



Developing GHG Inventories and Effective Reduction Targets



MONTROSE
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Introductions



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Biggest Challenges and Market Drivers





Industry Confronts Unique Challenges in The Face of Climate Change

What is my emissions baseline? Should I commit to a reduction target?

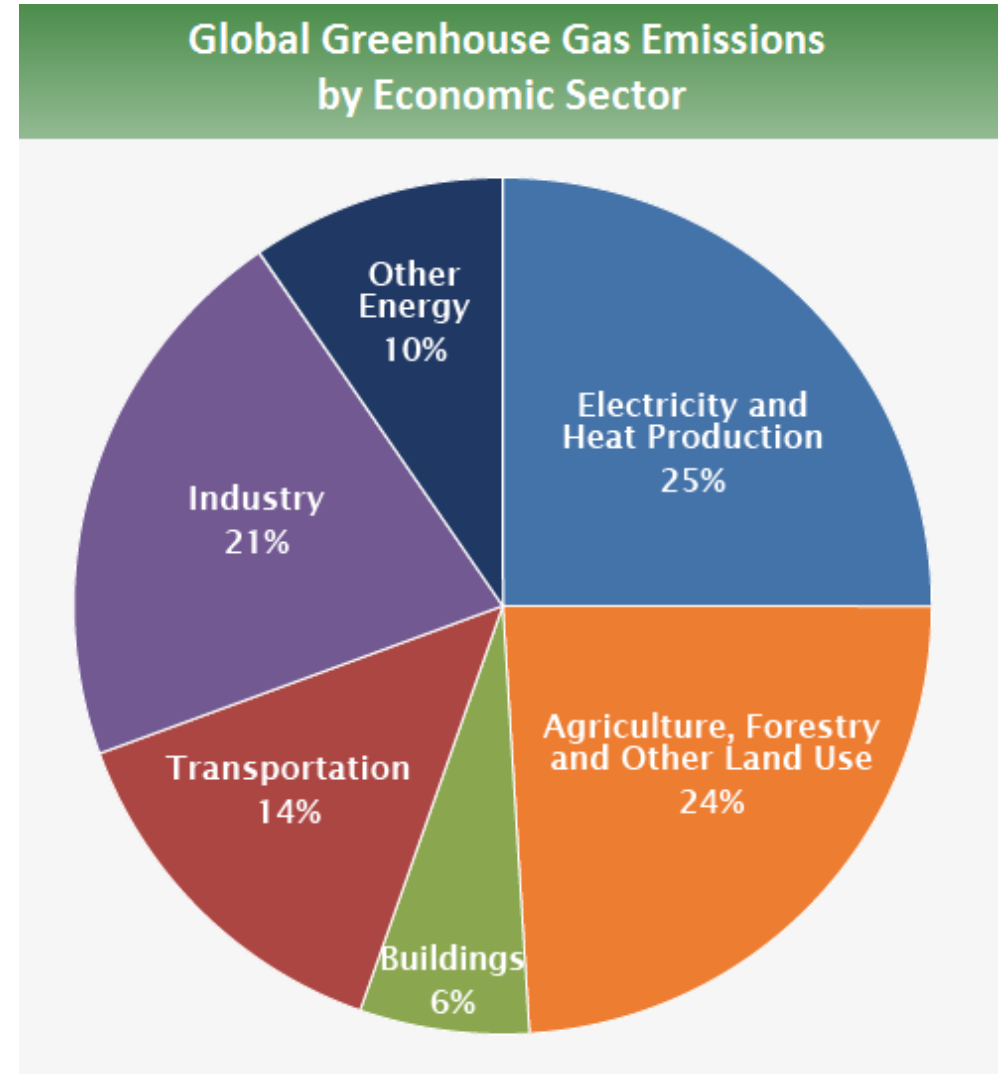
These are just a few of the questions we hear from our clients everyday. So while there are no easy answers, you can rest assured that you are not alone in asking them!

Stakeholders of all stripes are looking for more voluntary action on the part of the industry, and more stringent regulatory requirements are emerging around the world. It is a dynamic time. The strategies you choose will have implications for your current business, your prospects for growth, and how you will be viewed by customers, investors, employees and the communities in which you operate.



Climate Impacts of Greenhouse Gas Emissions

- Human-induced warming reached $\sim 1^\circ\text{C}$ above pre-industrial levels in 2017, increasing at $\sim 0.2^\circ\text{C}$ per decade¹
- Global net anthropogenic GHG emissions were $\sim 59 \text{ GtCO}_2\text{-e}$ in 2019, about 12% higher than in 2010²
- Worldwide, most glaciers are shrinking or disappearing altogether³
- Global average sea level has risen 8–9 inches since 1880
- High-tide flooding is now 300% to more than 900% more frequent than it was 50 years ago
- 1.5 C warming pathway is unlikely without a 37% decline in methane emissions by 2030



Source: IPCC, 2014

Sources: 1, 2. IPCC, Climate Change 2022
3. NOAA, [Climate Change: Global Sea Level](#)



GHG Emission Monitoring and Reporting Voluntary and Required

Required reporting and market expectations

- U.S. Regulations – primarily use emission factors to calculate GHG emissions
 - EPA 40 CFR Part 98 Greenhouse Gas Mandatory Reporting Rule
- SEC Disclosure requirements (proposed)
- European Green Deal, EU Methane Strategy, EU Taxonomy
- Global Methane Pledge
 - Collective goal of reducing global methane emissions by at least 30 percent from 2020 levels by 2030
- Voluntary
 - Customer Requirements
 - ESG/Stakeholder Expectations
 - Reduce Losses
 - Cost of Capital

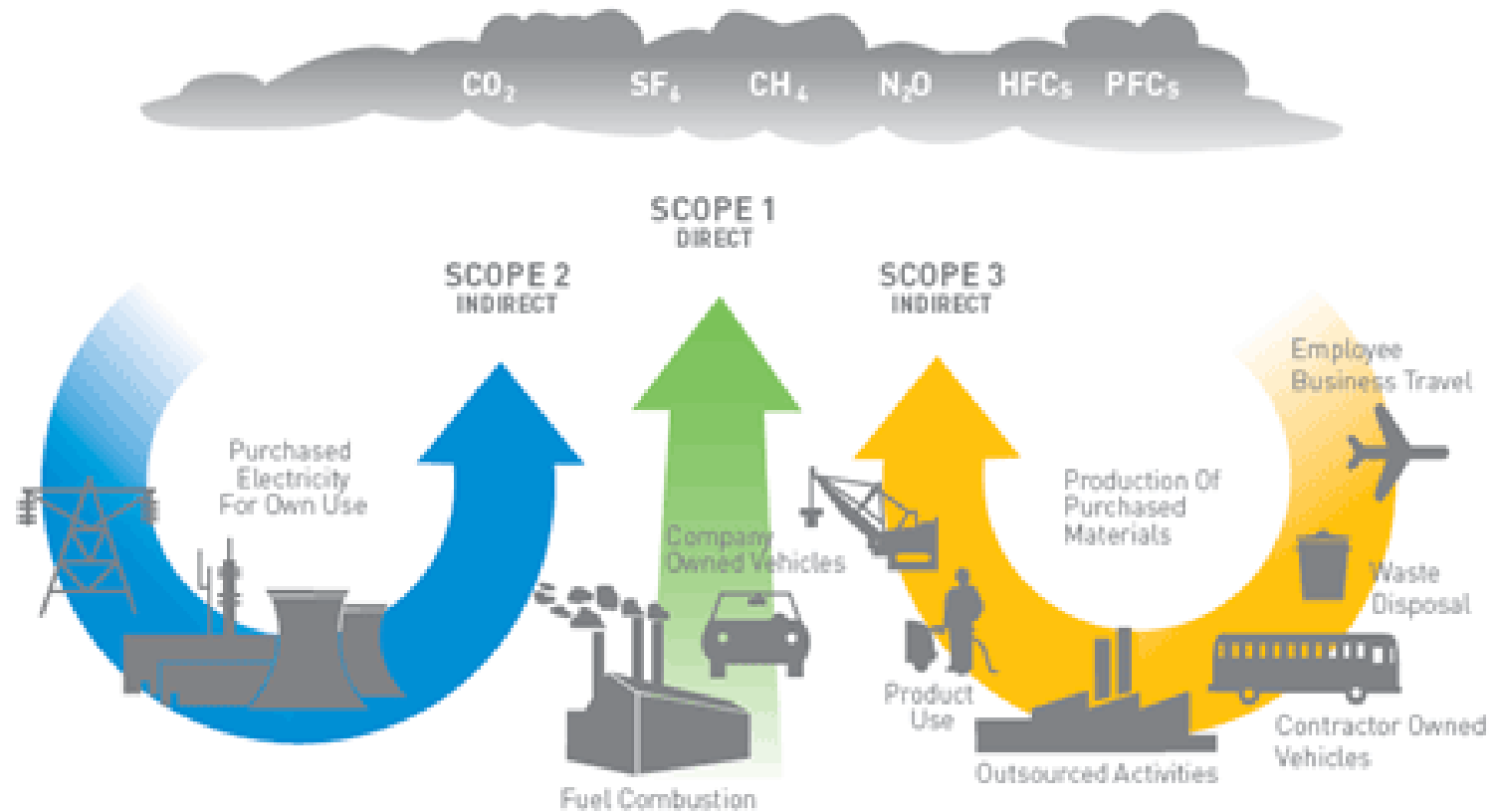




Components of a Complete GHG Inventory



Components of a Complete GHG Inventory



Scope 1 – Direct Emissions

- Scope 1 emissions are direct GHG emissions that occur from sources that are controlled or owned by an organization
- Scope 1 emissions include:
 - Stationary Combustion: combustion of fossil fuels (e.g. engines, boilers, turbines, mobile sources)
 - Mobile Combustion
 - Process and Fugitive Emissions
 - Chemical and Refrigerant Leaks
- Emissions are derived from direct measurement, emission factors, engineering estimations, and simulation software tools

Scope 1 DIRECT



company
facilities



company
vehicles

REPORTING COMPANY



Scope 2- Indirect Emissions

- Scope 2 emissions are indirect GHG emissions that occur from the generation of purchased electricity or steam that is consumed in the operator's owned or controlled equipment or operations
- Scope 2 emissions are typically a large source of GHG emissions with significant reduction opportunity
 - Can invest in energy efficient technologies, energy conservation efforts or switch to green power providers where possible
- Calculations typically use metered electricity consumption and supplier-specific, local grid or other published emission factors

Scope 2
INDIRECT



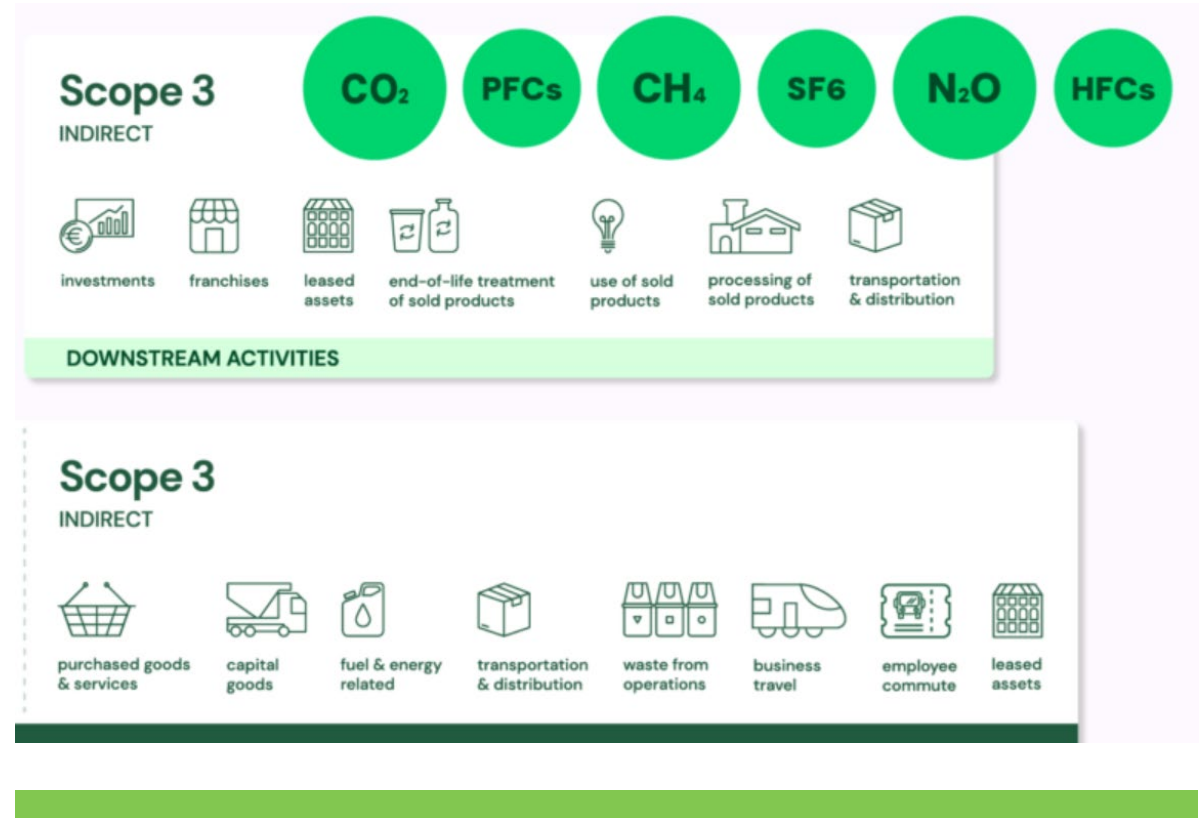
purchased electricity, steam,
heating & cooling for own use

UPSTREAM ACTIVITIES



Scope 3 – Other Indirect Emissions

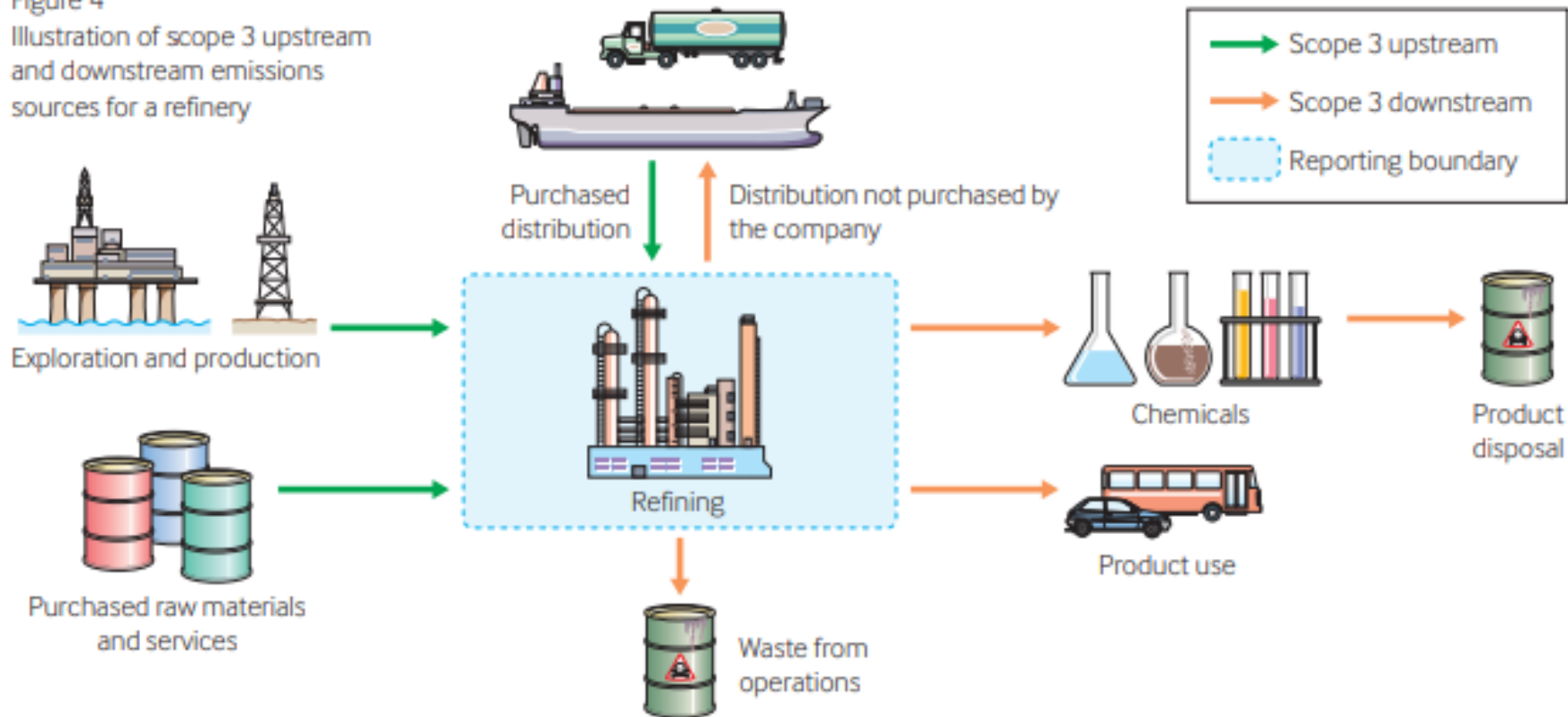
- Scope 3 emissions are all indirect emissions (excluding Scope 2) that occur in the value chain of the operator, including both upstream and downstream emissions
- Reporting Scope 3 emissions is typically optional, but gives the best comprehensive summary of all GHG emissions
- Scope 3 emissions are primarily calculated using activity data and published or third -party emission factors. Source - or facility - specific emission factors are preferable to generic
- Scope 3 data accuracy is typically lower due to less availability and reliability



Scope 3 - Emissions Example

Figure 4

Illustration of scope 3 upstream and downstream emissions sources for a refinery



<https://www.api.org/~//media/Files/EHS/climate-change/Scope-3-emissions-reporting-guidance-2016.pdf>

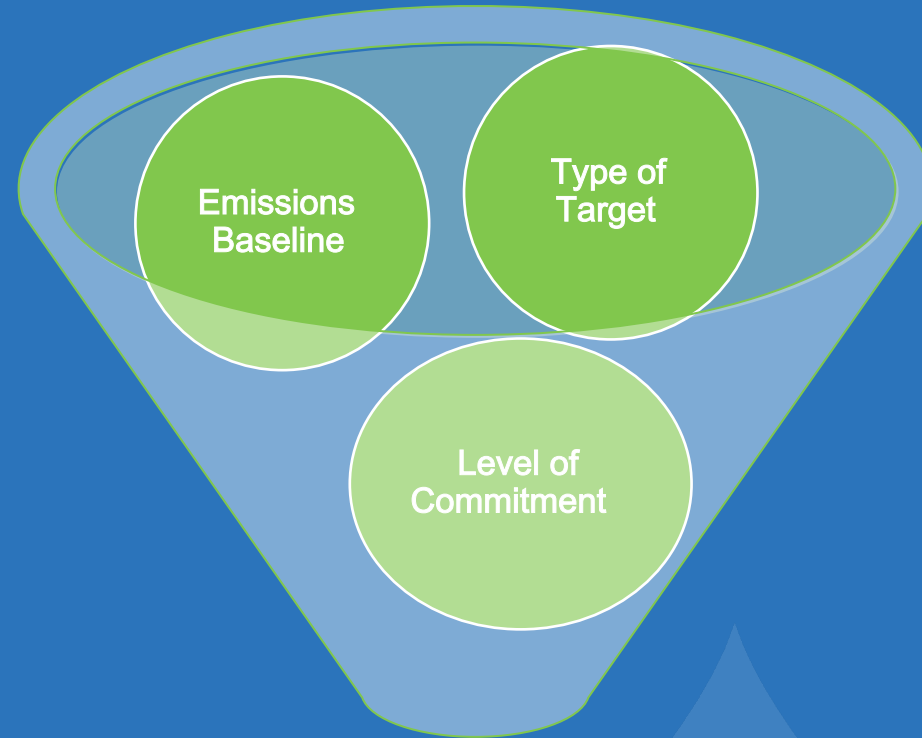




Setting Successful Reduction Goals



GHG Emissions Target Setting

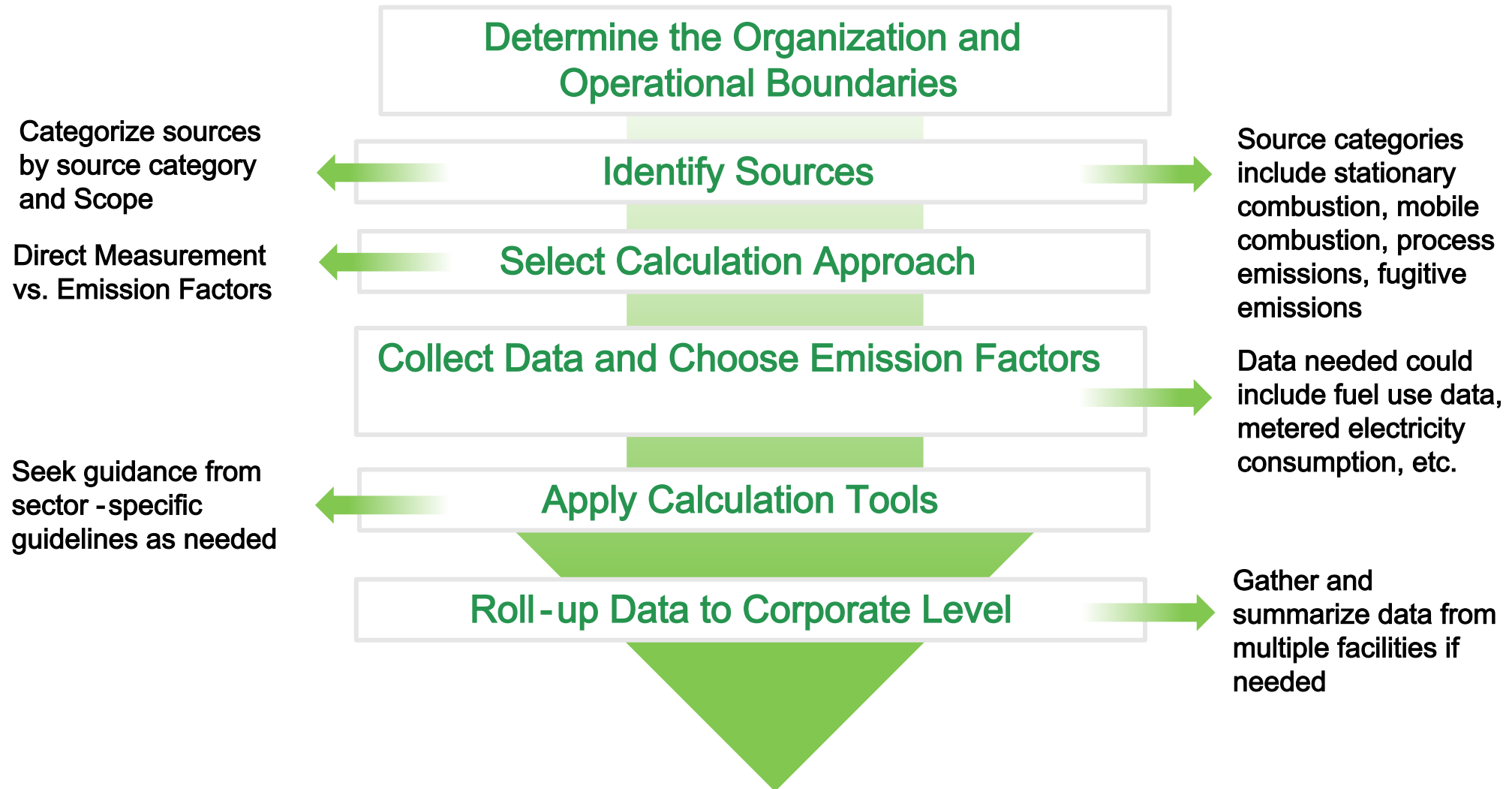


Elements for Target
Setting



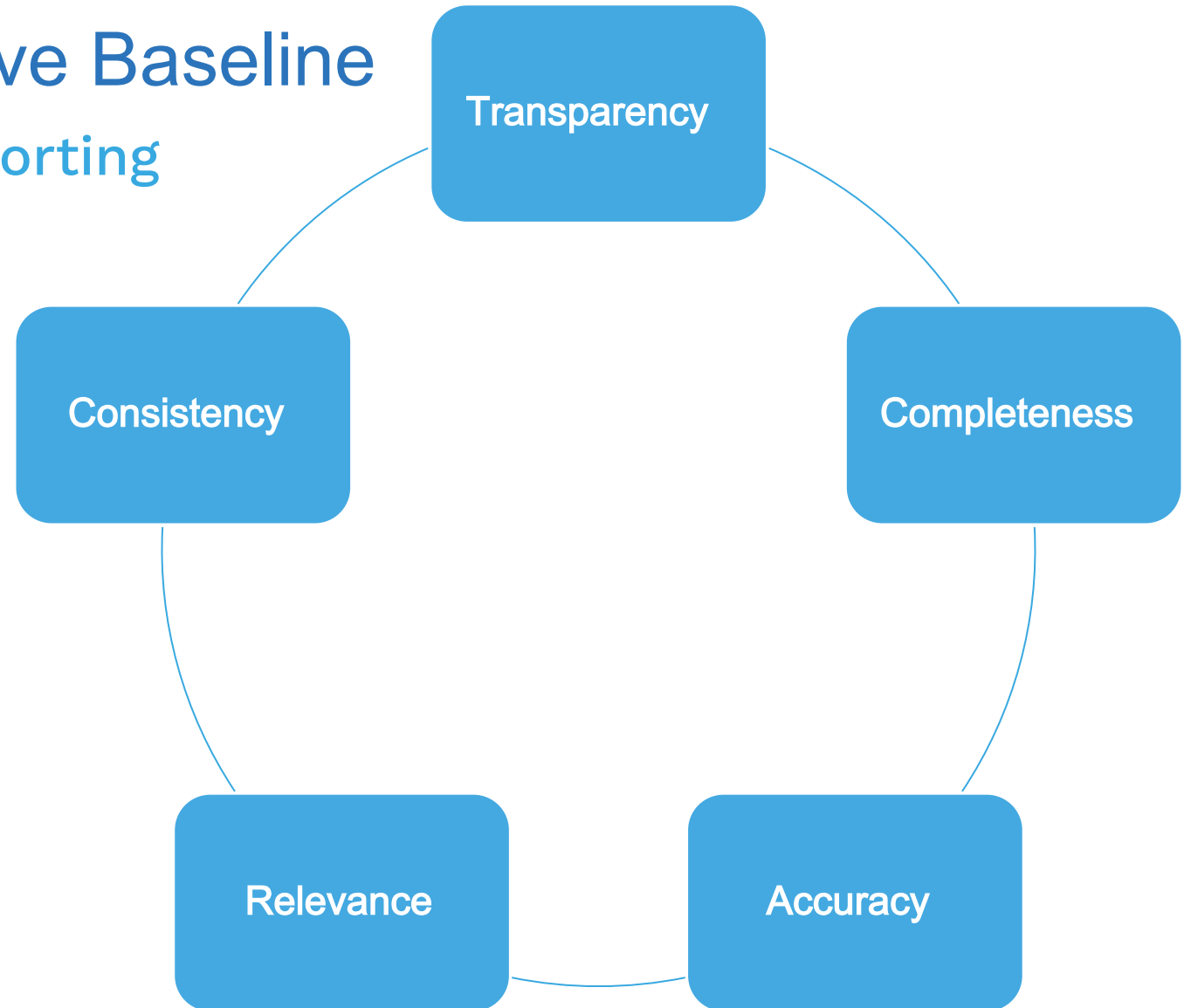
Building a Comprehensive GHG Baseline Inventory

Steps in Identifying and Calculating GHG Emissions



Elements of a Effective Baseline

GHG Accounting and Reporting Principles



Baseline and Target Years

Guidelines for establishing the baseline and target years

- Baseline Year is the year against which companies compare their reduction target
 - Choose a recent year with verified data
- Target year defines the target completion date and the length of commitment period
 - Typically two targets are set to cover medium (5- 15 years) and long terms (>15 years)
 - Target year may be defined by a commitment
- Adding intermediate targets and/or milestones increase credibility of long-term commitments by giving stake holders clarity and drives action plans



Types of Targets

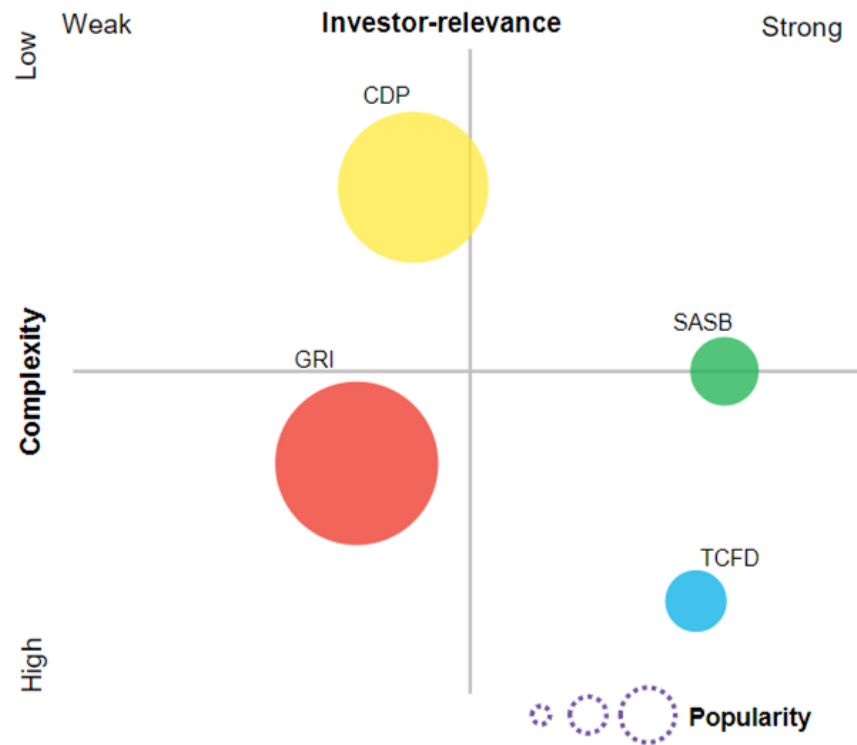
- Establishing emission reduction targets is vital for the oil & gas sector to play a measurable role in moving toward methane reduction
- Targets can focus on methane or GHG (CO₂e)
- An **absolute target** describes a reduction in actual emissions in a future year when compared to a base year
- An **intensity target** describes a reduction in emissions that have been normalized to a business metric when compared to the same normalized business metric emissions in a base year
 - Example: Emissions per energy sold
 - Intensity targets allow for better comparison between companies of varying sizes, if intensity calculations and normalization factors are consistent



Major Sustainability Reporting Frameworks

Despite similarities in the way they are structured, evaluating the slew of corporate sustainability reporting standards and frameworks side-by-side is a valuable exercise for companies beginning their sustainability journeys. Low-complexity standards and frameworks like CDP are easier to report against, but do little to signal impacts, risks and opportunities to investors. Aligning with TCFD, by contrast, is a challenging process, but could be much more relevant for companies in industries feeling pressure from investors.

Sustainability reporting standards and frameworks



Standards/ Framework	Strengths	Weaknesses
CDP	<ul style="list-style-type: none"> Aligned with setting up a carbon inventory Low complexity – structured survey data is popular. 	<ul style="list-style-type: none"> Minimal impact on direct decarbonization Narrow scope (carbon, forests, water)
GRI	<ul style="list-style-type: none"> Enables benchmarking against self and others Helps with selection of indicators and targets 	<ul style="list-style-type: none"> Less focus on indirect impacts in the supply chain Guidance often cherry-picked by companies
SASB	<ul style="list-style-type: none"> Helps companies identify most relevant, financially-material data to disclose Popular with investors 	<ul style="list-style-type: none"> Limits disclosures to a five-year time horizon Little indication of relative performance
TCFD	<ul style="list-style-type: none"> Uses scenario analysis to spot material future climate risks and opportunities Popular with investors 	<ul style="list-style-type: none"> Relatively lengthy guidance, complex implementation Limited guidance on scenario analysis
GHG Protocol	<ul style="list-style-type: none"> Complementary with other standards and frameworks Low complexity and significant support materials 	<ul style="list-style-type: none"> Low investor relevance, relative to other standards and frameworks Coverage isn't sector-specific

Source: BloombergNEF Note: Chart is BNEF's house view on these standards and frameworks. GHG Protocol is not plotted on the chart, as it's not a direct comparison.

Questions?

