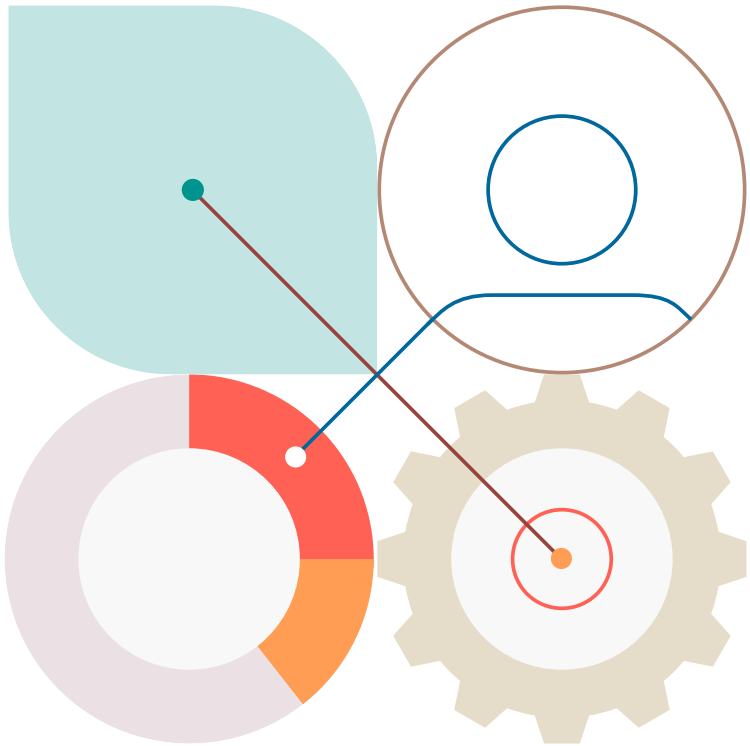
ULTRUS™ | UL 360 ESG and Sustainability Software

INDUSTRY GUIDE

Managing emissions along the technology value chain

Explore how to manage challenges in calculating, reporting and reducing carbon emissions across the value chain.



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Executive Summary

Technology companies' full environmental impact extends beyond the factory to include indirect emissions produced up and down the value chain.

Technology companies face growing pressure from investors, regulators and customers to reduce carbon emissions. Although 2022 estimates of the technology industry's greenhouse gas (GHG) emissions range between 5% and 10% of total emissions, that percentage has the potential to skyrocket as more of the world goes online and adopts technologies that leverage artificial intelligence (AI), machine learning (ML) and quantum computing, which require a tremendous amount of computing power.

A 2021 Forrester survey revealed that 32% of U.S. consumers are expected to prioritize companies actively reducing their environmental footprint, while 68% of highly empowered consumers intend to increase their efforts to identify brands that reduce environmental impact.[1] In response, investment in environmental, social and governance (ESG) initiatives such as carbon emissions reporting and reduction is steadily growing. A Bloomberg Intelligence report predicted global ESG investment would exceed $53 trillion (USD) by 2025, representing more than a third of total projected assets under management.[2]

Until recently, companies across industries have focused on reporting scope 1 emissions – direct emissions from sources that a company owns or controls (such as furnaces or a fleet of vehicles) – and scope 2 emissions – indirect emissions from the off-site generation of electricity, steam, heating and cooling bought and consumed by the

32%

of U.S. consumers are expected to PRIORITIZE COMPANIES actively reducing their **ENVIRONMENTAL FOOTPRINT**

1. https://www.forbes.com/sites/forrester/2021/01/21/empowered-consumers-call-for-sustainability-transformation/?sh=596263f82042
2. https://www.bloomberg.com/professional/blog/esg-assets-may-hit-53-trillion-by-2025-a-third-of-global-aum/
3. https://www.epa.gov/climateleadership/scope-3-inventory-guidance

company. However, in recent years, a greater emphasis has been placed on scope 3 emissions reporting.

According to the U.S. Environmental Protection Agency (EPA), "Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly affects in its value chain."[3] This includes upstream and downstream emissions such as purchased goods and services and employee commuting and travel, together with the processing and usage of sold goods and leased assets. Technology companies' scope 3 emissions include those resulting from upstream activities such as mining raw materials – especially copper, lithium, nickel, cobalt and rare earth elements – for device components. Downstream emissions sources include data center operations and electronic waste (e-waste), Scope 3 emissions can approach 100% of a company's total carbon output, with scope 3 emissions accounting for 75% of companies' greenhouse gas emissions on average.[4]

Collecting and analyzing reliable data from the long technology industry value chain in compliance with reporting requirements can be complicated, time-consuming and costly. This industry guide explores the accelerating importance of scope 3 transparency along with the challenges companies face in collecting, calculating and meeting increased scope 3 reporting expectations.

4. https://www.tcfdhub.org/resource/cdp-technical-note-relevance-of-scope-3-categories-by-sector/

Common scope 3 reporting challenges in the technology industry

Challenge: supplier volume and global reach

As with many of today's industrial players, the technology industry depends on an extensive network of suppliers — more than 7,000 on average — and numerous products sold through multiple channels. Suppliers and product purchasers are dispersed around the world, making it difficult for technology companies to get emissions data from both upstream and downstream channels.[5] Emissions data resulting from the mining of technology raw materials such as lithium and rare earth minerals is especially difficult but critical to track because reducing emissions needed to extra and transport these raw materials positively impacts the emissions of every subsequent link down the value chain.

Solution: Prioritizing which suppliers to engage

Choosing which suppliers to engage first is a business strategy decision that can help streamline and increase the impact of technology companies' efforts to improve scope 3 emissions. Consider prioritizing engaging suppliers that comprise 75% to 80% of your company's spend. Also include suppliers that pose the greatest risk to your business's performance or reputation if they do not decrease their emissions, such as suppliers with energy-intensive operations that are vulnerable to rising energy costs.

5.https://www.mckinsey.com/industries/industrials-and-electronics/our-insights/reimagining-industrial-supply-chains

Challenge: inconsistent or incomplete data

Reliance on supply chain partners' reporting efforts can also contribute to noticeable gaps in the scope 3 emissions data. Because technology companies may not have visibility into supply chain partners' calculation methodologies, there can be no guarantee that data obtained from partners is of high quality or encapsulates the right scope of information.

Supply chain partners may lack experience in greenhouse gas accounting, and if they do not fully understand the scope of the information being requested, they are left guessing as to what data is needed, where to find the data, how to calculate the emissions and how to check the data for accuracy.

Supply chain partners may be unable to provide all of the information required for scope 3 due to a lack of primary activity data (such as number of pounds of waste diverted to recycling in stores) or a lack of knowledge about sourcing secondary data (such as industry averages for retailer recycling rates gathered from public databases). Privacy of data and intellectual property are at more risk today than ever before. Because this is so, supply chain partners may be hesitant to disclose critical business information – even if they have the knowledge and experience to report the required data – due to fear of privacy breaches and legal ramifications.

Solution: education, accountability and incentives

Some of your suppliers may not be familiar with scope 3 emissions. Before launching your program, educate your network by supplying them with information about GHGs, as well as how their activities factor into GHG emissions. Your organization will make smoother progress when you help partners understand your scope 3 goals, provide reporting guidance and set measurable targets.

Developing and maintaining relationships with suppliers helps them comprehend requirements, calculate their impacts accurately and report them transparently. Provide clear expectations for what, how and when your partners need to convey emissions data so your supply chain has the necessary information to complete internal calculations without unintentionally omitting activity categories. You can provide detailed guidelines for suppliers to determine emissions based on the GHG Protocol standards, including data collection templates for suppliers to send to their suppliers further upstream. You may also require that supplier emissions data be verified by a third party and insist that all suppliers adhere to a social responsibility code of conduct in alignment with your technology company's sustainability practices and objectives. It can also be helpful to communicate the consequences of failing to provide data.

When your suppliers are on board with your scope 3 emission plans, work with their teams to identify opportunities to reduce energy use, costs and risks. Collaborate to set measurable targets and hold your partners accountable. Some partners may not be motivated to provide complete data in a timely manner, so be prepared to closely manage and engage them throughout the process.

A strategy to improve value chain partners' compliance with requests for not only emissions data but also for emissions reductions is to offer preferred supplier agreements with incentives such as price, volume or long-term commitments in order to provide suppliers with additional cash flow to help them fund or secure financing for emissions reduction projects. According to Standard Chartered's 2021 Carbon Dated report, most companies surveyed for the report said they would pay a premium averaging 5% for measurably sustainable products or services. Forty-five percent of respondents said they would pay an average premium of 7% for products or services from suppliers that achieved net-zero emissions.

The technology industry's carbon hotspots

"While many tech companies have been able to cut their own emissions by switching to renewable energy sources, they often have 'carbon hotspots' in scope 3, says Laura Tedeschi, ICT sector lead at Carbon Trust.[6] "All value chains are linked in some way, so one company's scope 1 and 2 emissions are someone else's scope 3," Tedeschi explains. Scope 3 emissions calculations will become easier as more companies commit to reporting and reducing their direct emissions, and hotspots are effective places to focus efforts. Two common hotspots driving up technology companies' scope 3 emissions are data centers and electronic waste (e-waste).

Data centers

In addition to their electrical demand, data centers use a large amount of resource-intensive materials such as cement and steel in their physical structures, and require the use of high-emissions heavy equipment such as earthmovers, dump trucks and cranes to be built. The environmental impact is significant even before the data center goes online. Once in operation, data centers can use up to 400 terawatt-hours (Twh) of electricity global, which accounts for about 3% of global carbon emissions.[7]

Engaging with your downstream partner data center owners and operators to reduce carbon emissions in data centers can be an effective way to drive down your total scope 3 emissions. There are several approaches. Strategies for reducing the emissions impact of building data centers include renovating existing structures, which can result in a 78% emissions reduction building new structures; embracing sustainable materials, including new forms of concrete that are produced using waste carbon dioxide; and sourcing materially locally to reduce the emissions involved in shipping from other parts of the country or the world. Once data centers are operational, operators can take action to reduce the reliance on fossil fuels with strategies such as using outside air, lakes or seawater to cool critical equipment while significantly lowering consumption; powering facilities using renewable energy sources, such as wind, solar, geothermal and hydroelectricity; using automation and power management techniques to lower energy consumption during low-usage periods; and enabling network engineers to manage and troubleshoot data center issues remotely to reduce the time, costs and environmental impact of managing the issues on-site.

6. https://techmonitor.ai/focus/tech-industry-carbon-emissions-progress
7. https://energydigital.com/technology-and-ai/how-data-centers-can-reduce-their-carbon-footprint

E-waste

According to a United Nations (UN) 2019 report, e-waste, which includes any refuse with an electrical plug or battery, is the fastest-growing category of waste; the UN forecasts that the world is on track to produce 74 million metric tons of e-waste per year by 2030 and 120 million metric tons by 2050 if current trends go unchecked.[8] Despite the astounding volume of e-waste, less than 40% of e-waste in the European Union (EU) is recycled.

Technology companies may employ various strategies to increase circularity and reduce e-waste and along the value chain. Companies can reduce environmental impact by using renewable energy sources to power electronic device manufacturing facilities, using a higher percentage of recycled plastics and low-carbon emissions materials in electronics products, building products to last longer, and refurbishing and reselling discarded products.

The European Commission is considering promoting incentives for manufacturers for consumers to return used equipment and manufacturers to accept discarded equipment to address the industry-wide problem. Using materials derived from mushrooms, hemp and other biological sources in the production of electronics products may be a strategy that can significantly reduce the environmental impact of e-waste in the future.

Less than **40%** of **E-WASTE** in the Eurpean Union (EU) is **RECYCLED**.

8. https://www.unep.org/news-and-stories/press-release/un-report-time-seize-opportunity-tackle-challenge-e-waste

Optimizing your scope 3 data collection efforts

Implement these approaches to help your technology company optimize your scope 3 data collection efforts.

- When you set up your Scope 3 reporting methodology, focus on what is practical: collecting real-world, operational data that can be obtained reliably and consistently
- Proactively consider what to do if some supply chain data sources cannot be obtained or are no longer available. Finding alternate sources can help you prevent delays in your reporting
- When you establish Scope 3 targets with supply chain partners, demand progress, but be realistic about what the vendor can reasonably achieve
- Making lasting changes to protect environmental sustainability means reviewing progress while committing to making long-term change
- Refining your calculation methodology – for example, by calculating your individual footprint and counting all goods and services purchased – can help you improve your scope 3 emissions
- While it's important to stay agile, your reporting methodologies should remain consistent to promote meaningful year-over-year analysis

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How UL Solutions can help

Efficiently gathering meaningful, reliable data helps companies meet their investors', clients' and regulators' demands while underpinning company action and progress. UL Solutions offers abroad range of data reporting software and services that can help. UL 360 ESG and Sustainability software, part of ULTRUS™ from UL Solutions, supports food and beverage companies' efforts to gather, measure, report and act on key sustainability and environmental, social and governance (ESG) data across their organizations while aligning with frameworks such as Carbon Disclosure Project (CDP), Sustainability Accounting Standards Board (SASB), Global Reporting Initiative (GRI), Dow Jones Sustainability Indices (DJSI) and the UN. Our advisory services can help you understand where materiality lies in your value chain, what standards and guidelines are important and how to optimize your stakeholder engagement and data efficiency processes. This, in turn, helps you optimize your use of reporting software.

Some of the largest global technology companies trust our investment-grade non-financial reporting software for their own reporting needs and their supply chain. Whether you're just starting your sustainability journey or are already an established reporter, we can help you choose the right software to meet your needs.

	1 Mobilize Establish and optimize your ESG programs	2 Measure Implement robust systems for measuring ESG performance	3 Manage Drive continuous improvements on your ESG key performance indicators (KPIs) and goals	4 Report Streamline and enhance your ESG disclosure and reporting	5 Assurance Independent verification of key ESG KPIs
Advisory	●	●	●	●	
Software		●	●	●	
Assurance					●

UL 360 and ULTRUS™ software
UL 360 is now available through ULTRUS software, which includes flagship offerings from UL Solutions to help customers manage their regulatory, supply chain and sustainability challenges.

Learn more

Learn more about UL Solutions UL 360 ESG and Sustainability Software or contact us for more information.

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