which as of the date of publication, was undergoing revision and in a public comment period) outlines the pathway for companies to reduce GHG emissions to achieve net-zero by 2050.

The priority should be to prevent emissions in the first place. Thus, companies setting net-zero goals are directed to reduce GHG emissions by at least 90% and neutralise any residual GHG emissions on an ongoing basis. In this case, neutralising includes permanent carbon removal and storage methods that counterbalance emissions that are impossible to avoid. Carbon offsets are **not included** within the definition, calculation, or validation of net-zero targets.

While some companies still refer to being 'carbon neutral', this term is not equivalent to net zero as it generally does not exclude the use of carbon offsets when determining emissions reductions. For instance, the SBTi does not validate or align with carbon neutrality claims as "carbon neutral does not necessarily mean that direct emission reductions have taken place [… and does] not necessarily include GHGs other than carbon dioxide."

Carbon offsetting, as defined by the UNFCCC, is "a mechanism for companies to purchase carbon credits from projects that create a reduction in emissions of carbon dioxide or greenhouse gases (GHG) in order to compensate, or offset, their unavoidable emissions."
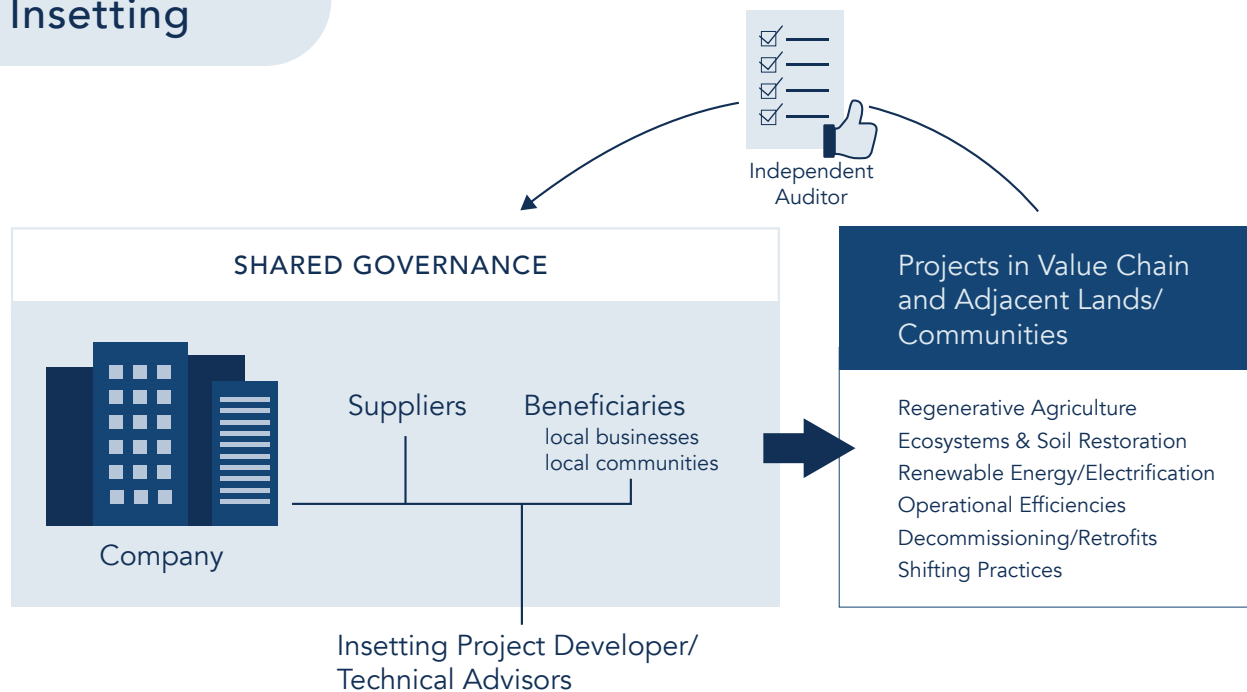
Offsetting

purchases offsets certificate

Company

CARBON OFFSET CERTIFICATE

Carbon Offset Provider

External Projects

Renewable Energy
Reforestation
Regenerative Agriculture
Soil Health
Methane Capture
Carbon Capture and Utilization/Storage

receives offsets certificate

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Ideally, offsets should only be used to compensate for "hard-to-abate" emissions, those that are difficult or impossible to eliminate with current technology. Increasingly, companies are being criticised for relying on offsets instead of investing directly in climate solutions to reduce their own emissions. Carbon offsets have also faced growing skepticism for their lack of additionality and permanence, double-counting, and violations of the rights of Indigenous Peoples and local communities. In addition, businesses are increasingly expected to disclose the use of carbon offsets to achieve their reduction targets.

Insetting aims to address some of the issues faced by offsetting by tying carbon reduction investments directly to company value chains. Instead of financing carbon reduction projects elsewhere, insetting redirects resources to support direct and indirect suppliers to reduce their emissions. To drive transformation, these insetting strategies need to be long-term, make sense for suppliers, and be responsive to local needs. Again, insetting should focus on compensating for "hard-to-abate" emissions. You can read Embedding Project's three-part blog series explaining carbon offsetting and insetting in more depth here.

Insetting

Independent Auditor

SHARED GOVERNANCE

Company

Suppliers

Beneficiaries
local businesses
local communities

Insetting Project Developer/
Technical Advisors

Projects in Value Chain and Adjacent Lands/ Communities

Regenerative Agriculture
Ecosystems & Soil Restoration
Renewable Energy/Electrification
Operational Efficiencies
Decommissioning/Retrofits
Shifting Practices

CLIMATE TRANSITION PLANS

A climate transition plan is a roadmap outlining how an organisation will transform its operations and business models to achieve net-zero emissions and align with the Paris Agreement's goal of limiting global warming to 1.5°C.

Climate transition plans are gaining momentum as a vital tool to demonstrate that your organisation is committed to credible transition to a zero-carbon economy. They are increasingly a key component of climate disclosure requirements around the world, with many jurisdictions proposing or requiring disclosures of climate transition plans.

The Carbon Disclosure Project (CDP) notes that a climate transition plan "is a *time-bound action plan* that clearly outlines how an organization will achieve its strategy to pivot its existing assets, operations and entire business model towards a trajectory that aligns with […] limiting global warming to 1.5°C.

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Environmental disclosure alone is not enough – it needs to lead to accountability and transformation; hence the relevance of climate transition plans as part of a business's strategy."

Key elements within a transition plan include governance; scenario analysis; financial planning;

value chain engagement and low carbon initiatives; policy engagement; risks and opportunities; targets; and scope 1, 2, and 3 accounting with verification. Broadly, climate transition plans outline your company's climate strategy, including your targets and the actions you will take to align with a 1.5-degree pathway.

Climate Transition Action Plan (CTAP) Principles TO GUIDE YOUR EFFORTS

Ambition - Action - Accountabililty

Core CTAP Elements TO ALIGN WITH LEADING FRAMEWORKS

| Foundations | Implementation Strategy | Engagement Strategy | Governance | Metrics |

Six CTAP Action Areas TO CREATE A LEADING PLAN

| Setting goals and targets | Decarbonising the business | Ensuring a just transition | Advocating for public policy | Supporting integration and accountability | Tracking and reporting progress |

Adapted from Ceres

Additional terms and definitions:

Science-based targets: Science-based targets offer companies a clear, actionable path to align emissions reductions with the Paris Agreement goals. […] Targets are considered 'science-based' if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement – limiting global warming to 1.5°C above pre-industrial levels.

Decarbonisation: The process of reducing or eliminating carbon dioxide (CO_2) emissions from human activities.

Absolute zero: No GHG emissions are attributable to an actor's activities across all scopes. Under this definition, no offsets or balancing of residual emissions with removals are used. (E.g. full decarbonisation across the value chain)

Explore Climate Risk Preparedness and Adaptation: A Getting Started Guide for further insights into key concepts associated with climate risk and adaptation.

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3 KEY PLAYERS IN CLIMATE MITIGATION

The United Nations Framework Convention on Climate Change (UNFCCC) is an international treaty among countries to combat "dangerous human interference with the climate system" and limit the adverse effects of climate change.

The We Mean Business Coalition is a global non-profit coalition working with the world's most influential businesses to act on climate change. It aims to catalyse business and policy action to halve global emissions by 2030 in line with a 1.5°C pathway.

The Greenhouse Gas Protocol establishes comprehensive global standardised frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations, value chains, and mitigation actions.

CDP is a global non-profit that runs the world's only independent environmental disclosure system for companies, capital markets, cities, states, and regions to manage their environmental impacts.

The Science Based Targets Initiative (SBTi) Corporate Net-Zero Standard includes the guidance, criteria, and recommendations companies need to set science-based net-zero targets consistent with limiting global temperature rise to 1.5°C.

Carbon Brief covers the latest developments in climate science, climate policy, and energy policy. They specialise in clear, data-driven articles and graphics to help improve the understanding of climate change, both in terms of the science and the policy response.

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The Transition Pathway Initiative Centre (TPI Centre), based at the London School of Economics and Political Science, is an independent, authoritative source of research and data into the progress being made by corporate and sovereign entities in making the transition to a low-carbon economy.

EP100 is a global corporate energy efficiency initiative, led by Climate Group, bringing together over 125 ambitious businesses committed to improving their energy efficiency.

RE100 is a global corporate renewable energy initiative bringing together hundreds of large and ambitious businesses committed to 100% renewable electricity.

The Energy Transitions Commission (ETC) is a global coalition of leaders and think tanks from across the energy landscape committed to achieving net-zero emissions by mid-century, in line with the Paris climate objective of limiting global warming to well below 2°C and ideally to 1.5°C.

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4 COMMITTING TO TAKE ACTION – MID- AND LONG-TERM GOALS

Committing to take action on **Climate Mitigation (Decarbonisation and Carbon Removal)** can include addressing many of the key topics listed above. The mid- and long-term commitments that your organisation elects to make should be based on your identified priorities, areas of greatest impact, and your capacity to undertake the work required.

It is important to note that this section does not provide all possible mid- and long-term goals related to this issue, but rather a sample of the goals that were most frequently adopted by companies in our research.

Common mid- and long-term goals and/ or commitments on **Climate Mitigation (Decarbonisation and Carbon Removal)** include variations of the following:

Long-term goal: Achieve net-zero emissions across the value chain by 2050 [or sooner]

- Achieve net-zero emissions in operations by 2050 [or sooner].
- Reduce absolute scope 1 and 2 GHG emissions [X%] by 20[XX] and absolute scope 3 emissions by [X%] by 20[XX] based on a 20[XX] baseline in line with the Paris Climate Agreement.
- Purchase 100% renewable electricity globally by 20[XX].
- Become carbon negative for scope 1 and 2 by 20[XX], removing all carbon emitted by the company directly and through electricity consumption since [a set date].

Are you setting new goals or interested in benchmarking your goals against leading practice? To help advance progress in credible corporate sustainability goals, the Embedding Project maintains a public goals database containing leading sustainability goals and commitments set by large companies globally. Explore our Sustainability Goals Database for more mid- and long-term goals on Climate Mitigation (Decarbonisation and Carbon Removal).

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5 HOW TO GET THERE – PROCESS-BASED INTERIM TARGETS

Note: The following proposed timelines are only for guidance and are based on the pace outlined by other companies. The timeframe for actions and work for each step needs to be embedded in your organisational context, which may require different time allocations.

The sequence outlined below assumes that your company has significant impacts on climate within its direct operations and that you will begin by learning and taking action to get your own house in order prior to engaging with your value chain. Whereas companies with limited direct impacts, where the majority of their climate impacts reside within their value chain, may (and likely should) opt to engage with value chain partners at a much earlier stage.

YEAR 1: CONDUCT A CARBON INVENTORY

Understand your organisation's carbon footprint by gathering data and completing an inventory of all relevant activities under Scope 1, 2, and 3 to establish a baseline. You can learn more about how to conduct a carbon inventory in Addressing Scope 3: A Start Here Guide.

YEAR 1: CONDUCT A CLIMATE CHANGE RISK ASSESSMENT

Conduct a climate change risk assessment at the enterprise level, incorporating asset-level data and supply chain data, as appropriate. Further guidance on understanding climate-related risks can be found in Climate Risk Preparedness and Adaptation: A Getting Started Guide.

YEAR 1: PRIORITISE AREAS FOR ACTION

Leverage the gathered data to identify emissions hotspots across your operations and value chain to prioritise areas and activities for target setting and inclusion in your climate transition plan.

YEAR 1: BEGIN TO UNDERTAKE EARLY ACTIONS TO REDUCE EMISSIONS

Given the urgency for decarbonisation, begin investing in emissions reduction. At early stages, energy conservation, energy efficiency, and waste reduction activities can both reduce emissions and save costs. Focus your early efforts on finding these points of alignment.

Examples of process-based targets for Year 1:

- By 20[XX], we will complete an inventory of all relevant activities under scope 1, 2, and 3 to establish a baseline carbon footprint.
- By 20[XX], we will carry out climate-related risk assessments, where appropriate, at site level, supplier level, and project level (including stress testing operations and value chain under worst case climate scenario).
- By 20[XX], we will use the carbon inventory results to map emissions hotspots and prioritise areas for action.
- By 20[XX], we will identify high priority opportunities for energy conservation, energy efficiency, and waste reduction in our own operations.

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YEAR 2: IDENTIFY BEST PRACTICE

Identify best practice within your industry for climate mitigation, including understanding the role of renewable energy, waste reduction, new technologies that improve energy efficiency, and more. Understand the components of climate mitigation international standards and/or collective efforts for your industry, where available. Catalogue and benchmark your current approaches against identified best practice to identify where your company currently stands on climate mitigation action.

YEAR 2: SET LONG-TERM AND INTERIM EMISSIONS REDUCTION TARGETS ALIGNED WITH A 1.5-DEGREE SCENARIO

Set science-based long-term targets that align with the 1.5°C scenario. If you already have climate targets, evaluate if they are in line with the 1.5°C scenario. The current standard is to aim for 50% reduction in emissions by 2030 and net zero emissions across your value chain by 2050. In recognition of the urgency of the climate crisis, some companies are committing to reach net zero by 2040. Best practice also includes setting absolute emissions reduction targets as well as outlining goals for engaging in credible carbon removal to address historical emissions.

CASE STUDY: Mars aligns its climate target with a 1.5°C scenario

Recognising that emerging climate science was shifting the pathways needed to credibly achieve net zero emissions and tackle climate change, the Mars Leadership Team decided to shift the company's long-term target to align with new expectations and began a process to develop their interim 2030 target. Considering their entire global business and value chain, Mars asked "What it would take?" to set an interim target consistent with the science of 1.5

degrees. Their answer was their new target – 50% absolute emissions reduction by 2030. Over several months, the team explored hundreds of strategies and perspectives on how to get there. The result was a detailed marginal abatement cost curve (MACC) analysis that provided key insights on the path forward.

YEAR 2:DEVELOP A CREDIBLE CLIMATE TRANSITION PLAN

Map out what it would mean to get there. Outline how you will reach your emissions reductions targets by developing a credible climate transition plan. Understand what implications these long-term targets would have for your strategy and operations. Set interim targets that guide the work required to achieve the targets and foster accountability for progress.

Your climate transition plan should explain how your corporate strategy and financial planning is influenced by climate, including risks and opportunities, and how you will integrate climate considerations into your governance and decision-making. Consider how your company can rapidly decarbonise its operations through a range of levers, from energy efficiency measures to accelerating a shift to renewables to using electric or lower-carbon alternatives for transportation. Key issue areas such as energy, nature, and packaging, are interlinked with climate action and can often have compounding impacts on emissions reduction efforts. Translate this into clear interim targets that can drive your emissions reduction efforts.

Additionally, highlight how your company will ensure that its actions align with achieving a just transition and explain how your public policy engagements will align with your ambitions. Your climate transition plan should be accompanied by an emissions inventory that is verified by a third party to track progress.

Examples of process-based targets for Year 2:

- By 20[XX], we will identify industry best practice for climate mitigation.
- By 20[XX], we will benchmark our practices against best practice to understand where we currently stand.
- By 20[XX], we will set science-based targets for Scope 1 and 2 emissions from a 20[XX] baseline, in line with the 1.5°C scenario.
- By 20[XX], we will set science-based targets for relevant Scope 3 emissions categories from a 20[XX] baseline, in line with the 1.5°C scenario.
- By 20[XX], we will develop and publish a climate transition plan.
- By 20[XX], we will equip business units with a toolkit of best practice measures to mitigate climate change and establish site-specific climate action plans.

YEAR 3: INVEST IN CLIMATE MITIGATION INITIATIVES

Expand your investments in climate mitigation initiatives, aligned with your climate transition plan. This involves addressing scope 1 (operational) emissions through energy conservation and efficiency, reducing waste, and investment in electrification; and addressing scope 2 emissions through sourcing renewable energy. Consider how to reduce the overall energy demand of the business by implementing energy efficiency technologies and shifting to business practices or models that use less energy.

CASE STUDY: DELL reduces emissions through e-waste recycling

Dell is tackling the fast-growing global e-waste issue by sourcing post-consumer recycled plastics and establishing a closed-loop supply chain for plastics from used electronics. Plastics are collected through takeback schemes, sorted, and further processed before being sent to a manufacturing partner, with the e-waste processed into new Dell products in less than six months. This not only addresses waste but also reduces carbon emissions by 11% compared to using virgin plastic.

Examples of process-based targets for Year 3:

- By 20[XX], we will invest in various climate mitigation initiatives within our operations to meet our commitments in our climate transition plan.
- By 20[XX], we will replace fossil fuel powered infrastructure in our facilities (e.g. gas boilers) with renewable energy alternatives.
- By 20[XX], we will electrify [X%] of company operated transportation.
- By 20[XX], we will address scope 2 emissions by sourcing all electricity through renewable power purchase agreements (PPAs) and purchasing of renewable energy certificates.
- By 20[XX], we will identify credible nature-based solutions that suit our climate mitigation plans.
- By 20[XX], we will shift [X] facilities to local sources for renewable electricity to help improve energy resilience and create shared value with local partners.
- By 20[XX], we will implement solutions that improve energy efficiency across our operations (e.g. real-time energy management tools).
- By 20[XX], we will implement changes in our business model to reduce overall energy demand (e.g. circularity, repairability, servitisation, energy sufficiency).

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YEAR 4: EXTEND YOUR EFFORTS INTO YOUR VALUE CHAIN

Consider how you could extend your efforts further into your value chain, including deeper supplier engagement and investing in supplier decarbonisation through insetting approaches.

Engage with your suppliers to understand priority issues areas and align your targets with activities that contribute to the largest emissions in Scope 3.

Also, consider establishing a framework to engage suppliers to set science-based targets for their operations. Explore an insetting approach as a pathway to tackle your Scope 3 emissions. Codevelop projects with supply chain partners to support reducing their emissions and design these to account for the specific context – the risks, opportunities, impacts, and strategy – of the parties involved.

Plan and conduct a preliminary Scope 3 inventory → Data management and governance → Set or update your targets → Take action to support value chain decarbonisation → Verify and disclose → Review your progress and adapt your strategy → (loop)

Collaborate with suppliers and customers

Further guidance for engaging in value chain decarbonisation can be found in Embedding Project's [Collaborating for Value Chain Decarbonisation: A Scope 3 Guide](). It offers guidance on four key sets of action, including prompting, influencing, supporting, and investing, and covers six key focus areas where companies could be supporting value chain decarbonisation: supporting renewable energy adoption; supporting greater energy efficiency and conservation; decarbonising logistics; supporting better materials stewardship and eliminating waste; supporting lower-impact agriculture and land-use; and supporting carbon capture and sequestration.

CASE STUDY: Siemens empowering suppliers to optimise logistics

[Siemens']() "Carbon Reduction @ Supplier" approach is designed to support suppliers in target setting and action plans for reducing

their climate footprints. The "Guide to Carbon Reduction Management" offers support materials for suppliers, including optimising logistics. The guide builds capacity for energy-saving training for drivers and fleet managers, adopting new drive systems and smart technology for trucks, and transitioning transport operations to less CO_2-intensive modes.

CASE STUDY: BASF undertakes insetting project

Recognising that there was rising demand from customers and supply chain partners to cut Scope 3 emissions, and that offsets were not viable to meet their SBTi targets, [BASF]() began to look towards investing in regenerative agriculture in their value chain to cut farmland emissions. The company began to engage with barley farmers, integrating practices such

as cover crops and straw retention to increase soil carbon. To ensure that their efforts could be measured and tracked, BASF aligned with the VM0042 Improved Agricultural Land Management methodology to effectively measure soil carbon levels and had the entire process audited and approved by a non-profit that verifies carbon projects. Results of the initial insetting project showed that, at a farm level, emissions associated with barley crops were reduced by almost 90% due to the increased capacity of the soil to store carbon.

YEAR 4: INVEST IN CREDIBLE CARBON REMOVAL

Consider how your company can help draw down atmospheric carbon levels and become carbon negative by investing in credible opportunities for carbon removal through nature-based solutions and/or credible technologies for carbon dioxide removal.

Examples of process-based targets for Year 4:

Extending your efforts to your value chain:
- By 20[XX], we will build internal alignment and a framework for partnering with our suppliers on climate mitigation.
- By 20[XX], we will engage with suppliers on identified priority issue areas in setting science-based targets.
- By 20[XX], we will support key suppliers to install renewable energy on-site or source renewable energy through Power Purchase Agreements (PPAs).
- By 20[XX], we will help suppliers shift to lower carbon modes of transport.
- By 20[XX], we will help suppliers to adopt energy efficiency measures.

Investing in carbon removal:
- By 20[XX], we will invest in nature-based solutions to remove [X Gigatons (Gt)] of carbon dioxide by 20[XX].
- By 20[XX], we will invest in credible technologies to remove [X Gigatons (Gt)] of carbon dioxide by 20[XX].

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RESOURCES

GUIDANCE

UNDERSTANDING THE CLIMATE CRISIS

If you are looking for a reliable and comprehensive starting point for building up your knowledge and understanding of climate change, NASA's repository on climate change is your one-stop shop. Global Climate Change: Vital Signs of the Planet provides a wealth of relevant and credible information, including the latest research, breaking news, and nuanced Q&A on climate change evidence, causes, effects, and solutions.

The Fossil Fuels in Transition report from the Energy Transitions Commission (ETC) can help you understand what technologies and supporting policies are needed to decarbonise the global economy. It highlights the policies required to reduce fossil fuel demand; the role of different clean energy technologies in replacing fossil energy; and the role of carbon capture and removals. There is also a sectoral breakdown outlining where emissions reductions are most needed.

The State of Carbon Dioxide Removal reports are a global assessment of the state of CDR and the gap we need to close. It is intended to regularly inform researchers, policymakers and practitioners on the state of progress, by systematically collecting and analysing the vast amount of data and developments in many parts of the world.

SETTING STRATEGY AND TARGETS

First launched in 2019 by the UN's Framework Convention on Climate Change, the Climate Action Pathways set out sectoral visions for achieving a 1.5° C resilient world in 2050. Pathways are a living document, and will provide you with an up-to-date road map of the interim actions and key impacts needed.

'Engaging Supply Chains on the Decarbonisation Journey' by the Science Based Targets initiative (SBTi) will help address your value chain sustainability impacts by setting supplier engagement targets. It explains how to select suppliers, set and implement targets, and track progress.

Accounting for Natural Climate Solutions Guidance from Quantis delivers a robust methodology to embed land-related emissions in corporate and product footprints, which can be used for setting science-based climate targets. Additionally, the supporting Annex document provides detailed information on the scope of the proposed methodology, including technical instructions, context, debated challenges, and limitations, as well as references.

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DEVELOPING CLIMATE TRANSITION PLANS

Blueprint for Implementing a Leading Climate Transition Plan from Ceres makes the business case for climate transition action plans (CTAPs) in response to climate-related risks, opportunities, and regulations. The report provides specific ways companies can create a leading plan across six action areas, including goal- and target-setting, decarbonising the business, ensuring a just transition, advocating for public policy, supporting integration and accountability, and tracking and reporting progress. By developing a credible and effective CTAP, companies can better position themselves for not just compliance but success in the low-carbon-economy.

Climate Transition Action Plans: Activate Your Journey to Climate Leadership by the We Mean Business Coalition highlights the core components of a comprehensive climate transition action plan and how can it be used to drive sufficient, near-term action for companies and decision-useful information for stakeholders. It offers templates, checklists, and other tools to help your organisation develop a credible climate transition plan.

TAKING ACTION IN OPERATIONS AND VALUE CHAINS

Addressing Scope 3 by the Embedding Project is a start here guide that explains the basics of Scope 3 emissions and how companies should begin to take credible action. The guidance is anchored in the real-world experience of companies that are already navigating this journey.

'Just Transition and Renewable Energy: A Business Brief' from the United Nations Global Compact outlines how your business can support public Just Transition policies. The authors acknowledge that business has a key role to play in ensuring that the transition to the low carbon economy is just. The brief provides ten recommendations for how business can support the transition through their policy advocacy.

With the urgent need to reduce global emissions, rapid decarbonisation of our economy is essential, and the key is collaboration across the value chain. The Embedding Project's Collaborating for Value Chain Decarbonisation guide provides practical advice and examples to help companies support their supply chain partners to decarbonise. You'll find advice on how companies are prompting, influencing, supporting, and investing in their value chain and resources and ideas for how to support six key decarbonisation pathways.

The 'Climate Solutions at Work' guide from Drawdown Labs was created to "democratize" climate action by helping all employees concerned about climate change to take concrete action in the workplace.

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TOOLS

The Climate Drive platform by WBCSD features a number of tools that can support your organisation's net zero transition. These include an Action Library that features tangible, high-impact actions and recommendations from peers, such as green energy options for your operations and ways to make use of Power Purchasing Agreements.

The 'Mapped: the impacts of carbon-offset projects around the world' tool created by Carbon Brief maps out the locations of carbon offset projects that have created negative impacts. It can help you to understand how these negative impacts manifest, the locations where they are most likely to occur, and their prevalence.

This 'Climate Action Protocol' resource from Climate Impact Partners can help you to navigate the growing range of frameworks and guidance on climate action claims. The protocol compares Climate Impact Partners' CarbonNeutral certification; ISO's 14068 Carbon Neutral Standard; ISO's Net Zero Guidance; SBTi's Net Zero Standard; and VCMI's Carbon Integrity Claim. It also provides tools to compare and contrast requirements in order to make the right choice for your business.

STANDARDS

Science Based Targets has created a five-step target-setting framework that helps you to assess; interpret and prioritise; measure, set, and disclose; act upon; and track your science-based goals. They have created sector-specific guidance and target monitoring for companies and financial institutions. The Science Based Targets initiative's (SBTi) Corporate Net-Zero Standard includes the guidance, criteria, and recommendations companies need to set science-based net-zero targets consistent with limiting global temperature rise to 1.5°C.

The Greenhouse Gas Protocol is the global standard for measuring GHG emissions. The protocol was developed by the World Resources Institute (WRI) and World Business Council on Sustainable Development (WBCSD) and includes sector specific guidance and calculation tools.

The Core Carbon Principles (CCPs) are a global benchmark that provide a credible and rigorous means of identifying high-integrity carbon credits.

Explore more curated resources on Climate Mitigation (Decarbonisation and Carbon Removal) here.

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