The Ripple Effect:
Addressing scope 3 emissions in an interconnected carbon economy

April 2025

CEEZER

What are Scope 3 emissions and where do they come from?

Any company seeking to implement a robust and effective climate strategy must have a thorough understanding of its greenhouse gas (GHG) emissions. Traditionally, corporate climate strategies have centered on:

Scope 1:
Direct emissions from sources it owns and controls

Scope 2:
Indirect emissions from purchased electricity

In recent years, however, attention has shifted toward scope 3 emissions. According to the GHG Protocol, these include "all other indirect emissions generated along the corporate value chain." This expanded focus acknowledges that truly addressing climate change requires examining entire supply chains, not just direct operations.

The impact is significant. Research shows that just eight supply chains — food, construction, fashion, consumer goods, electronics, professional services, automotive, and freight — generate more than half of global emissions. More striking still, a relatively small number of multinational corporations indirectly influence these emissions through purchasing decisions and product designs.

So what constitutes scope 3 emissions? There are 15 mutually exclusive scope 3 emissions categories across the corporate value chain:

- **Eight categories cover upstream activities** — or everything that happens before your operations, such as supplier manufacturing.
- **Seven categories cover downstream activities** — or everything that happens after your operations, such as product use and disposal.
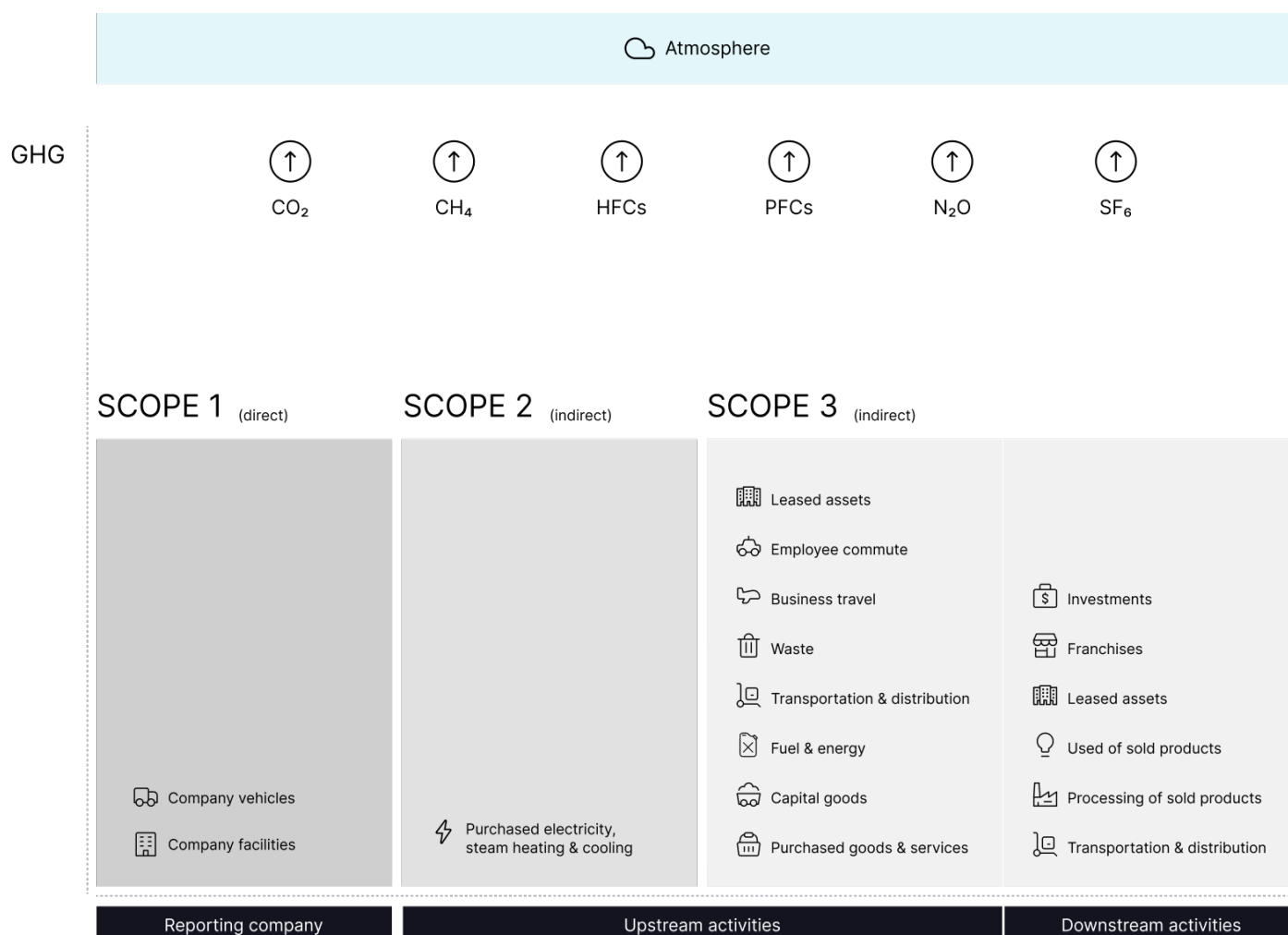

Figure 1: Scope 1, 2 and 3 emissions categories. (Based on Greenhouse Gas Protocol (2011).)

Why should companies address scope 3 emissions?

The numbers tell a compelling story: scope 3 emissions typically account for around 90 percent of a company's total climate impact. Consider these real-world examples:

- According to CDP's 2024 Strengthening the Chain report, corporate supply chain emissions (scope 3) are on average 26 times greater than operational emissions (scopes 1 and 2), yet only 15 percent of companies have set upstream emission reduction targets.

- An analysis of 866 product carbon footprints, reported to Carbon Disclosure Project (CDP) by 145 companies and spanning 30 industries and 28 countries, found only 23 percent of total value chain emissions are associated with direct operations, while 45 percent and 32 percent arise in upstream and downstream activities, respectively.

Figure 2 presents the percentage breakdown of scope 1, 2, and 3 emissions for several high-impact sectors based on 2022 CPD data. Traditional "heavy emitters" sectors like cement, steel, and transportation services show higher direct emissions (scope 1 and 2) than indirect emissions. However, the opposite pattern emerges in other sectors:

- The food, beverage, and tobacco sectors generate eight times more scope 3 emissions than scope 1 and 2 combined.

- Even more dramatically, the financial services sector's scope 3 emissions are more than 600 times greater than direct emissions.

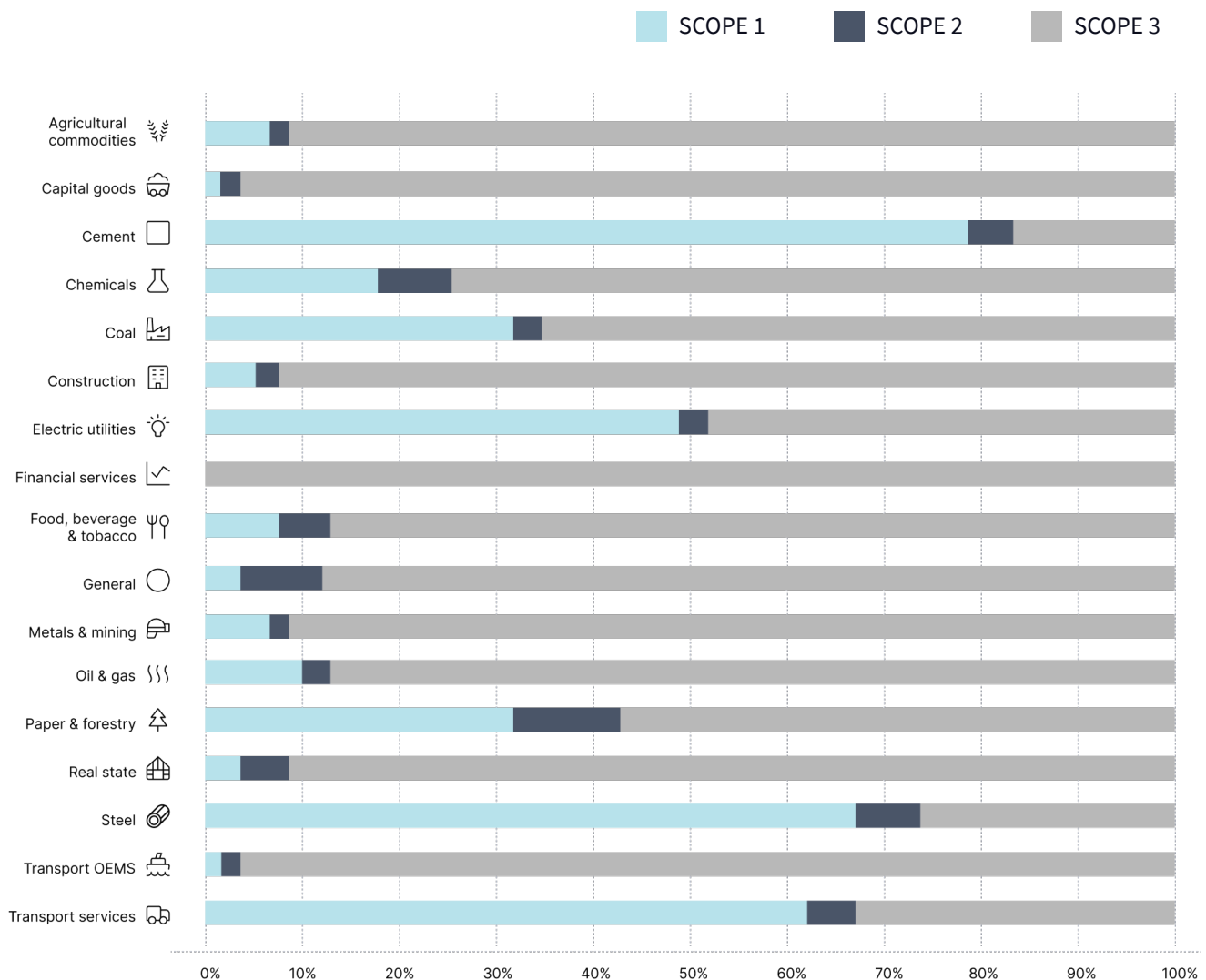## Scope 1, 2 & 3 emissions by sector.

Figure 2: Scope 1, 2 and 3 emissions by sector. (Based on CDP (2022).)

Understanding these complex carbon footprints reveals an important truth: One company's direct emissions (scope 1) inevitably become another company's indirect emissions (scope 3). While this interconnection could become an excuse for inaction, it actually presents powerful opportunities. By addressing scope 3 emissions, companies can:

- Multiply their climate impact throughout their value chain.
- Accelerate emissions reduction in sectors and regions that have been slow to change.
- Achieve significant carbon reductions with relatively modest additional costs.
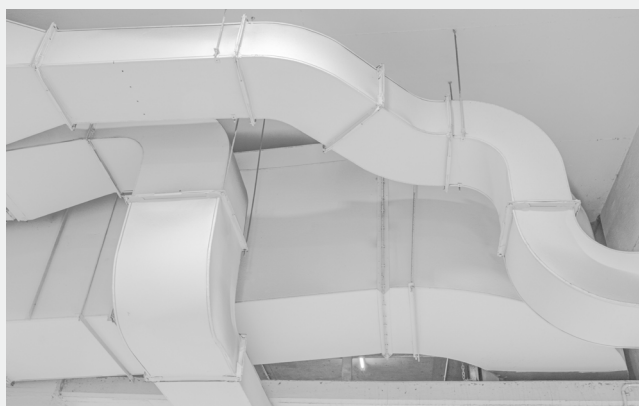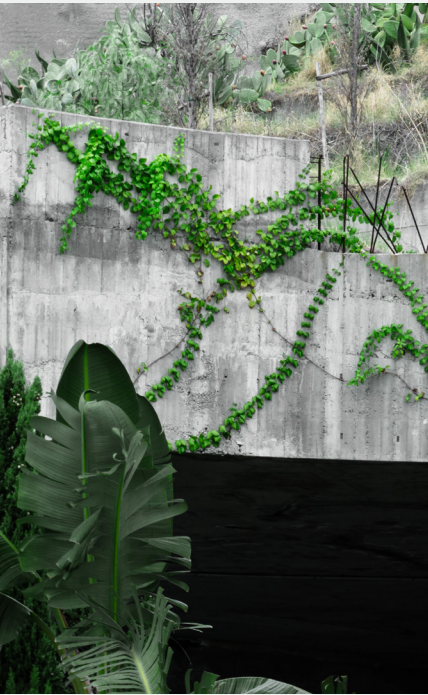
Scope 3 emissions: requirements and reduction targets

Corporate supply chains face unprecedented scrutiny in today's sustainability-focused landscape. Ignoring scope 3 emissions creates material risks — both financial and reputational:

- In 2023, McKinsey found 85 percent of surveyed chief investment officers considered ESG an important factor in their investment decisions and 83 percent were willing to pay a premium for companies demonstrating a clear link between their ESG efforts and financial performance.

- Consumer expectations are shifting : A NielsenIQ/Food Industry Association survey found that three quarters of polled consumers consider brand and manufacturer transparency "extremely important" or "important."

- Regulatory pressure is increasing: The EU's Corporate Sustainability Reporting Directive (CSRD) will soon apply to nearly 50,000 companies, requiring detailed climate impact disclosures. Complementary regulations like the EU Green Claims Directive and France's Loi de Vigilance are expanding mandatory due diligence and environmental claims verification across supply chains.
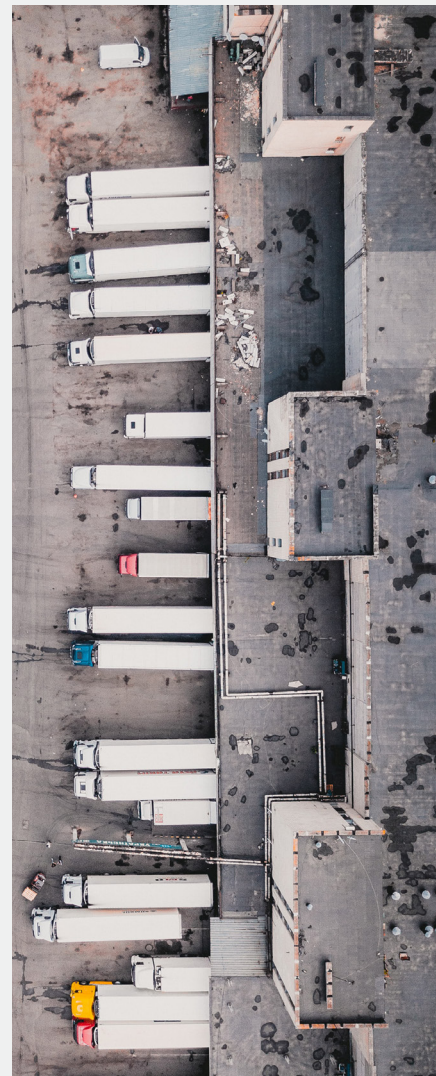
Voluntary initiatives fill the gap

While legal requirements urge climate action, they currently lack clear regulations or guidance concerning scope 3 emissions. Instead, various voluntary initiatives such as the GHG Protocol Corporate Value Chain (scope 3) Standard, Science-Based Target Initiative (SBTi), and the Voluntary Carbon Markets Integrity Initiative (VCMI) Claims Code of Practice have stepped up to collectively provide clearer guidelines on how companies can tackle scope 3 emissions.

The Scope 3 Standard by GHG Protocol provides a step-by-step approach to help companies measure GHG emissions throughout their supply chains. The GHG Protocol Scope 3 Standard is an important addition to the GHG Protocol Corporate Standard, requiring companies to report scope 3 emissions rather than making it optional.

The GHG Protocol does not, however, provide clear guidance on how to tackle scope 3 emissions. While the standard allows companies to identify GHG ''hot spots'' in their value chain, the SBTi aims to provide private companies with more concrete guidance on how to reduce GHG emissions.

The VCMI Claims Code of Practice establishes a framework for making credible claims about the use of carbon credits within corporate climate strategies. Launched in 2023 and updated in 2024, it addresses how companies can appropriately incorporate carbon credits alongside their decarbonization efforts, particularly for hard-to-abate scope 3 emissions. The Code introduces several claim types:

- VCMI Scope 3 Claim (beta) requires retirement of high-quality carbon credits equal to or greater than 100 percent of a company's scope 3 emissions gap. Companies must first demonstrate progress toward their scopes 1 and 2 near-term emission reduction targets and disclose both current efforts and plans to overcome scope 3 decarbonization challenges.

- VCMI Enterprise Claims (Gold, Silver, and Bronze) require companies to meet progressively stringent criteria regarding science-based targets, emissions inventory coverage, and use of high-integrity carbon credits across all scopes.

- The framework emphasizes transparency and integrity by requiring companies to clearly communicate how carbon credits complement — rather than replace — direct emissions reductions efforts within their value chains.

- The Code aligns with other frameworks — including SBTi and GHG Protocol — to create a coherent approach to climate action, particularly valuable for companies with significant scope 3 emissions where direct control is limited.

Pathways to reduce scope 3 emissions

Addressing scope 3 emissions requires a multi-pronged strategy, combining supplier engagement, operational transformation, and market-based mechanisms.
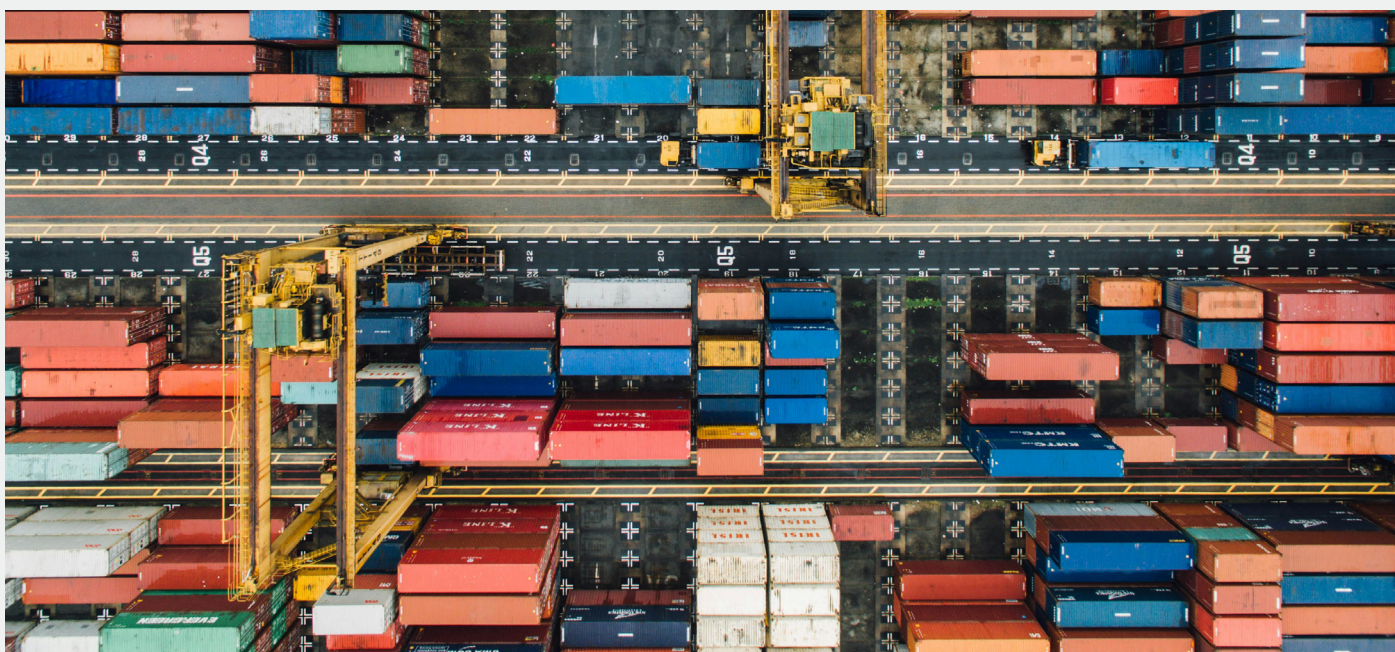
## Direct value chain emission reductions

Companies should first focus on reducing emissions at the source by:

- **Supplier engagement:** Incentivizing lower-carbon materials and production methods.

- **Product design innovation:** Extending product life cycles and improving energy efficiency.

- **Operational optimization:** Optimizing logistics, transportation, and sourcing renewable energy.

Before considering carbon credits or offsets, organizations must prioritize actual reductions in scope 3 emissions through these concrete operational changes. Companies leading in climate action are implementing supplier engagement programs that include financial incentives, capacity building, and collaborative innovation — resulting in measurable emissions reductions. For example, as noted in CDP's 2024 report, suppliers engaged by their buyers achieved 43 $MtCO_2e$ in verified emissions reductions through such initiatives.

However, such measures take time to implement, and according to VCMI, many companies that have set a science-based target are falling behind.
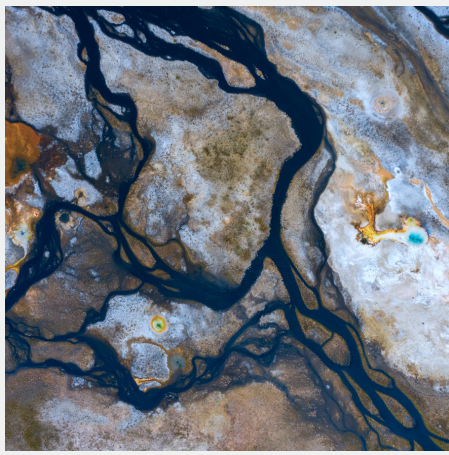
How to address scope 3 emissions through the voluntary carbon market

Delivering on net-zero ambitions to reduce scope 1 and scope 2 emissions is a significant technical and economic challenge, but scope 3 emissions add additional complexity thanks to their convoluted nature.

Indeed, many companies are finding their net-zero targets increasingly in jeopardy due to the pace required for emissions reduction. According to G&A Institute data, a significant number of companies have withdrawn from SBTi because its framework doesn't allow carbon removal projects to count toward scope 1, 2, and 3 emissions targets, creating a practical barrier for companies genuinely committed to climate action but unable to reduce emissions quickly enough. This indicates a need for frameworks to evolve in how they allow for removals to count toward emissions targets.

To address these challenges, companies should consider a three-pronged approach:

1. Implement transparent accounting and monitoring practices.

- Move beyond an overreliance on secondary or tertiary data on suppliers' and customers' emissions.
- Build robust internal data infrastructure.
- Leverage carbon accounting functionality already available in enterprise resource planning (ERP) and customer relationship management (CRM) systems.

2. Collaborate with customer and supplier networks.

- Integrate the right technology and systems to enable suppliers to actively collaborate on emissions reductions.
- Increase supplier responsiveness through collective engagement. (Studies show supplier CDP disclosure rates rise to 76 percent from 68 percent when requested by three companies versus two.)
- Provide suppliers with practical tools and resources to participate in your emissions reduction journey.

3. Be responsive.

- Stay current with shifting best practices and regulations.
- Proactively engage stakeholders throughout multi-year change initiatives.
- Anticipate that changes in one part of the supply chain may have ripple effects elsewhere. For example, companies may already be able to rapidly reduce some scope 3 emissions through simple measures, such as logistics optimization and switching to low-carbon energy suppliers.

While some scope 3 emissions can be reduced through immediate measures, most value chain emissions will require sustained medium- to long-term efforts. Only after exhausting all feasible reduction strategies should companies turn to high-quality carbon credits to address truly unavoidable residual emissions, ensuring environmental integrity in their climate commitments. In such instances, the voluntary carbon market (VCM) can serve as a useful tool to assist companies in accelerating their decarbonization journey:

- Avoidance credits can help compensate rapidly for interim emissions while reduction strategies mature.

- Removal credits can address unavoidable or residual emissions. (Learn more in our white paper, entitled *Why should you use carbon credits? on ceezer.earth*)

Best practices for selecting carbon credits to address scope 3 emissions

When using the VCM to tackle scope 3 emissions, companies should employ a systematic three-step approach focused on quality, transparency, and collaboration:

1. Establish robust internal standards for carbon credit portfolios.

Develop clear, objective, and verifiable criteria to ensure climate impact is maximized with quality carbon credits. This can include purchasing credits only from verified registries and with recent vintages, as well as regularly evaluating their reported baseline and monitored efficacy. It may also require further research into their quality in terms of climate impact and co-benefits.

2. Implement comprehensive monitoring and reporting processes.

To ensure compliance with established internal and external standards, companies should regularly screen existing carbon credits against the most updated quality criteria adopted internally. They should also maintain a "live ledger" that contains original certifications, monitoring reports, and transaction records. This will help ensure bullet-proof accounting when generating audit-ready data for net-zero certifications.

3. Engage your entire value chain through a centralized system.

With the right technology, companies can organize their ecosystem around centralized rules regarding when and how carbon credits are used internally. Companies can use these centralized systems to actively engage customers and suppliers to ensure their carbon credit portfolios meet established standards as well as share impact stories and results to help build momentum and encourage participation.

For support in building an optimized carbon credit portfolio to address your scope 3 emissions, CEEZER offers specialized expertise throughout your decarbonization journey and your full value chain.

Learn more at www.ceezer.earth or contact us at info@ceezer.earth.

References

Baker, B. (2020) Scope 3 Carbon Emissions: Seeing the Full Picture. MSCI. Available at: https://www.msci.com/www/blog-posts/scope-3-carbon-emissions-seeing/02092372761

Buchardt, J., Fredeau, M., Hadfield, M., Herhold, P., O'Brien, C., Pieper, C., Weise, D. (2021) Supply Chains as a Game-Changer in the Fight Against Climate Change. BCG. Available at: https://www.bcg.com/publications/2021/fighting-climate-change-with-supply-chain-decarbonization

Bundesgesetzblatt (2021) Gesetz über die unternehmerischen Sorgfaltspflichten in Lieferketten. Available at: https://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&jumpTo=bgbl121s2959.pdf#__bgbl__%2F%2F*%5B%40attr_id%3D%27bgbl121s2959.pdf%27%5D__1666792464429

Carbon Trust (2022) Briefing: What are Scope 3 emissions? Available at: https://www.carbontrust.com/resources/briefing-what-are-scope-3-emissions

CDP (2022) CDP Technical Note: Relevance of Scope 3 Categories by Sector. Available at: https://cdn.cdp.net/cdp-production/cms/guidance_docs/pdfs/000/003/504/original/CDP-technical-note-scope-3-relevance-by-sector.pdf?1649687608

CDP (2024) Strengthening the chain. Transform the Norm. Available at: https://cdn.cdp.net/cdp-production/cms/reports/documents/000/007/890/original/CDP_HSBC_Report_2024.pdf

Clean Energy Wire (2024) German top court forces companies to explain 'climate neutral' claims in adverts. Available at: https://www.cleanenergywire.org/news/correction-german-top-court-forces-companies-explain-climate-neutral-claims-adverts

Climate Partner (2022) What are scope 1, 2, and 3 emissions? Available at: https://www.climatepartner.com/en/climate-action-insights/reducing-scope-emissions

European Commission (2025) EU Taxonomy for Sustainable Activities. Available at: https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en

European Commission (2021) Proposal for a Directive of the European Parliament and of the Council. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0189

FMI (2022) Transparency in an Evolving Omnichannel World. Available at: https://microsites.nielseniq.com/web-assets/wp-content/uploads/sites/7/2022/01/FMI-NIQ-Transparency-in-an-Evolving-Omnichannel-World.pdf

Greenhouse Gas Protocol (2011) Corporate Value Chain (Scope 3) Accounting and Reporting Standard: Supplement to the GHG Protocol Corporate Accounting and Reporting Standard. World Resources Institute & World Business Council for Sustainable Development. Available at: https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporing-Standard_041613_2.pdf

Greenhouse Gas Protocol (2013) Technical Guidance for Calculating Scope 3 Emissions (v1.0): Supplement to the Corporate Value Chain (Scope 3) Accounting & Reporting Standard. World Resources Institute & World Business Council for Sustainable Development. Available at: https://ghgprotocol.org/sites/default/files/standards/Scope3_Calculation_Guidance_0.pdf

Journal Officiel de la République Française (2017) LOI no 2017-399 du 27 mars 2017 relative au devoir de vigilance des sociétés mères et des entreprises donneuses d'ordre (Loi de Vigilance). Available at: https://www.legifrance.gouv.fr/download/pdf?id=9aawcYcwvkntYs2UUCMWL4iX_erjixoTD_Jy3AVXRFk=

Klaaßen, L., Stoll, C. Harmonizing corporate carbon footprints. Nat Commun 12, 6149 (2021). DOI: 10.1038/s41467-021-26349-x. Available at: https://www.nature.com/articles/s41467-021-26349-x

McKinsey & Co. (2024) What are Scope 1, 2, and 3 emissions? Available at: https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-are-scope-1-2-and-3-emissions

Gelb, Jay; McCarthy, Rob; Rehm, Werner; Voronin, Andry. (2023) Investors want to hear from companies about the value of sustainability. McKinsey & Co. Available at: https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/investors-want-to-hear-from-companies-about-the-value-of-sustainability

Meinrenken, C.J., Chen, D., Esparza, R.A. et al. (2020) Carbon emissions embodied in product value chains and the role of Life Cycle Assessment in curbing them. Sci Rep 10, 6184. DOI: 10.1038/s41598-020-62030-x. Available at: https://www.nature.com/articles/s41598-020-62030-x

SBTi SBTi (2024) Corporate Net-Zero Standard Criteria. Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard-Criteria.pdf

SBTi (2018) Value Change in the Value Chain: Best Practices in Scope 3 Greenhouse Gas Management. Available at: https://sciencebasedtargets.org/resources/files/SBT_Value_Chain_Report-1.pdf

SBTi (2022) Net-Zero: Urgent Beyond Value Chain Mitigation is Essential. Available at: https://sciencebasedtargets.org/blog/net-zero-urgent-beyond-value-chain-mitigation-is-essential

Spiller, P. (2021) Making supply-chain decarbonization happen. McKinsey & Co. Available at: https://www.mckinsey.com/capabilities/operations/our-insights/making-supply-chain-decarbonization-happen

Walmart (2022) 2022 Project Gigaton Accounting Methodology Available at: https://corporate.walmart.com/content/dam/corporate/documents/newsroom/2019/04/10/walmart-launches-new-reusable-bag-campaign-announces-93-million-metric-tons-of-supplier-emission-reductions-through-project-gigaton-and-announces-new-sustainable-textile-goals/project-gigaton-accounting-methodology.pdf

World Economic Forum (2021) Net-Zero Challenge: The supply chain opportunity. Available at: https://www.weforum.org/reports/net-zero-challenge-the-supply-chain-opportunity/

Appendix

The upstream scope 3 emissions categories include:

1. Cradle-to-gate (i.e. extraction, production and transportation) emissions associated with purchased goods (tangible products) and services (intangible products).
2. Cradle-to-gate emissions associated with acquired capital goods.
3. Emissions associated with fuel- and energy- related activities, including cradle-to-gate emissions for purchased fuels, electricity, and transmission and distribution losses and generation of purchased electricity sold-on to end users, not included in scope 1 or scope 2 emissions.
4. Transportation and distribution of purchased products and services, including between the company's direct suppliers and its own operations and between the company's own facilities, in vehicles and/or facilities not owned or controlled by the company. Life cycle analyses (LCAs) may also include emissions from the manufacture and construction of associated infrastructure.
5. Disposal, treatment and management of waste generated by the company's operations, in facilities not owned or controlled by the company. LCAs may also include emissions from transportation of waste.
6. Transportation of employees for business-related purposes. LCAs may also include emissions from the manufacture and construction of associated infrastructure.
7. Transportation of employees, in vehicles not owned or operated by the company, between their home and workplace.
8. Emissions associated with the operation of assets leased by the company, not including in scope 1 and Scope 2 emissions. LCAs may also include emissions from the manufacture and construction of associated infrastructure.

The downstream scope 3 emissions categories include:

1. Transportation and distribution of goods and services sold by the company between its operations and the end -user. LCAs may also include emissions from the manufacture and construction of associated infrastructure.
2. Emissions from the processing of intermediate products by downstream companies.
3. Direct end-use emissions of products, over their expected lifespan, sold by the company, including consumption of energy during use, fuels and feedstocks required for use and GHGs contained in or emitted by the product during use. LCAs may also include indirect end-use emissions.
4. Disposal, treatment and management of products sold by the company.
5. Emissions associated with the operation of downstream assets owned by the company and leased to other entities, not included in scope 1 and scope 2 emissions. LCAs may also include emissions from the manufacture and construction of associated infrastructure.
6. Emissions associated with the operation of franchises, not included in scope 1 and scope 2 emissions. LCAs may also include emissions from the manufacture and construction of associated infrastructure.
7. Emissions associated with the operation of investments, including both equity and debt financing), not included in scope 1 or scope 2.

CEEZER