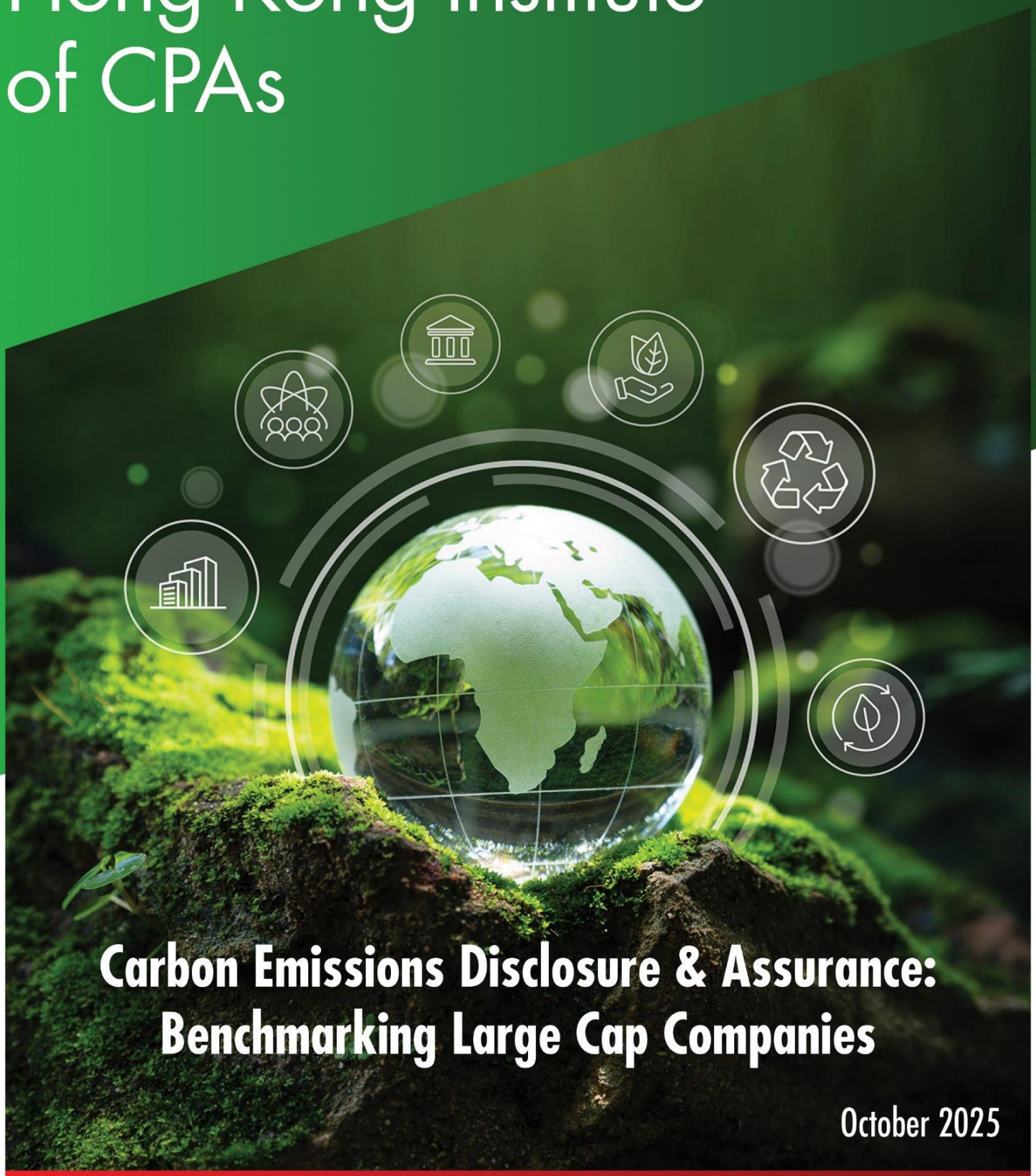
Hong Kong Institute of CPAs



Carbon Emissions Disclosure & Assurance: Benchmarking Large Cap Companies

October 2025

Hong Kong Institute of
Certified Public Accountants
香港會計師公會

The Hong Kong Institute of Certified Public Accountants is the only statutory body responsible for the registrations of accountancy professionals in Hong Kong. The Institute has over 47,000 members and around 12,000 students. Members of the Institute are entitled to the description "certified public accountant" and to the designation CPA.

Contents

Message from the chair of the 2025 Best Corporate Governance and ESG Awards Judging Panel

We stand at a pivotal moment in the evolution of global capital markets, where the integration of long-term sustainability considerations is fundamentally reshaping the definition of value and risk. As a long-time champion of good governance and sustainability practices and reporting, the Hong Kong Institute of Certified Public Accountants (Institute) presents this report with a keen sense of responsibility towards fostering a resilient and transparent market ecosystem.

The global imperative for robust climate action and corporate accountability is now unequivocal. This is not a peripheral concern but a central tenet of prudent governance and long-term value creation. In Hong Kong, our regulatory framework has risen to meet this challenge with purposeful strides. The issuance of the Hong Kong Financial Reporting Standards (HKFRS) S1 *General Requirements for Disclosure of Sustainability-related Financial Information* and HKFRS S2 *Climate-related Disclosures*, establishes a critical, unified platform for sustainability reporting, directly aligning our market with international benchmarks. These standards, coupled with the enhanced disclosures and guidance in the Environmental, Social and Governance Reporting Code, issued by Hong Kong Exchanges and Clearing Limited, at Appendix C2 of the Listing Rules, which commenced on 1 January 2025, provide a clear and firm pathway for listed companies. They move us to a more structured regime that expects and requires more detailed disclosure of governance, strategy, risk management, and metrics and targets for climate-related matters. This is more than a compliance exercise; it is the bedrock upon which investor confidence and market integrity will be built in the decades to come.

This report delves into the practical application of this framework among the leading companies of the Hang Seng Composite LargeCap Index. Our analysis moves beyond the mere fact of disclosure to investigate its substance and credibility. We have specifically examined the critical, yet complex, area of Scope 3 value chain emissions, the ambition and inclusivity of carbon-neutrality/ net-zero targets, and the vital role of external assurance in validating reported data. The insights contained within these pages reveal not only the significant progress being made, but also illuminate the gaps that must be bridged to meet the standards of our new era.

The findings presented here are intended to serve as both a mirror and a map, reflecting our current collective position and charting a course towards more rigorous, assured, and decision-useful ESG reporting. I hope this brief report is of value to company directors, investors, and policymakers alike, not only in conveying a snapshot of the current state of important aspects of ESG and climate-related reporting, but also in stimulating further fruitful thought and discussion on the “how” and “when” of implementation. Let us embrace the challenges and opportunities ahead, working collaboratively to ensure that Hong Kong's market remains a leading, trusted, and sustainable global financial centre.

Edward Au
Institute President
Chair of the 2025 Best Corporate Governance and ESG Awards Judging Panel

Background

About this research

Addressing climate change is among the most pressing and important issues of our time. Governments cannot do it alone. The business sector has an important contribution to make and responsibility to make it.

This report presents the findings of a research initiative undertaken by the Institute to evaluate key aspects of the Environmental, Social, and Governance (ESG) reporting landscape among constituent companies of the Hang Seng Composite LargeCap Index (LargeCap Index). Although relatively short, this study reflects more detailed research that examined the 105 LargeCap Index constituents, with a specific focus on those that had published a standalone Sustainability/ ESG Report or incorporated a comprehensive sustainability/ ESG section within their annual reports for the 2024/2025 reporting period, as of 1 July 2025.

The primary objective of this analysis is to assess the maturity and robustness of corporate reporting on greenhouse gas (GHG) emissions and decarbonization strategies. A particular emphasis is placed on the disclosure of Scope 3 emissions—indirect emissions from the value chain—which are increasingly recognized as critical to understanding a company's complete climate impact and transition risks. Furthermore, the investigation evaluates the ambition of stated climate targets and the growing practice of seeking external assurance for reported ESG data.

Through a systematic review, based on the key questions that follow, this report provides a structured benchmark of current practices, highlighting areas of progress, and identifying opportunities for enhanced transparency and accountability among leading listed companies.

Background (cont'd)

Research questions

In terms of scope, our study set out to find answers to the following questions:

Scope 3 greenhouse gas reporting

1. Do the companies in the LargeCap Index (companies) report their Scope 3 GHG emissions data (Scope 3 emissions)?
2. For companies that report on their Scope 3 emissions, which of the 15 categories, as defined by the Greenhouse Gas Protocol, are most frequently reported upon?

Carbon neutrality/ Net zero emission reduction targets

3. Do the companies disclose a carbon-neutrality or net-zero target date?
4. Does the net-zero/ carbon-neutrality target include Scope 3 emissions?
5. Are the companies participating in the Science Based Targets initiative (SBTi)? If YES, what is the current status of their commitments or validation?
6. Do the companies state a baseline year or years for emissions reduction comparisons? If YES, do they indicate the rationale for selecting that year/ those years?

Independent assurance

7. Do the companies engage an external assurer to verify their emissions data? If YES, is the assurer (i) the company's financial auditor, (ii) another firm of certified public accountants (CPA firm) or (iii) a different independent consultant?
8. If the companies engage an external assurer, does the scope of the assurance include Scope 3 emissions?

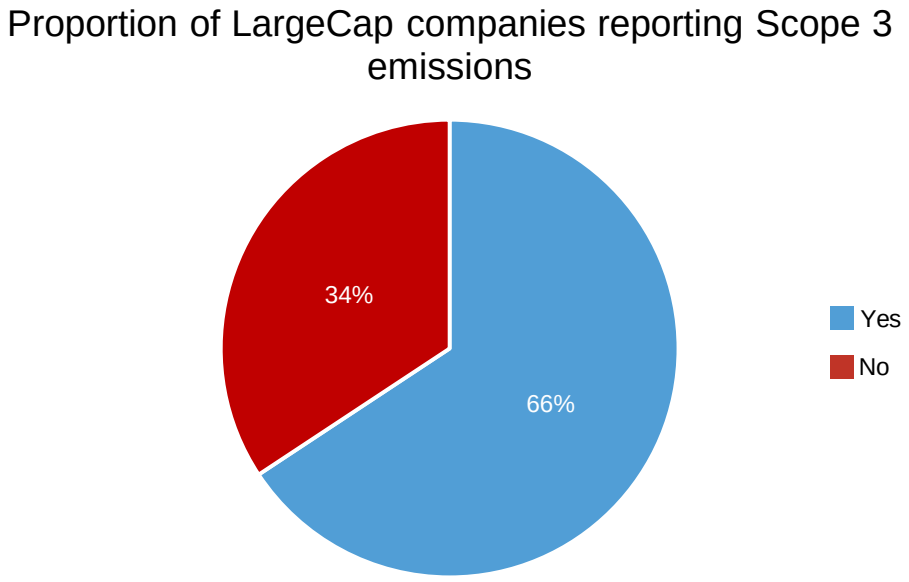
1. Do the companies in Hang Sang Composite LargeCap Index (companies) report their Scope 3 GHG emissions (Scope 3 emissions)?

105 companies in the LargeCap Index were included in our analysis. We looked at sustainability/ ESG reports (referred to hereinafter in this study just as “ESG reports”)

Out of these 105 companies, 69 companies (i.e. 66%) currently report on their Scope 3 emissions.

Based on the 2024 Analysis of ESG Practice Disclosure, conducted by the Hong Kong Stock Exchange and Clearing Limited (HKEX Analysis), published in November 2024, which looked at ESG reports published as of 30 June 2024, i.e. the financial year 2023/24, only 50% of LargeCap Index companies reported on their Scope 3 emissions.

This indicates a growing level of awareness and adoption of more extensive carbon accounting practices.



2. For companies that disclose Scope 3 emissions, which of the 15 categories, as defined by the Greenhouse Gas Protocol, are most frequently reported upon?

The GHG Protocol categorizes Scope 3 emissions into 15 distinct types, which cover all indirect emissions that occur in a company's value chain. These are split between upstream activities (related to purchased goods and services) and downstream activities (related to sold goods and services).

➢ **Upstream categories (1–8)**

These emissions come from the suppliers' activities before a product is sold. The categories include:

- Purchased goods and services (1)
- Capital goods (2)
- Fuel- and energy-related activities not covered in Scopes 1 or 2 (3)
- Upstream transportation and distribution (4)
- Waste generated in operations (5)
- Business travel (6)
- Employee commuting (7)
- Upstream leased assets (8)

➢ **Downstream categories (9–15)**

These emissions occur after the products or services have been sold. The categories are:

- Downstream transportation and distribution (9)
- Processing of sold products (10)
- Use of sold products (11) (relevant for energy-consuming products)
- End-of-life treatment of sold products (12)
- Downstream leased assets (13)
- Franchises (14)
- Investments (15) (especially for financial institutions)

This distribution reflects a focus on upstream supply chain impacts and, for relevant sectors, downstream product use.

<u>Key findings</u>

Among the 69 companies that disclose their Scope 3 emissions, the most commonly reported categories are:

- Category 6 (business travel) = 72%
- Category 1 (purchased goods and services) = 69%

After the above, the next most reported on are:

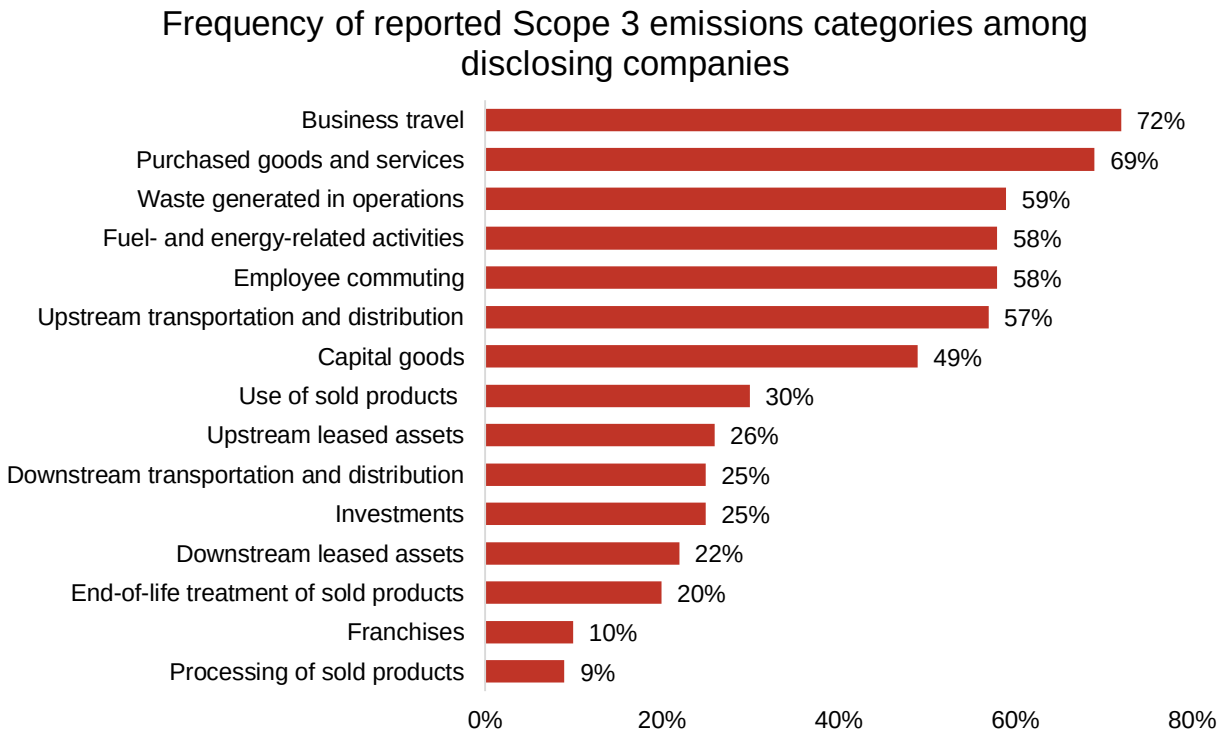
- Categories 3 (fuel and energy-related activities), 4 (upstream transportation and distribution), 5 (waste generated in operations), and 7 (employee commuting) all ranged between 57% - 59%.

2. For companies that disclose Scope 3 emissions, which of the 15 categories, as defined by the Greenhouse Gas Protocol, are most frequently reported? (cont'd)

Detailed distribution of Scope 3 categories

The following table details the frequency and percentage of companies reporting each Scope 3 category:

Scope 3 category	Category name	Number of companies reporting	Percentage of disclosing companies
Upstream categories			
Category 1	Purchased goods & services	49	69%
Category 2	Capital goods	34	49%
Category 3	Fuel- & energy-related activities	40	58%
Category 4	Upstream transportation & distribution	39	57%
Category 5	Waste in operations	41	59%
Category 6	Business travel	50	72%
Category 7	Employee commuting	40	58%
Category 8	Upstream leased assets	18	26%
Downstream categories			
Category 9	Downstream transportation & dist.	17	25%
Category 10	Processing of sold products	6	9%
Category 11	Use of sold products	21	30%
Category 12	End-of-life treatment of sold products	14	20%
Category 13	Downstream leased assets	15	22%
Category 14	Franchises	7	10%
Category 15	Investments	17	25%



2. For companies that disclose Scope 3 emissions, which of the 15 categories, as defined by the Greenhouse Gas Protocol, are most frequently reported? (cont'd)

Summary

The top three Scope 3 categories reported on by these LargeCap Index companies are all upstream categories. For the downstream activities, reporting rates are much lower, which, as the HKEX Analysis indicates, may be due to reasons like lack of incentive and/ or power to control or monitor customers' use and disposal of products or services, low data visibility from customers, complex calculation methods, and the strategic risk of highlighting a product's full climate impact, etc.

Most reported categories:

		
Category 6 Business travel	Category 1 Purchased goods & services	Category 5 Waster in operations

Least reported categories:

		
Category 12 End-of-life treatment of sold products	Category 14 Franchises	Category 10 Processing of sold products

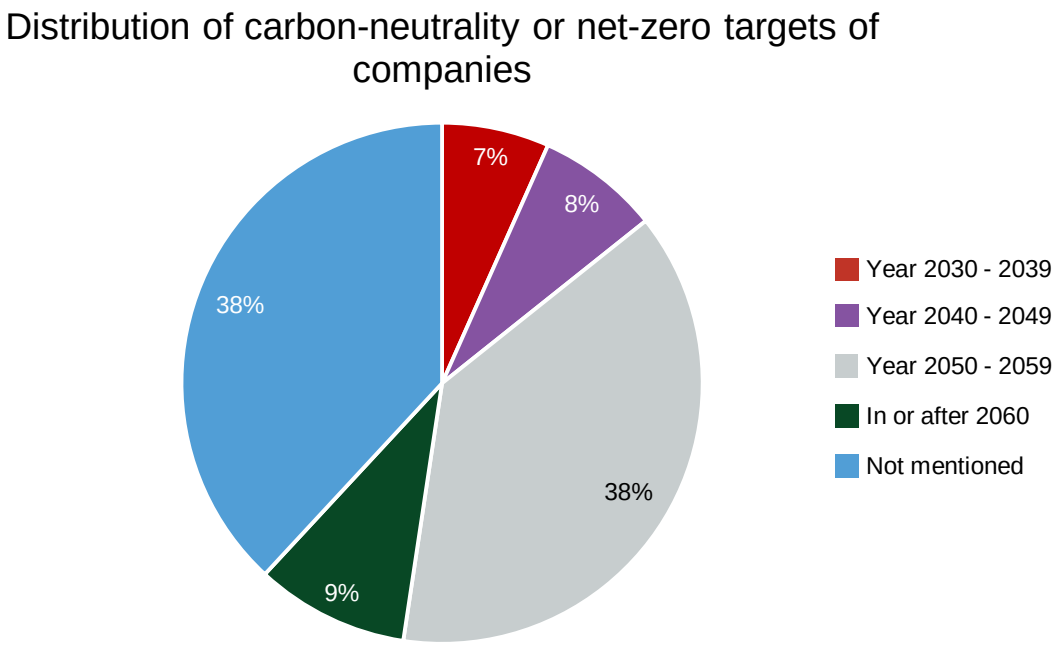
3. Do the companies indicate a carbon-neutrality or net-zero target?

Our analysis indicates that a majority of companies indicate a carbon neutrality or net-zero target date. At the same, there may be variations among companies within the same group. In addition, only a minority of these companies have established formal, comprehensive long-term climate commitments (see question 4).

Key findings

Within the cohort of 105 companies, approximately 62% (or 65 companies) declare a carbon neutrality or net-zero goal. The ambition of these targets varies significantly. The most common long-term target year is 2050, which is in line with the Paris Agreement on reaching net-zero carbon emissions by 2050.

The analysis also highlights the challenge of group-level vs. subsidiary-level targets. For large conglomerates with multiple listed subsidiaries, we observed a fragmented approach. It is not uncommon for the parent company to announce a 2050 net-zero ambition, while key, carbon-intensive subsidiaries operate under different or less stringent timelines. This creates ambiguity and risks diluting the overall commitment, as the parent company's target is often an aggregation of disparate and sometimes weaker subsidiary plans.



3. Do the companies indicate a carbon-neutrality or net-zero target? (cont'd)

Observations and recommendations

- Companies that have not yet set a carbon neutrality or net-zero target date should consider doing so, as part of the end game of carbon reduction strategies, especially companies in high-emission or high-energy-use industries. This will also help to contribute to national and/or regional climate goals and, potentially, address investor and stakeholder concerns. However, companies also need to understand the implications in terms of their systems and processes for data capture and management, etc. and actions that may be required to meet that target.
- For large conglomerates, a governance-focused approach, pressing the group board to mandate and enforce consistent, group-wide climate target-setting standards across all major subsidiaries, is recommended. This strategy will allow for efficient capital allocation and risk management across the entire group.

4. Does the net-zero/ carbon-neutrality target include Scope 3 emissions?

Among the 105 companies studied, the inclusion of Scope 3 emissions in their stated climate targets is highly varied and represents a critical point of differentiation in the credibility of their commitments. While a growing number of companies are acknowledging the need to provide Scope 3 emissions data, the depth of integration into their core reduction targets is inconsistent. A significant portion of targets, particularly those labelled "carbon neutrality," address only direct operational emissions or limited indirect emissions (from purchased energy) (i.e., Scopes 1 and 2), thereby excluding the majority of their value chain footprint and falling short of the robust standard required for a genuine net-zero pledge.

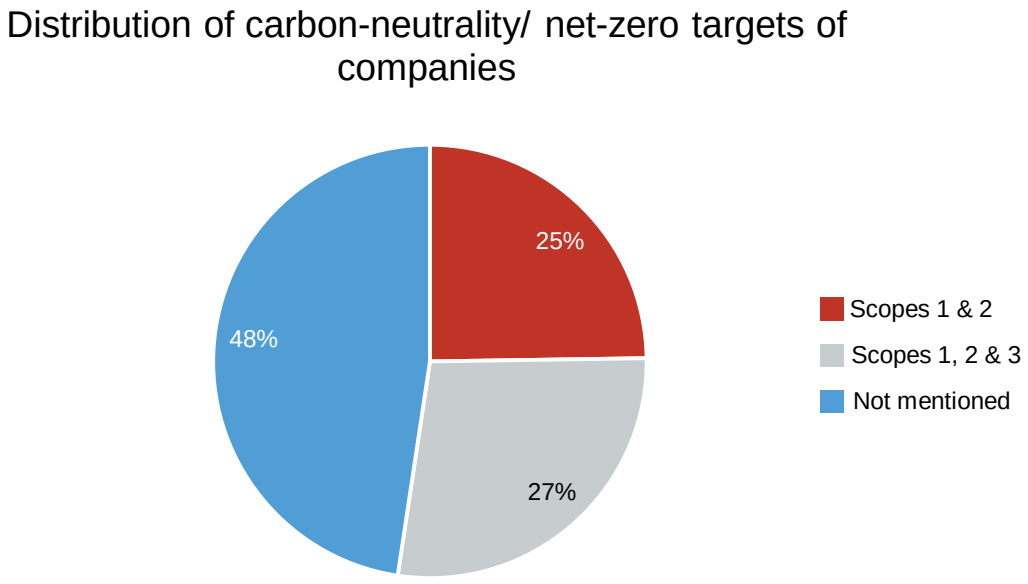
Key findings

While a majority of companies (52%) have publicly stated a target that indicates the type of emissions covered, the substance and scope of these commitments vary significantly, indicating different stages of maturity in their decarbonization journeys.

The findings highlight three distinct tiers of commitment. A leading segment, comprising 27% (i.e., 29 companies) demonstrate a comprehensive approach by setting targets that encompass Scopes 1, 2, and 3 emissions. This reflects a robust, enterprise-wide strategy that acknowledges the critical role of value chain emissions.

Meanwhile, 25% (i.e., 26 companies) have established targets covering only Scopes 1 and 2 emissions. While this represents a crucial foundational step, it indicates that their strategies have not yet fully integrated the more complex Scope 3 emissions. A further 10% of companies have stated a long-term target without further expanding on what this covers, which may call into question the robustness of their commitment.

Therefore, a significant commitment gap persists, with nearly half of the companies (48%, i.e. 50 companies) providing either a vague target without a specified scope, or no mention of a target at all in their reporting. This lack of clear and actionable roadmaps underscores a substantial area for development in corporate climate strategy. Overall, while ambition is growing, these disparities highlight the need for greater specificity, comprehensive scope coverage, and accelerated adoption of science-based decarbonization pathways across the market



4. Does the net-zero/ carbon-neutrality target include Scope 3 emissions? (cont'd)

Observations and recommendations

We recommend that investors and analysts categorize companies based on their Scope 3 inclusion and engage accordingly:

- **For companies excluding Scope 3**: Engagement should focus on challenging leadership to understand the rationale for omission and to initiate a materiality assessment of their value chain emissions. The ask should be to commit to developing a full Scope 3 inventory as a foundational step toward a credible net-zero target.
- **For companies with partial inclusion**: Engagement should aim to strengthen the commitment. The focus should be on integrating the most material Scope 3 categories into the primary, time-bound reduction target and seeking SBTi validation to ensure the approach is scientifically robust.
- **For companies with full inclusion**: The engagement should shift to monitoring and accountability. Investors should request detailed transition plans, track progress against interim Scope 3 reduction milestones, and scrutinize the company's strategy for addressing hard-to-abate residual emissions through permanent removals rather than temporary offsets.

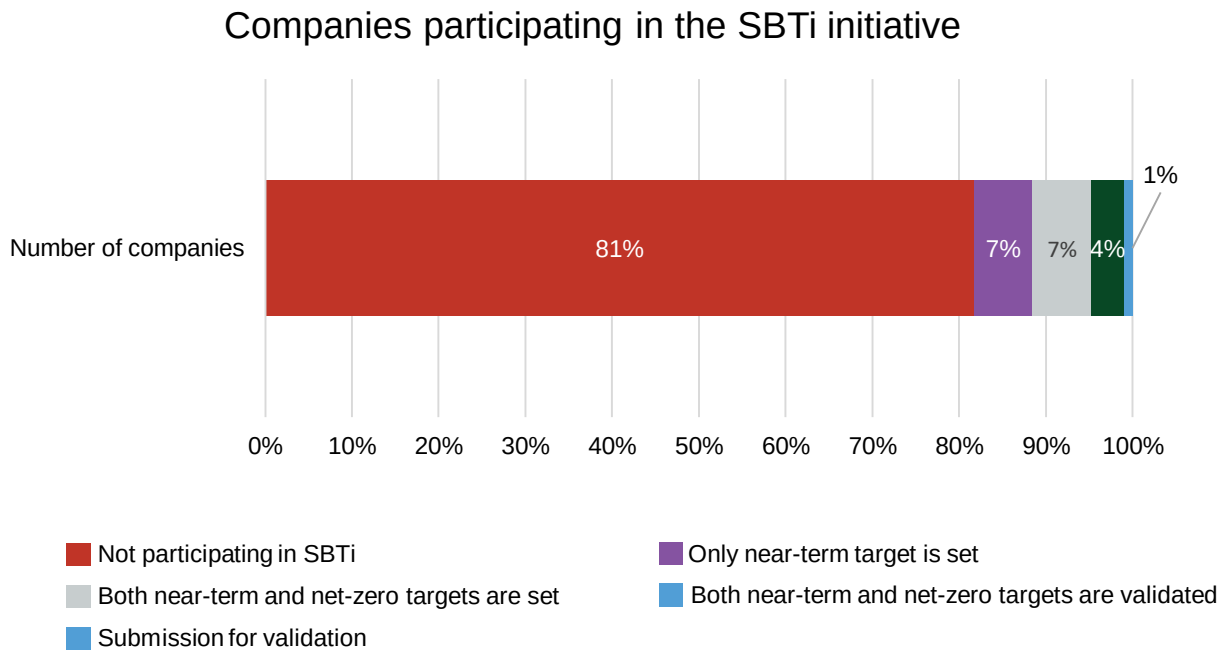
5. Are the companies participating in the Science Based Targets initiative (SBTi)? If YES, what is the current status of their commitment or validation? (cont'd)

SBTi participation is a key differentiator for corporate climate ambition, though overall adoption rate, at this time remains fairly low. The initiative provides a clear, verifiable framework for emissions reductions, and its uptake signals a company's commitment to aligning its business model with climate science.

Our findings show a spectrum of engagement, from companies with fully validated targets to those that have not yet engaged with the SBTi, highlighting varying levels of maturity in managing climate-related risks and opportunities.

Key findings

Only 19% (i.e., around 20) companies have joined the SBTi. Among these participating companies, the commitment levels vary: 7% have established solely near-term targets, while an additional 7% have set both near-term and net-zero targets. Conversely, among the remaining 81% companies that have not joined SBTi, it is noteworthy that three have been formally removed from the SBTi target dashboard, indicating a retraction of their initial climate commitments, at least on this platform.



Observations and recommendations

Adhering to/ obtaining validation from widely-accepted international benchmarks adds a level of credibility and objectivity to a company's emission reduction commitments. The current landscape underscores a significant opportunity to broaden and deepen corporate climate ambition within the large-cap segment.

6. Do the companies state a baseline year or years for emission reductions comparisons? If YES, do they indicate the rationale for selecting that year/ those years?

In our analysis, we noted that the practice of stating a baseline year for emission reductions is common, but the companies' disclosure levels were applied inconsistently. While a majority of companies with climate targets define a baseline year, most fail to provide a clear underlying rationale for its selection. This lack of transparency surrounding baseline justification presents a challenge for accurately assessing and comparing the ambition and integrity of corporate climate targets across the index.

Key findings

Prevalence of a stated baseline year:

There are 77 companies (73% of the LargeCap Index) have publicly stated a baseline year for their reduction goals. The most frequently selected years are 2019, 2020, and 2021, often chosen as they represent a pre-COVID operational baseline or a year with robust data availability. Companies with more than one segment, or with some holding companies, or with different carbon emission activities might select more than one baseline year.

On the other hand, the remaining 28 companies (27% of the LargeCap Index) have not disclosed a specific baseline year. Their targets often rely on intensity metrics (e.g., emissions per unit of revenue) without an absolute baseline or are stated as vague commitments without a clear starting point.

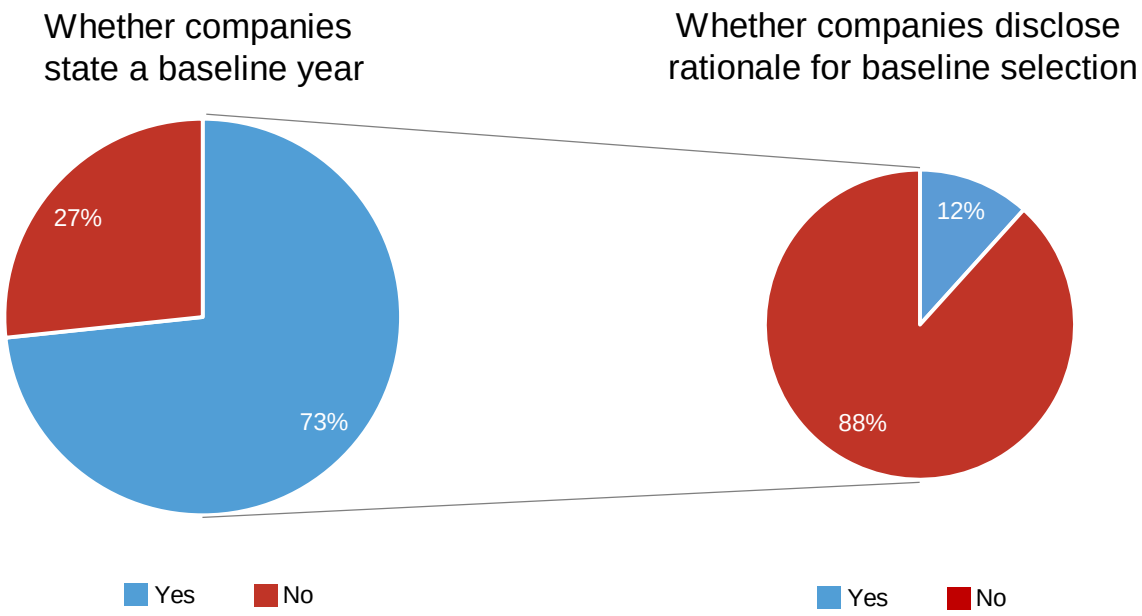
Rationale for baseline selection*:*

Among the companies that have stated a baseline year, our analysis found:

- Only 9 companies (i.e., 12%) clearly explain the reasoning behind their chosen baseline. Common justifications for the year selected include:
  - More representative of a year that was not impacted by the COVID-19 pandemic.
  - Serving as the starting point for both the decomposition of dual carbon goals and data inventory.
  - The date an ESG Committee was established.

The remaining 68 companies simply state a baseline year without any accompanying explanation for the choice. This omission creates ambiguity, and could raise questions about possible "baseline cherry-picking" to make reduction targets appear better than they are and easier to achieve.

6. Do the companies state a baseline year or years for emission reductions comparisons? If YES, do they indicate the rationale for selecting that year/ those years? (cont'd)



Observations and recommendations

Investors and analysts should consider treating the presence of a clearly-explained and well-justified baseline year as a key indicator of a more robust and credible climate target.

For companies that have stated a baseline with a rationale, engagement should focus on tracking performance against that baseline and understanding any recalculations made due to structural changes (e.g., mergers, acquisitions).

For companies that have stated a baseline without a rationale, engagement may seek clarification from the sustainability or investor relations team on the reasoning for the selection. The goal is to encourage greater transparency and ensure that the baseline represents a fair and reasonably ambitious starting point.

For companies with no stated baseline for their emissions reductions, this should be flagged as a fundamental data gap. The primary engagement ask should be to establish and publicly disclose a baseline year with a clear justification, as this should be a non-negotiable foundation for any measurable and accountable emissions reduction trajectory.

7. Do the companies engage an external assurer to verify their emissions data? If YES, is the assurer (i) the company's financial auditor, (ii) another CPA firm or (iii) a different independent consultant?

Prevalence of external assurance

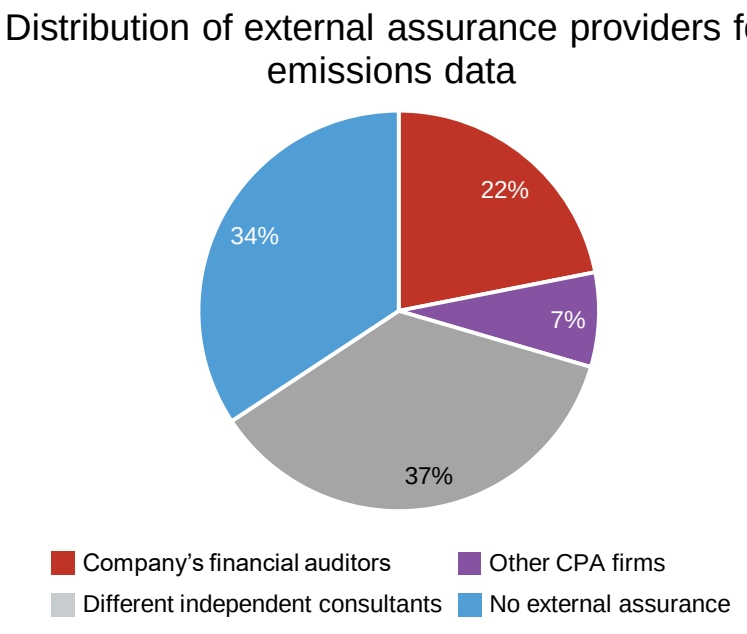
69 companies (around 66% of the companies studied) engaged external assurers to verify some or all of their reported emissions data. This practice is the most common among companies in high-impact sectors and those with more mature sustainability programmes.

Meanwhile, the remaining 36 companies (34%) currently disclose emissions data without any external, third-party verification. This reliance on unaudited self-reported data presents a higher degree of reporting risk and reduces the reliability of their disclosures for stakeholders.

Breakdown of assurance providers

Among the 69 companies that have obtained external assurance, the provider landscape is distributed as follows:

- **The company's financial auditors:** 23 companies (i.e. 22% of the companies studied and 33% of those obtaining external assurance). This mainly involves the "Big Four" accounting firms leveraging their existing audit relationship. The primary advantage is their global reach and familiarity with the company's financial controls, which can be extended to environmental data. Such firms will also tend to have separate ESG expertise within their ranks, which the financial auditors can tap into.
- **Other CPA firms**: 8 companies (i.e., 7% of the companies studied and around 12% of those with assurance). This includes "Big Four" accounting firms that are not the relevant company's financial statement auditor. Companies may choose this path to avoid the perception of any conflicts of interest or to seek a specialist team within a different accounting network..
- **Different independent consultants**: 38 companies (i.e. 37% of all companies and 55% of those with assurance). This category consists of specialized environmental, engineering, and sustainability consulting firms. These providers may bring specific technical expertise in emissions quantification methodologies and lifecycle assessment.



7. Do the companies engage an external assurer to verify their emissions data? If YES, is the assurer (i) the company's financial auditor, (ii) another CPA firm or (iii) a different independent consultant? (cont'd)

Observations and recommendations

Investors should consider the merits of moving from a situation of voluntary, unassured reporting to making clear their expectation for externally-assured emissions data as a core component of their engagement.

For companies with no external assurance, the primary engagement ask should be to commit to obtaining limited assurance for their Scopes 1 and 2 emissions within a defined timeline (e.g., by the next reporting cycle). Companies themselves should also consider the merits of doing so. This is a critical first step in enhancing data credibility.

8. If the companies engage an external assurer, does the scope of the assurance include Scope 3 emissions data?

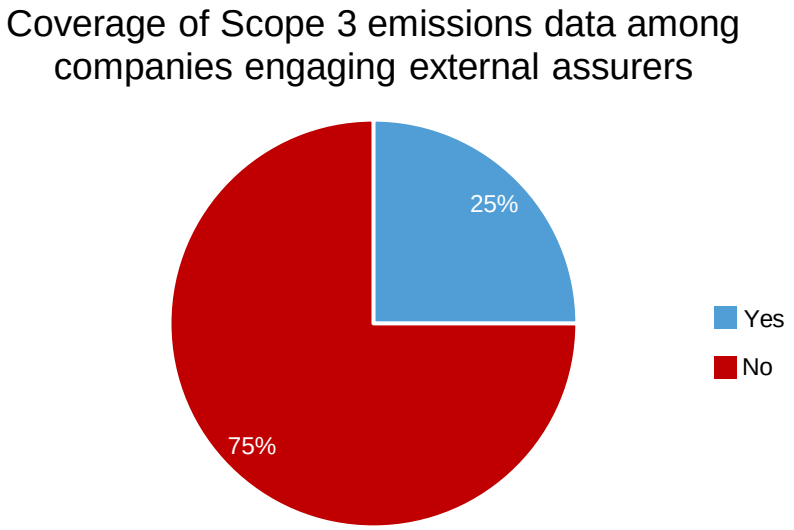
Among companies that engaged external assurers for their emissions data, obtaining verification of Scope 3 emissions is a distinctly minority practice. While assurance on Scopes 1 and 2 data is becoming more common, the external validation of Scope 3 inventory is a leading-edge indicator of data maturity and commitment to transparency. Our analysis finds that most companies providing assured Scope 3 data are those in sectors where value chain emissions are critically material and they have already undertaken significant work to map and quantify their Scope 3 footprint.

Key findings

Assurance of Scope 3 data:

There are 17 companies (25% of the companies with external assurance) that have extended the assurance engagement to include select Scope 3 categories. Some assurance is performed on a limited basis only and often focuses on the one or two most significant categories.

In the meantime, 52 companies (75% of the companies with external assurance) have limited their external verification solely to Scope 1 and 2 emissions. Any Scope 3 data remains self-declared and unverified, potentially, representing a significant gap in the overall reliability of their emissions reporting.



8. If the companies engage an external assurer, does the scope of the assurance include Scope 3 emissions data? (cont'd)

Observations and recommendations

Investors should regard the assurance of Scope 3 data as a key differentiator for assessing the sophistication of a company's climate governance.

For all companies with material Scope 3 emissions, the long-term goal should be the external verification of this data. The engagement ask should be for the company to publish a roadmap that includes a timeline for beginning limited assurance of its priority Scope 3 categories.

For companies that already assure Scope 1 and 2, the immediate next step is to encourage them to pilot the assurance of their most significant Scope 3 category within a definite timeframe.

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