

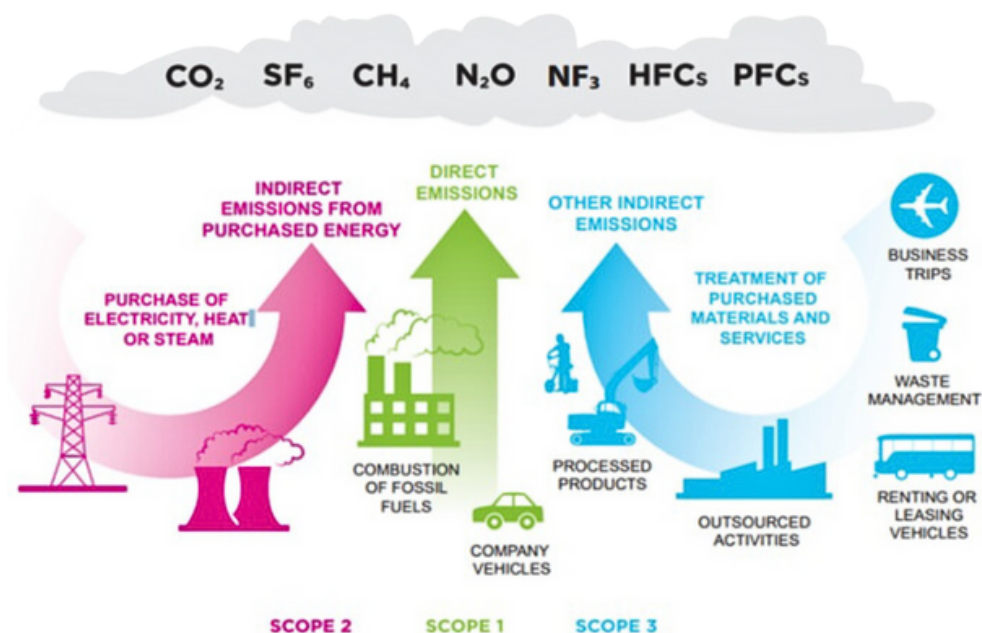
Understanding Carbon Accounting: Tracking Emissions for a Sustainable Future

In the quest for sustainability, businesses are increasingly turning to carbon accounting as a critical tool for measuring and managing their environmental impact. Carbon accounting, also known as greenhouse gas accounting, involves quantifying the volume of greenhouse gases (GHGs) generated directly and indirectly from the activities of a business or organization within specified boundaries.

Carbon dioxide (CO₂) stands as the predominant greenhouse gas emitted through human activities. Consequently, other significant GHGs are converted into carbon dioxide equivalent (CO₂), which is computed by multiplying the quantity of a GHG by its global warming potential (GWP).

The GWP of a gas represents the amount of energy the emissions of one ton of that gas absorb over a specified duration relative to the emissions of one ton of carbon dioxide. A higher GWP indicates a greater contribution of that GHG to global warming.

Through carbon accounting, organizations can measure their greenhouse gas emissions, comprehend their climate impact, and establish objectives to diminish their emissions. The demand for robust greenhouse gas (GHG) accounting is rapidly expanding as investors and businesses aim to showcase their dedication to decarbonization. As of February 2023, 92% of global GDP has made either an intended or actual commitment to achieving net zero emissions by 2050.



Pic credit: https://en.wikipedia.org/wiki/Carbon_accounting

Understanding Carbon Accounting:

Carbon accounting encompasses the systematic measurement, reporting, and verification of GHG emissions, typically expressed in terms of **carbon dioxide equivalent (CO₂e)**. The process involves three main steps:

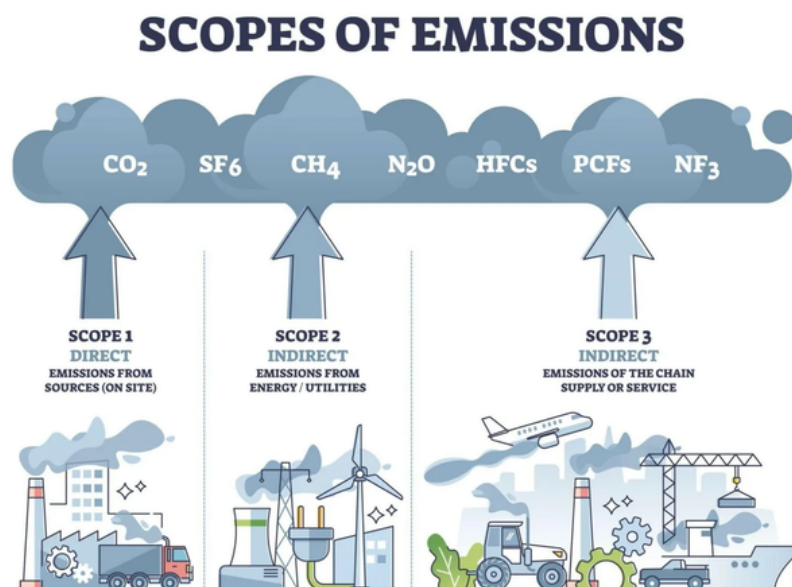
1. Scope Assessment: Carbon accounting involves categorizing emissions into three scopes:

Scope 1: Referred to as **direct emissions**, **Scope 1 emissions** are discharged directly from sources that are under the ownership or control of an organization. Instances encompass emissions stemming from manufacturing procedures, as well as fugitive emissions such as methane emissions from coal mining or the generation of onsite electricity by burning coal.

Scope 2: Termed as **indirect emissions** or **Scope 2 emissions**, these are emitted from the electricity, steam, heating, and cooling procured by an organization. In 2015, the GHG Protocol guidance underwent revision, advising the utilization of both location-based (grid-based) and market-based methodologies for calculating Scope 2 emissions.

Scope 3: Frequently labeled as **supply chain emissions**, **Scope 3 emissions** represent indirect greenhouse gas emissions stemming from the operations of a facility, yet originating from sources beyond the ownership or control of that facility's business.

With an average emission accounting that surpasses a company's direct emissions by 5.5 times, Scope 3 emissions offer a substantial avenue for organizations to collaborate with their suppliers, thereby expediting global decarbonization efforts.



Pic credit: <https://corporatefinanceinstitute.com/resources/esg/carbon-accounting/>

2. Data Collection: Organizations collect data on energy consumption, fuel usage, transportation, waste generation, and other relevant activities to quantify their emissions across scopes.

3. Calculation and Reporting: Using standardized emission factors and calculation methodologies, companies estimate their total emissions and report the results in annual sustainability reports or to relevant stakeholders.

Importance of Carbon Accounting

Having access to precise, detailed greenhouse gas (GHG) emissions data is imperative for organizations seeking to pinpoint areas for emissions reduction, formulate strategies, and monitor the effectiveness of emissions reduction initiatives.

Companies typically embark on an emissions reduction journey aimed at enhancing efficiency, integrating renewables, and acquiring offsets to meet their net zero objectives.

Detailed data on emission sources guides the organization's emissions reduction endeavors, while continuous monitoring of GHG emissions offers a quantified feedback mechanism to evaluate the success of initiatives.

Minimize your carbon footprint

Carbon accounting stands as a crucial instrument for any enterprise aiming to minimize its carbon footprint – a pursuit that not only combats climate change but also enhances the appeal of businesses to customers, investors, and employees.

Given that effective management hinges on accurate measurement, quantifying carbon emissions represents the initial stride toward emission reduction, empowering businesses to transition to activities or materials with lower carbon footprints. Yet, computing emissions, particularly those across value chains, poses a formidable challenge, entailing the aggregation of diverse data types from various origins and subsequent conversion into emission totals.

Leveraging software solutions that automate this process offers businesses substantial time savings compared to pursuing the same endeavor internally or through sustainability consultants. With reduced time spent on data collection, businesses can expedite the development and implementation of reduction strategies.

For large-scale enterprises, carbon accounting holds particular significance within the value chain, encompassing the smaller businesses that supply services, products, and resources utilized in the enterprise's final offerings.

These value chain emissions constitute a substantial portion of a company's carbon footprint, accounting for an average of 92% according to CDP. However, these emissions do not directly originate from the company itself, presenting challenges in both calculation and reduction. Enterprise businesses, which may have thousands of suppliers, encounter specific obstacles when attempting to calculate value chain emissions.

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By employing a hybrid methodology, enterprises can initiate a spend-based estimation of their carbon footprint, providing an initial overview of emissions sources within their value chain. Subsequently, they can refine this estimate by gathering activity-based data from their primary emitters. This top-down approach facilitated by carbon accounting ensures that businesses, particularly large ones, can prioritize high-impact reduction efforts.

ESG Reporting Disclosure

Carbon accounting plays a crucial role in analyzing the energy footprint within the framework of the **Business Reporting on Sustainable Development Goals (SDGs) (BRSR) Core**.

1. Quantifying Carbon Emissions:

Carbon accounting allows businesses to quantify their carbon emissions accurately. This includes emissions from direct sources like onsite energy generation and indirect sources such as purchased electricity. Understanding these emissions is essential for assessing a company's environmental impact and identifying areas for improvement.

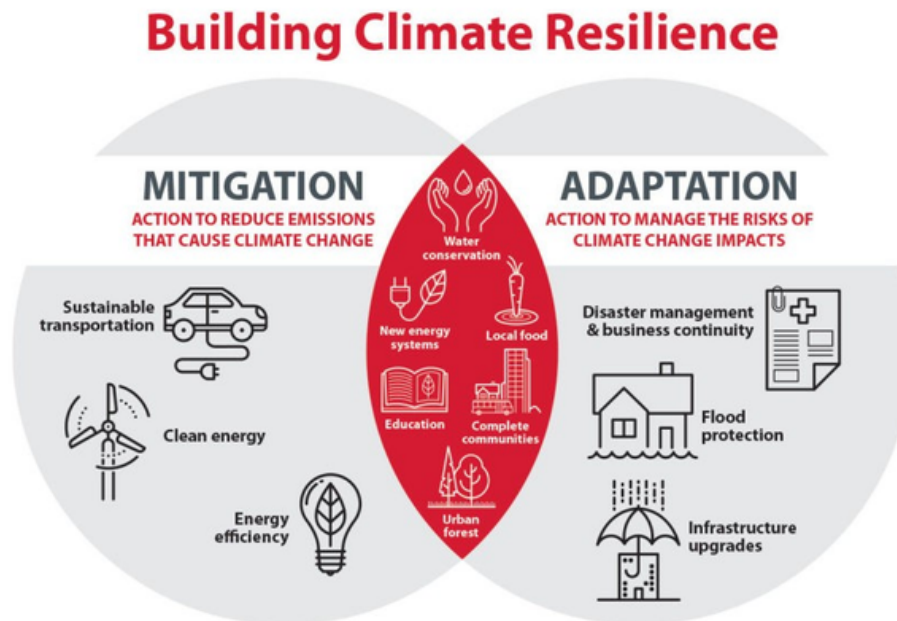
2. Monitoring Progress towards Climate Goals:

By incorporating carbon accounting into the BRSR Core, businesses can track their progress towards climate-related goals, such as reducing greenhouse gas emissions in line with international targets like the **Paris Agreement**. Regular monitoring and reporting of carbon emissions enable companies to set targets, implement mitigation measures, and measure their effectiveness over time.



3. Risk Management and Resilience:

Carbon accounting helps businesses identify and mitigate risks that are associated with climate change. By understanding their energy footprint, companies can anticipate regulatory changes, physical risks (e.g., extreme weather events), and market shifts (e.g., carbon pricing mechanisms). This proactive approach to risk management significantly enhances business resilience in an ever-evolving and rapidly changing climate.



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4. Enhancing Stakeholder Transparency:

Transparent reporting of carbon emissions demonstrates a company's commitment to environmental responsibility and builds trust with stakeholders, including investors, customers, and regulators. By disclosing their energy footprint through frameworks like the BRSR Core, businesses can enhance their credibility and reputation as sustainable entities.

5. Driving Innovation and Efficiency:

Carbon accounting encourages businesses to innovate and adopt energy-efficient technologies and practices. By analyzing their energy footprint, companies can identify opportunities to optimize energy usage, reduce costs, and enhance operational efficiency. This focus on innovation drives competitiveness and positions businesses for long-term success in a low-carbon economy.

6. Contributing to the SDGs:

Carbon accounting aligns with several Sustainable Development Goals (SDGs), including Goal 7 (Affordable and Clean Energy) and Goal 13 (Climate Action). By measuring and managing their energy footprint within the BRSR Core framework, businesses contribute to global efforts to combat climate change and promote sustainable development.

Gain competitive advantages

Enterprises that integrate carbon accounting into their operations often unearth unforeseen – yet underutilized – business benefits. These encompass risk mitigation, brand enhancement, and efficiency optimization.

Risk Mitigation - While greenwashing is typically perceived as deliberate and deceitful, many businesses inadvertently engage in it. Unintentional greenwashing occurs when an organization believes it is acting in an environmentally responsible manner and communicates as such. However, unbeknownst to them, their environmental initiatives may be less effective or comprehensive than presumed. The genesis of unintentional greenwashing frequently lies in the initial step of an organization's climate action: carbon footprint calculation. According to a 2021 survey by the Boston Consulting Group, businesses acknowledge an average error rate of 30% to 40% in their emissions calculations. This discrepancy, known as the **accuracy gap**, underscores the disparity between perceived and actual emissions output. The accuracy gap ranks among the five most prevalent greenwashing pitfalls because any action based on incomplete information yields incomplete results. Consequently, the accuracy gap poses a liability for businesses, underscoring the necessity for comprehensive and precise carbon accounting as a risk mitigation measure.

Brand Enhancement - While regulatory compliance and risk mitigation serve as primary motivators for many enterprises, astute businesses leverage carbon accounting to transcend mere regulatory adherence and create tangible business value. Increasingly, consumers, employees, and investors demand that businesses demonstrate climate responsibility. By utilizing carbon accounting to embark on measurable climate initiatives and substantiate their outcomes, enterprises can cultivate brand equity and shield themselves against accusations of greenwashing.

Efficiency Optimization - By quantifying their entire operational footprint, businesses can pinpoint inefficiencies, particularly within their value chains. For instance, Eltel, a Scandinavian telecommunications services company, utilized its carbon accounting findings to optimize the driving routes of its technicians. This strategic move minimized time costs, conserved fuel, and concurrently reduced carbon emissions. When wielded effectively, carbon accounting can serve as a gateway for businesses to transition towards a circular economy, fostering sustainability and enhancing competitiveness.

Requirements for Carbon Accounting

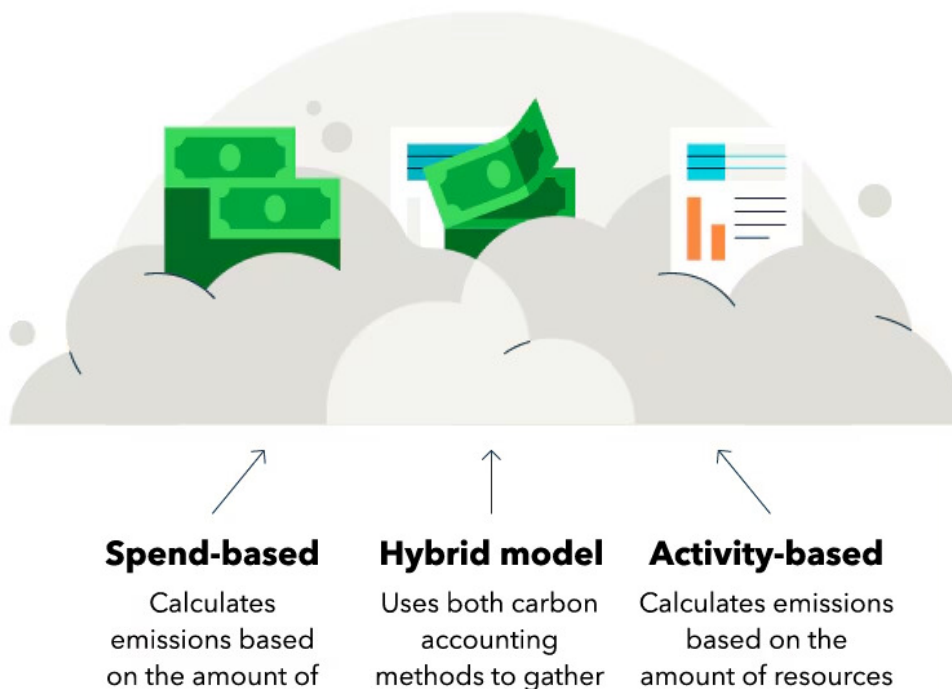
Carbon accounting depends on two types of data: **business data** and **emissions factors**. Business data delineates the operations conducted by a company. This includes:

1. **Expenditure data** – the amount of money disbursed to company X for a specific product or service.
2. **Activity data** – the quantity of fuel in liters or material in kilograms procured.

Emissions factors constitute the second category of data necessary for carbon accounting. These factors detail the quantity of greenhouse gas emissions linked to a particular unit of business data. Upon gathering all requisite data, it can be converted into estimates of emissions. The approach for this conversion varies depending on the methodology employed.

Methodology:

Carbon accounting employs two methodologies to assess an organization's greenhouse gas (GHG) emissions: **spend-based** and **activity-based**. The **hybrid approach** integrates both spend based and activity-based methods.



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In the **spend-based approach**, GHG emissions are computed by multiplying the financial value of a purchased product or service by an emission factor, which denotes the emissions generated per unit of currency. This multiplication yields an approximation of the emissions produced.

Typically, spend-based emission factors are derived from environmentally extended **input output (EEIO) models**, illustrating resource flows among different economic sectors. These models enable the calculation of average emissions associated with each monetary unit paid to a company in a specific industry and region. However, spend-based calculations may lack precision because emission factors are based on industry average greenhouse gas emission levels. For instance, when purchasing a chair, a spend-based approach only considers the acquisition of furniture and disregards factors like the chair's material composition, such as iron or wood.

On the other hand, the **activity-based method** quantifies the quantity of a particular product or material procured by a company, such as liters of fuel or kilograms of textiles. Similar to the spend-based method, activity-based calculations utilize emission factors obtained from scientific research to determine emissions output associated with each activity. While activity based data generally enables more accurate emissions estimates compared to spend-based data, it is often less readily available and can be time-intensive to collect.

Therefore, the **hybrid model methodology**, advocated by the **Greenhouse Gas Protocol**, the prominent carbon calculation standard, is recommended. This pragmatic approach entails utilizing all accessible activity-based data and supplementing it with spend-based methods to estimate remaining emissions.

Challenges in Carbon Accounting

The process of carbon accounting is intricate and demands access to precise, up-to-date, and historical energy data alongside a comprehensive set of factors. This data should aptly reflect the complexity and organizational hierarchy to trace emissions back to their origins for reporting and compliance purposes.

Regular updates to data are essential for enabling comparisons across reporting periods, enabling organizations to gauge their performance against set targets. Furthermore, adherence to internationally recognized standards is crucial for the collection of data and emission calculations. Many organizations resort to manual data collection and spreadsheet usage for their annual carbon accounting and ESG ratings calculations.

Many organizations resort to manual data collection and spreadsheet usage for their annual carbon accounting and ESG ratings calculations. This approach poses heightened risks and productivity losses, particularly for large, multinational organizations adhering to multiple reporting frameworks. These organizations often encounter the following hurdles:

- 1. Data fragmentation across silos or spreadsheets:** Metrics related to carbon, energy, waste, water, and social indicators are sourced from disparate areas within the organization, making consolidation for reporting and decision-making challenging.
- 2. Inconsistent and unreliable data quality:** Manual data capture elevates the likelihood of errors, leading to inaccuracies or incomplete datasets. To produce reports of financial grade quality, confidence in the data's accuracy and auditability throughout the process is imperative.
- 3. High time and cost associated with sustainability reporting:** Managing and allocating factors for emissions calculation becomes labor-intensive and time-consuming when relying on manual spreadsheet-based methods.
- 4. Limited understanding of ongoing sustainability performance:** Without access to consolidated and accurate data, monitoring and managing sustainability performance becomes challenging, hindering the ability to track the efficacy of sustainability initiatives over time.

Some Real World Examples

Google: Google is a pioneer in carbon accounting and has committed to achieving carbon neutrality since 2007. The company tracks its carbon footprint across scopes and invests in renewable energy projects to offset its emissions. Google's comprehensive carbon accounting practices have enabled it to achieve impressive reductions in its operational carbon intensity over the years.



IKEA: IKEA, the Swedish furniture retailer, is known for its ambitious sustainability goals, including becoming climate positive by 2030. As part of its carbon accounting efforts, IKEA tracks emissions from its entire value chain, from raw material sourcing to product end-of-life. By leveraging carbon accounting data, IKEA identifies opportunities for emissions reductions and invests in renewable energy and energy-efficient technologies.



Unilever: Unilever, a multinational consumer goods company, integrates carbon accounting into its Sustainable Living Plan. The company tracks emissions across scopes and sets targets to reduce its environmental footprint. Unilever's carbon accounting initiatives have led to significant reductions in energy consumption, waste generation, and greenhouse gas emissions across its global operations.



Conclusion:

Carbon accounting is a powerful tool for organizations seeking to mitigate their environmental impact and drive sustainable practices. By quantifying emissions, companies can identify hotspots, set reduction targets, and implement strategies to transition to a low carbon future. As demonstrated by companies like Google, IKEA, and Unilever, effective carbon accounting can lead to tangible environmental benefits while also creating value for businesses and society as a whole. Embracing carbon accounting is not only a responsible choice but also a strategic imperative in the fight against climate change.

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