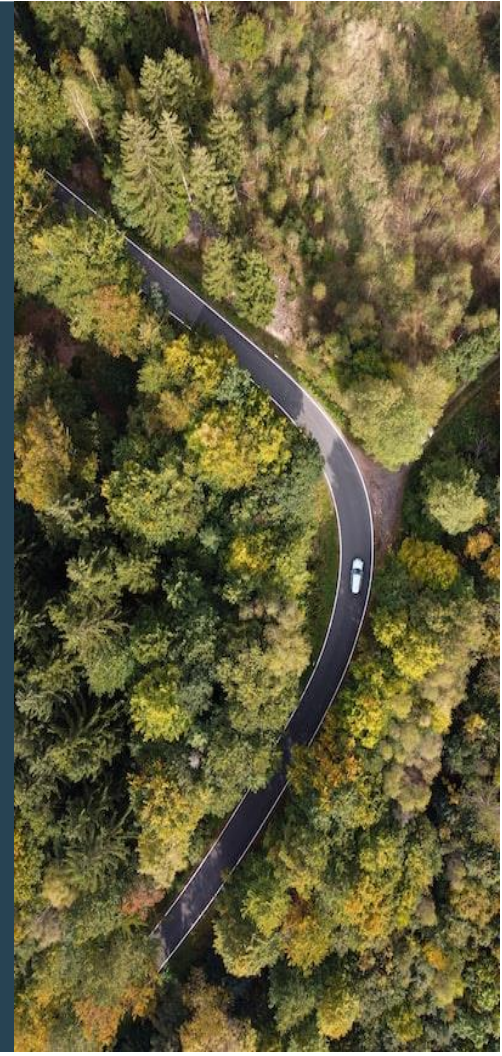


# Decarbonization Strategy A Practical Guide

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**An actionable guide for businesses to develop and implement an impactful and cost-effective decarbonization strategy**

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## Introduction

The last twelve months have brought more than their share of natural disasters worldwide, whose increased intensity, duration and frequency can be linked with climate change. Experiencing **multiple unprecedented climate conditions** first-hand, amplified by an overall better media coverage, helped **raise awareness** within the general population, especially in Western countries.

The [IPCC's Sixth Assessment Report](#) published in 2021 gave us ample insights on the **changes** that are happening, the **trends** and **impacts** to be expected in the coming decades, and what needs to be done and at what scale to stay within the boundaries of the Paris Agreement.

The combination of these events was a clear reminder that **mitigation** isn't a nice-to-have for the distant future, but something that both **governments and corporations need to seriously act on and fast**.

In that context, whereas countries' ambitions are still lagging behind, as the last COP 27 proved, more and more companies are seizing upon climate mitigation, with a focus on decarbonization, driven by three main factors. First, they need to abide by **existing or upcoming regulations** that are becoming more stringent, while covering a broader scope, such as the SEC (US Securities and Exchange Commission)'s rule for publicly-traded companies in the US, or the CSRD (Corporate

Sustainability Reporting Directive) for European companies and companies with significant operations in the European Union. Second, they feel a **higher pressure from their stakeholders**, especially large investors. Smaller BtoB companies which didn't have decarbonization on their radar yet, need to prepare to contribute to their large clients' own decarbonization strategies, as part of their Scope 3 emissions. Third, decarbonization can bring huge **business opportunities** to companies on brand reputation, talent attractivity and retention, risk reduction, and enhanced assets and operations resiliency.

Decarbonization, and more broadly climate mitigation, is part of a broader environmental transformation, demonstrated by the [nine planetary boundaries](#), six of which have already been crossed as of 2022, and for which companies need to do their share to bring us back within safe limits.

Implementing decarbonization strategies to bridge the gap between commitments and results is still easier said than done for businesses. The path to reach the long-term net zero goals they've set is still unclear and lacks **specific, shorter-term, intermediate milestones**. Some companies also need to transition from their initial muddy carbon neutral claims to a more **science-based** and **data-backed** strategy, which will drive more meaningful and lasting impacts.





# Do Your Decarbonization Goals and Strategy Make Sense?

## Who is setting targets?

Currently, more than 4,700 companies covering over a third of global economy market capitalization are working with the [Science Based Targets initiative \(SBTi\)](#). Almost half of them had their targets approved. According to the [Net Zero Tracker](#), more than 40% of the 2,000 largest publicly-traded companies in the world by revenue have a net-zero target for 2050.

## Are these targets enough?

The [MSCI Net Zero Tracker](#) calculates listed companies are **on track to reach an increase of 2.9°C**, with only 16% aligned with 1.5°C and 33% aligned with 2°C, as of October 2022.

Still, emissions have resumed increasing in 2022 following 2 years of a Covid-related artificial drop. Why is that?

In actuality, **only 0.4% of companies have disclosed credible climate transition plans**, according to a new [report](#) released by the environmental disclosure platform CDP, based on the more than 18,600 organizations that disclosed to the organization on climate change in 2022. The three least successfully reported categories are found in Figure 1 on the next page.

## Relying on Carbon Offsets

The truth is most companies are still **heavily relying on carbon offsets** to reach their decarbonization targets.

**0.4%** of companies have disclosed fully credible climate transition plans - CDP

## What are Carbon Offsets?

Carbon offsetting is compensating for one's carbon dioxide emissions by paying for the removal of the same amount of carbon dioxide to neutralize the effects of these emissions. The underlying assumption is that a ton of carbon emitted by a corporation can be cancelled (offset) by a ton of carbon removed somewhere else, typically by planting trees. It seems reassuring, makes things easy for corporations, and it's relatively cheap - companies pay third party companies which sell them carbon credits, but the price of carbon is usually far below the actual cost.

These offsets could work if and only if this removal would happen at the same time of emission (whereas it will take years for newly planted trees to grow enough to absorb and store a ton of carbon) and if this offset can be proven to be real and additional (i.e. that removal wouldn't have happened if the corporation hadn't financed it).

Recent [studies](#) show that in the overwhelming majority of cases, it is not what's really happening. In fact, more than 90% of credits issued by Verra, the largest carbon credit company in the world, are deemed [worthless](#) "phantom" credits, meaning they didn't remove any CO<sub>2</sub> from the air. As a consequence, companies that set decarbonization strategies relying on these carbon credits are off track.

In Europe, some companies which tried to "buy" their way out with offsetting have experienced reputational backlash or even been fined because of their claims being considered greenwashing. Recent examples include

[Deutsche Bank's DWS](#), [HSBC ads](#) in the UK, and further abroad with Australia's [Tlou Energy](#).

To avoid this, companies need to be able to back up their claims with tangible and measurable achievements.

### Relative or Absolute Reductions

Another point to consider is whether targets aim for an absolute or relative emissions reduction. An absolute emissions reduction means that your strategy will reduce the amount of CO<sub>2</sub>e (CO<sub>2</sub> equivalent) emitted by your company, full stop, regardless of change in the number of products or services produced and sold. A relative emissions reduction is a reduction in intensity (i.e. how many tons are emitted to produce a certain amount of goods), expressed as a percentage, which may not translate to a reduction of emissions, if the increase of products or services produced counteracts the emission reduction per unit produced or sold.

In the end, what matters is the impact and whether we are making real progress toward

limiting global warming below the thresholds agreed on at COP21 with the Paris Agreement.

### How do you know whether your goals and strategy make sense?

Are you able to confirm whether they are based on verifiable facts, provide the expected impact, and you are on track to reach them?

- Are they based on science? SBTi and their net-zero framework: requires 90% absolute reduction and 10% removal of what cannot be abated, using higher quality nature- or technology-based solutions (many of the latter still need to prove they can scale effectively and deliver on expectations)
- Are they backed by data? Build a strong baseline you can monitor progress against. Where do your emissions come from and what are the main drivers?
- Are your targets feasible, both from an economic and technical standpoint?
- Do they align with the overall corporate strategy?

## Worst-performing elements of CDP climate disclosures in 2022

Percent of organizations meeting the disclosure requirements for these elements

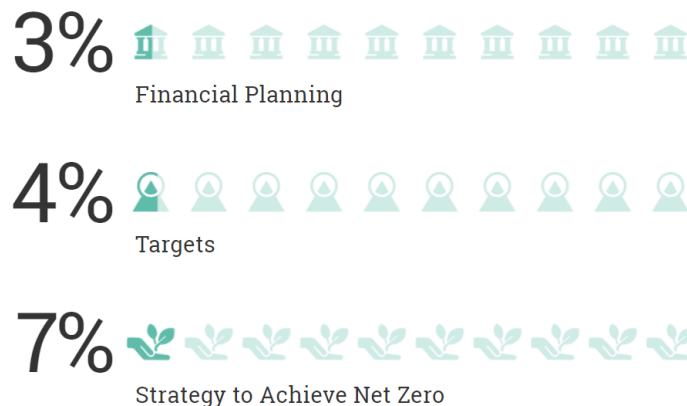


FIGURE 1: THREE LEAST SUPPORTED CATEGORIES SOURCE: CDP CLIMATE TRANSITION PLAN REPORT

# Carbon Accounting Gaps and Pitfalls

## How are emissions calculated?

The GHG Protocol, the most used Greenhouse Gas accounting protocol worldwide, splits emissions into three scopes (Figure 2 below):

- **Scope 1:** direct emissions related to the company operations, such as the fuel used in a facility or to power a vehicle you own or operate. Your company has direct control over it.
- **Scope 2:** indirect emissions linked with the electricity, steam, heat and cooling you purchase to power, heat, and cool the facilities and offices you run.

- **Scope 3:** all other indirect emissions in a company's value chain. Scope 3 is broken down into 15 categories, grouped into upstream and downstream emissions. These emissions are beyond a company's direct boundaries, with less control over them.

In many industries, Scope 3 accounts for 75% or more of total GHG emissions, but the proportion of each scope varies significantly depending on industry and business strategy. For example, if a company outsources its production, those emissions become Scope 3 instead of Scope 1.

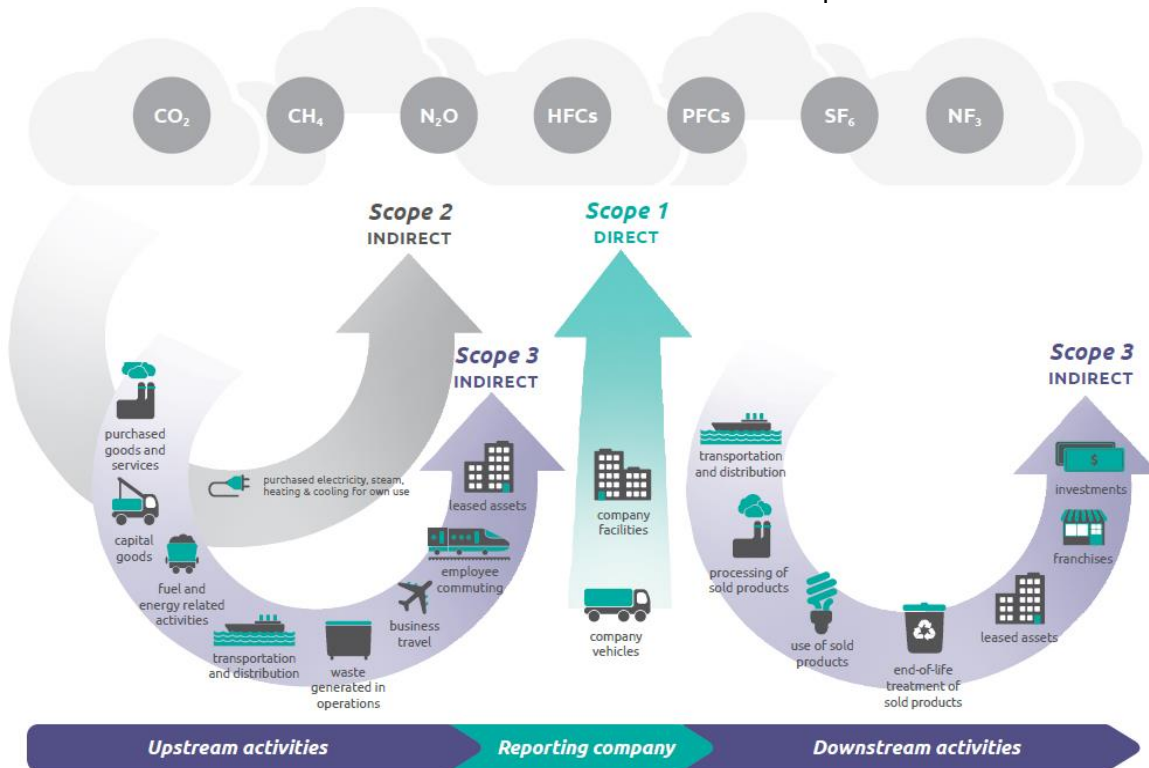


FIGURE 2: OVERVIEW OF GHG PROTOCOL SCOPES AND EMISSIONS ACROSS THE VALUE CHAIN

Measuring Scope 3 emissions can be challenging as a company needs to collect external data from its suppliers, its carriers, etc. Usually, **two calculation methods** can be considered or combined:

- **Spend-based:** using typical emissions factors provided by third parties (e.g. the EPA for US), to translate the type of expense and amount into emissions: faster but less specific to your business and much

less accurate, therefore potentially misleading.

- **Activity-based:** request at least your major suppliers to calculate their own emissions and share them with you. This method may take more time but should be more accurate. Activity-based calculations are recommended whenever possible.

Among Scope 3 categories, consider which one(s) have high impacts on your company to understand what matters and how to prioritize them:

- What you purchase

- What you sell: usage and end-of-life
- The necessary transportation between your suppliers, your clients and yourself
- What you lease
- How your employees move for their work (commuting and business travel)

Note that the increasing **quantity of data** to be collected, the higher expectations on **data quality and reliability**, and the increasing need for **proper auditability** make an **ESG reporting software platform** a must-have.





# Actionable Solutions to Reduce Scopes 1 and 2 Emissions

Solutions to tackle Scope 1 and 2 emissions are well defined and generally straightforward overall. This does not mean they can all be easily implemented, but a strong plan built on a thorough technical and economic analysis allows for confident planning and a cost-effective investment for companies. These plans should deliver expected results in carbon footprint reduction, enhanced operational resiliency and cost savings. By comparison, Scope 3 is by far a larger challenge and should require most of the corporation's attention (see next chapter).

## Where do these emissions come from?

Outside the agriculture industry, Scopes 1 and 2 come from the following sources:

- Building operations (heating, cooling, ventilation, lighting) in offices, warehouses, manufacturing plants, R&D labs
- Stationary sources: such as power plants and industrial facilities (assembly lines, kilns, etc.)
- Lab equipment and data centers directly operated by the company
- Vehicle fleets
- Non-CO<sub>2</sub> emissions (methane, HFC gases)

## How can they be reduced?

The approach to address these scopes is three-fold:

**1. Electrify** what is not already powered by electricity and makes sense in terms of feasibility and cost, depending on your industry and business goals: building HVAC system, vehicles operating on site (e.g. forklifts), a fleet of short-range vehicles. As an additional advantage, it limits exposure to higher price and volatility of fossil fuel markets. Think of

what is happening on the natural gas markets since 2022.

**2. Source** the electricity you use from **low-carbon electricity**. Two main options, which can be combined, are available depending on what makes sense for your business and depending on the markets you are in.

2a. Switch to an **alternative low-carbon provider** on the grid, which can supply your operations with a higher mix of renewable electricity than the incumbent provider. More and more energy markets are opening to competition worldwide and considering your options in some key markets you operate in is probably worth it. This kind of solution may not be available to you if you only occupy a few spaces in a large building and do not have a say on where the building pulls its energy from. Combining efforts with other tenants, who will likely have decarbonization targets themselves at some point, makes sense and can unlock new possibilities.

2b. **Supply with on-site or off-site renewable energy**: either directly operated or through a contract with a third-party provider (PPA or Power Purchase Agreement). In the latter case, you contract with a renewable energy project developer for a given duration (usually around 10-20 years but could be less or more) and a certain amount of energy for a fixed price (except for increases due to inflation). The supplier will build and operate the renewable energy facility and power either your facility directly or the grid. A side advantage of such a mechanism is the ability for you to have a long-term visibility on electricity price and hedge price variation (generally going up) during the contract duration. If you directly operate the renewable energy installation, there is an



upfront CAPEX cost but better savings during the renewable energy installation lifetime (generally 20 years for a solar PV installation). If you contract with a project developer, there is only an OPEX cost. Either option can make sense, depending on your goals and capabilities. A side benefit of on-site renewable energy is the ability it gives you to further increase both the use of renewable energy and the resiliency of your site's operations, when coupled with a Battery Energy Storage System (BESS), while creating the ability for you to provide ancillary services, that could in return help you tackle some of your scope 3 emissions (think EV charging for your clients or subcontracted transportation).

**3. Deploy renewable thermal processes**, such as cogeneration and heat recovery. For specific industrial processes which require temperature beyond what electricity can provide cost-effectively, invest

in other energy vectors produced from low-carbon sources (Green H2).

### What results can be expected?

For an effective yet impactful decarbonization strategy, these approaches need to be refined further and broken down into three main steps, from short-term to longer-term (see Figure 3 below) but some more lasting and transformative results are:

- **Optimization:** improving the way the current facility or equipment works or serves your needs, based on energy usage monitoring and data collection
- **System switch:** replacing the existing equipment by a more efficient, lower carbon alternative
- **Holistic approach:** a multi-fold transformation to enable new opportunities across operations and with stakeholders

	Optimization	System Switch	Holistic Approach
Building Operations, Lab Equipment, Datacenters	Equipment optimization, based on submetering, energy audits, software-based heating & cooling usage and schedule optimization. Increase building insulation. End lease or consolidate unnecessary space.	Retrofit and electrify building equipment (e.g. switching to heat pump). Reduce emission intensity of electricity supply by switching to low-carbon sources. Renewable thermal processes: cogeneration and heat recovery	Combine renewable electricity supply with Battery Energy Storage System (BESS). Optimize the whole as a micro-grid, to enable increased resiliency and ancillary services (e.g., EV charging capabilities). Increase environmental quality of indoor spaces during retrofits and electrification
Stationary Sources	Equipment Optimization, based on Real-time energy measurement, Equipment usage pattern analysis, Software-based optimization.	Electrify building equipment Reduce emission intensity of electricity supply by switching to low-carbon sources. Renewable thermal processes: cogeneration and heat recovery Other energy vectors (e.g. green H2) for higher temperature requirements.	Combine renewable electricity supply with Battery Energy Storage System (BESS). Provide excess Cogeneration and heat recovery to local community
Vehicle Fleet	Route & Fleet Optimization Software	Electrify short-range vehicles, switch to lower carbon long-range transportation options, consider alternative fuels.	Electrify transportation and supply chain hubs. Combine with local renewable electricity supply and Battery Energy Storage System (BESS)
Non-CO2 emissions	Leakage detection sensors	Retrofit Industrial Refrigeration System	

FIGURE 3: SCOPES 1 & 2 SOLUTIONS SUMMARY (EXAMPLES)

# Understand The Depth of Scope 3 Accounting

According to the [MSCI Net-Zero tracker](#), only 30% of listed companies disclosed any aspect of Scope 3 emissions. However, upcoming requirements in major geographical areas will make Scope 3 reporting no longer optional, especially the CSRD regulation for EU companies and non-EU companies with significant operations in the EU. If passed as it currently stands, the SEC rule of sustainability disclosure may also require listed companies to report on their material Scope 3.

**94%** of companies that signed up to SBTi in 2020 included commitments to reductions in emissions at customers and suppliers - McKinsey

Indeed, there are multiple challenges in measuring, reporting and reducing Scope 3 emissions:

- Immaturity of carbon accounting is most apparent for Scope 3 emissions. Emission calculations are usually based on rough activity data (spend-based calculations) and standard (meaning average) emission factors.
- Companies need to gather emissions from multiple decentralized suppliers and stakeholders, who can be spread worldwide for large organizations, and who may not have that kind of data available yet.
- Modern value chains are very complex and can uncover several intertwined economic, ecological, and social challenges.
- Integrity and auditability with a higher risk of double counting.

Still, even a partial, transitory picture of upstream emissions can help identify quick wins and set priorities to jumpstart a strategy.

Focusing on the most material and the best-known areas is an effective way to start your Scope 3 journey, which may vary significantly by industry (see Figure 4).

Earlier, we said Scope 3 is beyond immediate company boundaries and companies have less control over it. However, both upstream and downstream emissions are direct consequences of a company's business strategy and operations. Therefore, companies bear some responsibility for their Scope 3 emissions.

## Supply Chain Inputs (Upstream)

Inputs (upstream) depend on how a company does business (goods and services), and on its culture:

- What the company owns or leases (buildings, franchises, fleets, outsourcing)
- The supply chain: how the input materials are sourced and from where and whom
- Company culture: where workplaces are located vs where employees live and how they can get there (commuting), whether remote work is possible, tolerated, or encouraged.
- Where clients are vs where the goods and services are made
- How the products and services are designed, built, expected to be used by customers and for how long, and what can happen after product lifetime has ended (cf. circular economy)

Supply chain emissions depend on what materials are used, how they are sourced, and from whom and where. A deeper understanding of your supply chain and associated emissions not only helps in lowering these emissions, but also strengthening the

supply chain resiliency and improving competitive advantage.

**70%** of emissions reported to CDP originated in two emissions categories: Category 1 “Purchased Goods & Services” and Category 11 “Use of Sold Products”

### Purchased Goods and Services

Reducing emissions related to purchased goods and services can be based on 3 pillars:

- Update **procurement policy** to embed sustainability criteria to be met by your providers.
- **Partnering with main providers** to create win-wins with additional advantages beyond emissions abatement, while strengthening relationships over the long term. This may mean actively supporting your providers in setting and implementing their own decarbonization strategy, not just requiring them to do so. Share your experience with them, maybe share some resources to help them speed up. Remember, it’s in your best interest as well.

- Build on **Circular Economy** practices and rethink your procurement process, starting from challenging your needs, to reusing or repurposing materials, to buying second-hand professional items from qualifying vendors.

### Sold Products (Downstream)

Reducing emissions related to the use of sold products is first and foremost a matter of R&D - from lowering the packaging’s footprint to reducing the energy required to power the products you sell and end-of-life policy. It’s a long road ahead, with intermediary easier steps like rethinking packaging, but the cards are in your hands.

An efficient decarbonization strategy should be approached with a holistic view, even more so for Scope 3.

**30%** of total Scope 3 emissions could be abated through relatively straightforward measures, such as product and logistics optimization and procurement of low-carbon energy by suppliers - McKinsey

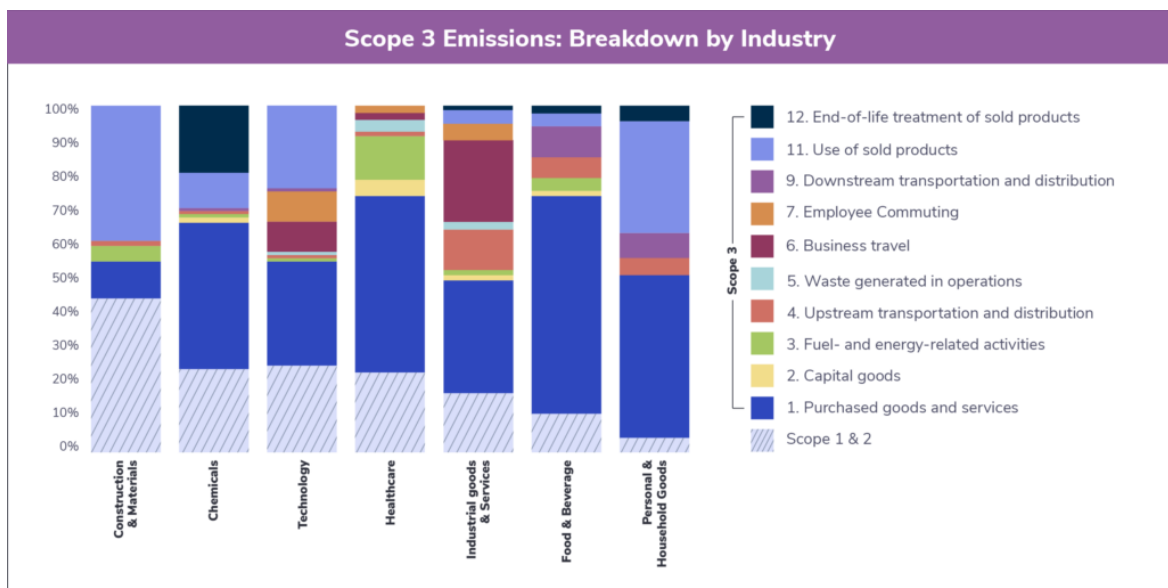


FIGURE 4: SCOPE 3 GHG EMISSIONS BREAKDOWN BY SECTOR. SOURCE: ENVIZI

	Incentives	System Switch	Holistic Approach
Purchased Goods & Services, Capital Goods	Integrate sustainability criteria (i.e. environmental and social performance) into procurement policy & process, alongside usual criteria such as quality and price. Promote local sourcing of products when applicable.	Use Circular Economy to reduce some goods & services to be purchased. Collaborate with suppliers to reduce packaging materials and eliminate single-use plastics.	Collaborate with suppliers to install or procure renewable energy, and invest in low-carbon equipment
Transportation & Distribution	Foster usage of low-emission solutions for ground shipment: transporter using EV fleets, railroad and waterway shipment, EVs or no-engine devices (e.g. bikes) for last-mile delivery.	Collaborate with transporters to promote electrification of fleet vehicles	
Business Travel	Update business travel policy and promote online meetings to reduce unnecessary flights.		
Employee Commuting	Develop hybrid/remote working policy. Encourage use of public transportation, carpooling and biking (e.g. implementing secured bike parking on site).	Use sustainable site selection criteria to locate offices in an area making commuting easy without a car.	
Processing of Sold Products & Waste Generated in Operations	Collaborate with suppliers to audit their facilities and operations, and optimize their energy consumption	Reduce packaging materials and eliminate single-use plastics for sold products. Collaborate with suppliers to reduce packaging materials and eliminate single-use plastics for intermediate products.	Embed circularity from design onward, make products more easily repairable and recyclable, and last longer.
Use and End-of-life treatment of Sold Products	Collect used products, promote "divert-from-landfill" policies.	R&D to use less emissions-intensive materials and more recycled materials, and to make products more energy-efficient.	
Investments	Use high level sustainability criteria to drive investments, such as the Green Taxonomy in the European Union		
Leased Assets & Franchises	See table for scopes 1 & 2		

**FIGURE 5: SCOPE 3 SOLUTIONS SUMMARY (EXAMPLES)**



# Developing A Confident Decarbonization Strategy

## Start with setting appropriate time horizons.

2030 aligns with a medium-term deadline for most governments and companies. It may look long-term considering the typical tenure at companies, but what world we will be living in at that time depends on today's decisions.

Beyond 2030, the next target horizon should be 2035. 5 years provides a good balance for the next step, not too far away while giving enough time for delivering further on a decarbonization strategy.

Plan for 2050 with 5-year intermediary milestones.

A successful decarbonization strategy starts with a vision of what the company wants to achieve and why.

## Understand your current situation.

Then gather the necessary internal and external data, to measure a current baseline, benchmark against competitors, assess where large contributors sit and what are the possible low-hanging fruits. If you have not done it yet, perform or update a whole GHG inventory of your activities, including Scope 3.

## Engage stakeholders.

Engage the board and employees on your strategy and targets, while making sure the latter are aligned with science, to increase credibility.

## Identify opportunities for reduction.

Start with Scopes 1+2 and evaluate cost-effective ways of reducing these emissions (see above). To tackle the likely far bigger Scope 3, you first need to understand where your emissions come from and how to improve this understanding over time (go from a cost perspective to a deeper, more case-by-case supplied product footprint perspective). Focus on the big players and build partnerships with suppliers and peers to share the burden of the transition, while creating economies of scale.

Set up measures and performance indicators to monitor progress overtime.

A marginal abatement cost curve can be a useful tool to prioritize the best sequence of actions, by assessing economic cost or value (NPV) and the expected emissions abatement impact at the same time.

## Apply decarbonization strategy across the business.

Expand internal requirements for investment: factor in the whole value the decarbonization strategy is providing to the company and work with the finance department to revisit criteria for sustainability-related investments to take a longer-term perspective and extend the maximum acceptable period from the usual 2-3 years to 5 years.

## Additional benefits

Taking this deep dive into your products and processes and being open to core business transformation may also open your business up to new products, services, or processes. It may also open you to additional opportunities, suppliers, and geographies.

# Altanova, Your Partner in Sustainability

Altanova is an international consulting & engineering firm that supports companies in setting and implementing science-aligned sustainability strategies with confidence. We strongly believe that companies shouldn't only reduce their negative footprints but also positively contribute to a more sustainable world, and that doing so is actually the best way for companies to thrive on the longer term.

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