NEW CLIMATE INSTITUTE

CARBON MARKET WATCH

Corporate Climate Responsibility Monitor 2025

ASSESSING THE TRANSPARENCY, INTEGRITY AND PROGRESS OF CORPORATE CLIMATE STRATEGIES

July 2025

Authors
Frederic Hans, Sybrig Smit, Thomas Day, Silke Mooldijk, Eve Fraser, Saskia Straub, Nabila Putri Salsabila, Louise Bammel

Contributions (in alphabetical order)

Juliette de Grandpré, Takeshi Kuramochi, Niklas Höhne, Sarah Richman, Carsten Warnecke

Design
Quentin Geluyckens, Curious Cowboy SRL – www.curiouscowboy.com
Photographies by Joel Filipe (Unsplash), Marek Studzinski (Unsplash) Dawid Zawila (Unsplash), Maximalfocus (Unsplash), Christopher Burns (Unsplash), Lampos Aritonang (Unsplash), Alex Kolodziej (Unsplash).

Editing
Hyunju (Laeticia) Ock

Communications
Lena Stüdeli, Nick Hay

Disclaimer

The *Corporate Climate Responsibility Monitor* presents the authors' independent analysis and interpretations based on information that is publicly available and self-reported by the companies assessed and third-party analyses. The authors did not independently verify, audit, or validate the accuracy or completeness of the information provided by the companies. Due to the potential for fragmentation, inconsistency, or ambiguity in the companies' disclosures, the authors cannot guarantee the factual accuracy or completeness of the information presented in this report.

Accordingly, neither the authors nor NewClimate Institute make any representations or warranties, express or implied, regarding the accuracy, completeness, or reliability of any information contained herein. The authors and NewClimate Institute expressly disclaim any and all liability for any errors, omissions, or misrepresentations in the information provided by the assessed companies, as well as for any claims, losses, or damages arising directly or indirectly from the use, reference to, or reliance on this report by the companies assessed or any other party.

The inclusion or assessment of any company in this report does not imply any statement regarding its legal compliance, business practices, or performance. This report is intended for informational and research purposes only.

Acknowledgement
This document was prepared in collaboration with Carbon Market Watch.

Suggested citation
NewClimate Institute (2025) *Corporate Climate Responsibility Monitor 2025: Assessing the transparency, integrity and progress of corporate climate strategies.* Berlin and Cologne, Germany: NewClimate Institute.

↓ Download the report: *http://newclimate.org/publications/*

NEW CLIMATE INSTITUTE

CARBON MARKET WATCH

Table of contents

About the Corporate Climate Responsibility Monitor

The need for scrutiny on corporate climate action

Many companies are putting themselves at the forefront of climate action. Corporate climate pledge-setting is becoming standard practice: as of May 2025, over 9,000 companies had joined the UNFCCC's Race to Zero campaign (UNFCCC, 2025), including many of the world's largest companies.

Civil society's increasing concern with climate change is resulting in more pressure from consumers, shareholders and regulators for companies to decarbonise. In parallel, companies realise that the direction of travel is set for the decarbonisation of the global economy, and it is increasingly attractive for them to assume a leading role in that new paradigm. Many companies are seeking innovative approaches and narratives to demonstrate their climate leadership. However, the rapid acceleration of setting corporate climate pledges, combined with the fragmentation of approaches and the general lack of regulation or oversight, makes it difficult to distinguish genuine climate leadership from unsubstantiated greenwashing.

The goalpost of what constitutes good practice climate action for companies has shifted with the increasingly clear scientific evidence that underpins the urgency of the climate crisis. With the objectives of the Paris Agreement, greenhouse gas emissions need to be reduced rapidly in all countries and in all sectors. The 1.5°C temperature limit requires a reduction in global greenhouse gases by 43% and CO_2 emissions by 48% from 2019 levels by 2030, to reach a state of net-zero global CO_2 emissions by around 2050, net-zero emissions of all greenhouse gases by around 2070, and net-negative emissions thereafter (IPCC, 2022).

Company actions that were considered viable only five years ago are often far from sufficient according to the current state of knowledge. For example, it is no longer sufficient for companies to only address their own direct emissions; rather, companies need to address upstream and downstream emissions as well. It is no longer good practice for a company to offset emissions by reducing or removing emissions elsewhere; rather, emission reductions and removals 'elsewhere' need to be enhanced *in parallel* to the company's emission reductions.

The difficulty of distinguishing real climate leadership from greenwashing is a key challenge that, where addressed, could unlock greater global climate mitigation. Corporate climate action is key to closing the emissions gap to a 1.5°C-aligned emissions pathway. In a short space of time, and in the absence of sufficient top-down regulation, consumers' and shareholders' expectations have become a major driver for enhanced corporate climate action. Companies appear to be responding. To strengthen this vital bottom-up pressure, it is essential that the credibility of companies' strategies is transparent and can be understood by their target audiences.

The Corporate Climate Responsibility Monitor

The *Corporate Climate Responsibility Monitor* evaluates the transparency and integrity of companies' climate pledges with the following objectives:

- **Identify and highlight good practice approaches** that can be replicated by others, recognising that companies are experimenting to work out what constructive and credible practices are.
- **Evaluate the transparency and integrity of major companies' climate leadership claims** and provide a structured methodology for others to replicate such an evaluation. **Transparency** refers to the extent to which a company publicly discloses the information necessary to fully understand the integrity of that company's approaches towards the various elements of corporate climate responsibility. **Integrity**, in this context, is a measure of the quality, credibility and comprehensiveness of those approaches.
- **Highlight opportunities for enhancing the corporate climate accountability system** based on emerging good practices and issues that we observe.

The *Corporate Climate Responsibility Monitor* focuses on four main areas of corporate climate action: tracking and disclosure of emissions (methodology section 1), setting emission reduction targets (methodology section 2), implementing key sectoral transitions (methodology section 3) and taking responsibility for ongoing emissions and scaling up durable removals (methodology section 4). Evaluations of 20 major global companies are set out in *Section B* of this report. *Section A* analyses aggregate trends drawing on up to 55 detailed company assessments, which includes the companies assessed in *Section B* of this report, as well as those covered in the 2022 and 2023 CCRM iterations.

The *Corporate Climate Responsibility Monitor* is prepared by **NewClimate Institute**, with support from **Carbon Market Watch**. The consortium partners combine years of experience with the independent critical analysis of corporate climate action and carbon market mechanisms. NewClimate Institute and Carbon Market Watch are both not-for-profit organisations. Neither institution holds private commercial interests in voluntary carbon credit markets.

Development of the Corporate Climate Responsibility Monitor

The *Corporate Climate Responsibility Monitor* follows the guiding principles for good practice corporate climate responsibility outlined in the accompanying methodology document: *Corporate Climate Responsibility. Guidance and assessment criteria for good practice on corporate climate strategies. Version 5.0, June 2025* (NewClimate Institute, 2025a). We have drawn these guiding principles from a combination of scientific literature review, previous work by the authors, and the identification of existing good practices from company case studies. These guiding principles address issues where the state of scientific knowledge and debate are rapidly evolving. The views expressed in this document reflect the perspectives of the authors, based on our interpretation of existing research and current developments. While these views may not be universally held, we note that version 5.0 of the methodology in 2025 is very closely aligned with the converging guidance of other major initiatives including the UN High Level Expert Group on Net Zero Targets and the ISO Net Zero Guidelines on net zero targets *(see Table 1.1)*.

The *Corporate Climate Responsibility Monitor* promotes transparency with the philosophy that consumers, shareholders, regulators, and civil society organisations (CSOs) should be able to follow and assess the integrity of companies' claims. Accordingly, the company assessments in *Section B* are solely based on publicly available information that the authors were able to identify *(see Annex on 'Data Sources' in NewClimate Institute, 2025a for a detailled explanation)*. Each rating represents the authors' understanding of the publicly available information. In some cases, company information was scattered across different sources (e.g. annual reports, press releases and statements, webpages or other marketing materials); it is possible that information may have been misinterpreted or that relevant information was overlooked during this process. Companies should consider how to present information as transparently as possible to ensure that observers are able to access all relevant information necessary to understand their climate strategies.

We assess companies primarily based on self-reported information. We do not verify or certify the accuracy of the information provided by companies, including their greenhouse gas (GHG) emission reporting. In specific cases, we supplement the self-reported information with data from other sources, but we cannot guarantee the accuracy of that information.

→ *see also the assessment methodology for the Corporate Climate Responsibility Monitor. Corporate Climate Responsibility. Guidance and assessment criteria for good practice on corporate climate strategies. Version 5.0, June 2025 (NewClimate Institute, 2025a).*

Good practice overview

Corporates looking to take a position of climate leadership can learn from each other to replicate good practice approaches that are transparent, constructive and robust. The *Corporate Climate Responsibility Monitor* assesses major global companies to draw out good practice in four key areas:

- **Tracking and disclosure of emissions:** To develop a comprehensive and robust climate strategy, it is essential that companies understand and are transparent about their GHG emissions footprints and their trajectories.
- **Setting specific and substantiated targets:** Companies' headline pledges to fight climate change encompass a broad range of target-setting approaches. Regardless of the type of target and the terminology used, the commitments should send a clear signal for immediate action to decarbonise the value chain and should avoid misleading consumers, shareholders, observers and regulators.
- **Implementing key sectoral transitions:** Sector-specific transitions toward deep emission reductions form the backbone of ambitious corporate climate targets.
- **Responsibility for ongoing emissions and scaling up durable removals:** Corporate climate leadership includes not only ambitious target-setting but also taking responsibility for ongoing emissions and scaling up durable carbon dioxide removals.

Figure 1.1 provides an overview of good practice corporate climate responsibility and our rating methodology for each of these four areas. *Table 1.1* demonstrates the alignment of this methodology with four major standards and initiatives.

Figure 1.1: Overview of Corporate Climate Responsibility Monitor assessment methodology

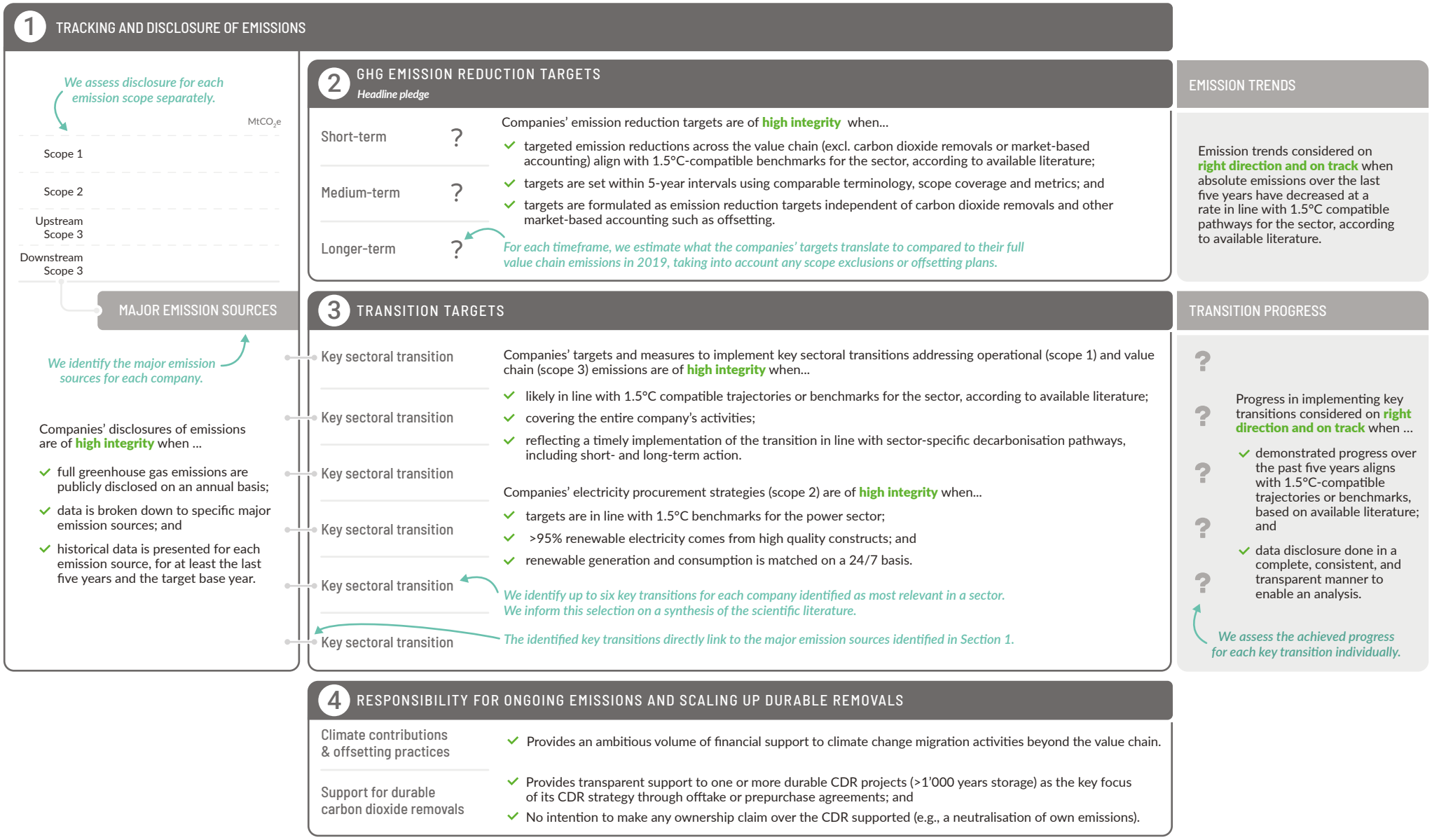


Table 1.1: Comparison of the Corporate Climate Responsibility Monitor (v5.0) methodology (NewClimate Institute, 2025a) with four other voluntary standards and guidelines. Adapted from Net Zero Tracker (2023, 2025a).

	CCRM *(NewClimate Institute, 2025b, v5.0)*	How does the CCRM align with other standards?	UN Expert Group *(UN HLEG, 2023)*	ISO Net Zero Guidelines *(ISO, 2022)*	SBTi Net Zero Standard *(SBTi, 2023a, v1.2)*	Assessing Transition Plans Collective guidance *(ATP-CoI, 2024)*
CCRM METHODOLOGY COMPONENT 2: SETTING SPECIFIC AND SUBSTANTIATED TARGETS						
Coverage of all emission scopes along the value chain (scopes 1, 2 and 3)	Yes	Fully aligned with HLEG, ISO & RtZ	Yes	Yes	Partially	Yes
Net-zero target						
Minimum reduction for 'credible net zero' terminology	>90% for all sectors	Fully aligned	Not specified	>90% for all sectors >72% for FLAG sector	>90% for all sectors >72% for FLAG sector	Not specified
Requirement to comply with 1.5°C-aligned decarbonisation milestones	Yes	Aligned but going beyond other standards	Not specified	Yes	Yes	Yes
2030 target(s)						
Five-year intervals for interim targets	Yes	Fully aligned	Yes	Yes	Partially	Yes
Requirement to comply with 1.5°C-aligned decarbonisation milestones	Yes	Aligned but going beyond other standards	Not specified	Not specified	Yes	Yes
Offsetting to achieve interim targets	Not allowed	Fully aligned	Not allowed	Not allowed	Not allowed	Not allowed
CCRM METHODOLOGY COMPONENT 3: EMISSION REDUCTION MEASURES						
Specific requirements for addressing key sectoral transition and mitigation areas	Yes	Going beyond	Partially	Partially	Not specified	Partially
Fossil fuel phase-out	Required	Fully aligned	Required	Required	Not specified	Yes
Additionality and hourly matching criteria for renewable electricity procurement	Required	Fully aligned with ISO	Not specified	Recommended	Not specified	Indirectly
CCRM METHODOLOGY COMPONENT 4: RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS						
Climate contributions (beyond-value-chain mitigation)	Required	Aligned but going beyond SBTi	Not specified	Not specified	Recommended	Not specified
Approach to scaling up durable removals						
Requirement to scale up durable removals in the short-term	Yes	Going beyond	Partially	Partially	Partially	No
Definition of durability	Yes	Going beyond	No	Yes	No	No
Ownership or neutralisation claims	Not recommended	Going beyond	Recommended	Recommended	Recommended	Allowed

SECTION A:
TRENDS IN CORPORATE CLIMATE RESPONSIBILITY

The 2025 *Corporate Climate Responsibility Monitor* (CCRM) analyses the climate strategies of 55 major global companies, critically assessing the extent to which they demonstrate corporate climate leadership. *Section 1* explores how persistent structural obstacles undermine the transparency and integrity of greenhouse gas (GHG) emission reduction targets, which currently fall short of driving meaningful emission reductions. It also outlines how transition-specific target-setting approaches can complement GHG targets to better incentivise sectoral decarbonisation. In *section 2*, we examine the evolving role of voluntary governance frameworks in 2025, particularly in the continued absence of legally-binding climate regulation across most jurisdictions.

Section A of this report includes references to different company sample sizes:

- **20 companies:** The 2025 CCRM includes in-depth analyses of 20 companies across four focus sectors: food and agriculture, tech, fashion and automotive manufacturers (Section B).
- **55 companies:** For our aggregated analysis in Section A, we have also updated our assessments for all other 35 companies covered in the 2022, 2023 and 2024 iterations of the CCRM. The 55 companies reported combined revenues of USD 6.46 trillion in 2023. Their total self-reported GHG emissions footprint in 2019, including upstream and downstream emissions (scope 3) that may include a marginal degree of overlap, amounts to approximately 8.0 $GtCO_2e$. This is equivalent to roughly 15% of global GHG emissions in 2019.

Five years into the critical decade for climate action: key takeaways from the CCRM 2025

1. Since 2022, the annual *Corporate Climate Responsibility Monitor* (CCRM) has assessed the climate strategies of 55 of the world's largest multinational companies. Over four editions, we have seen encouraging signs of **growing awareness among companies and voluntary standard setters about the key components of credible corporate climate strategies** – a positive and necessary development.

2. Yet halfway into the crucial decade for climate action leading up to 2030, the findings of CCRM 2025 show that **none of the 20 companies assessed demonstrates a climate strategy of '*reasonable*' or even '*high*' integrity** *(see Figure 1.1)*. Only a few frontrunners – such as H&M Group, Stellantis and Apple – are assessed as having '*moderate*' integrity for having made early progress by increasingly adopting more robust strategies and piloting high-integrity approaches to support sector-wide transitions toward (net) zero emissions.

3. In previous editions, our analysis primarily focused on evaluating the ambition and credibility of companies' greenhouse gas (GHG) emission reduction targets – long considered the centrepiece of corporate climate action. However, persistent structural obstacles such as **incomplete emissions disclosure and sector-specific accounting malpractices** now make it increasingly difficult to understand what these targets really mean and to assess progress toward achieving them *(see Sections 1.1 and 1.2)*. This challenge is particularly acute in sectors like technology, food and agriculture and automotive, where the credibility and feasibility of 2030 emission reduction targets are increasingly unclear. With only five years remaining, this points to increasing evidence that **GHG emission reduction targets alone are no longer fit for purpose**.

4. In light of these challenges, accelerating corporate emissions reductions will require complementing GHG emission reduction targets with **transition-specific alignment targets** – metrics that directly reflect a company's progress on critical decarbonisation milestones within its sector. For the first time, the CCRM 2025 applies a sector-specific framework to assess both targets and progress on key transitions. Although implementation remains incomplete across all major sectoral transitions, some early examples of companies setting such **alignment targets offer valuable blueprints that other companies can replicate to accelerate short-term climate action** *(see Section 1.3)*. Corporate climate accountability initiatives can play a vital role by more systematically encouraging companies to adopt these transition-specific alignment targets and the measures needed to meet them – thereby helping accelerate progress towards emission reduction goals in both the short and long term.

5. The next few years are especially critical, as the **corporate accountability system has entered an important transition phase**. Major revisions to key voluntary standards – including the Science Based Targets initiative (SBTi)'s Corporate Net-Zero Standard, the Greenhouse Gas Protocol (GHG-P) and the newly developed International Organization for Standardization (ISO) Net Zero Standard – are expected by mid-2026 *(see Section 2)*. These revisions will shape the corporate climate accountability system for the next decade and may lay the foundation for future national and international regulation. Addressing the current limitations of these standards, and strengthening them, will be essential to ensure credible and effective corporate climate action.

Table 1.2: Overview of companies assessed in the Corporate Climate Responsibility Monitor 2025

(companies are listed alphabetically within each integrity and transparency rating category)

HIGH INTEGRITY	SECTOR	HEADLINE PLEDGE	TRANSPARENCY	INTEGRITY
No companies achieved a high integrity rating				

REASONABLE INTEGRITY	SECTOR	HEADLINE PLEDGE	TRANSPARENCY	INTEGRITY
No companies achieved a reasonable integrity rating				

MODERATE INTEGRITY	SECTOR	HEADLINE PLEDGE	TRANSPARENCY	INTEGRITY
H&M Group	Fashion	Net zero by 2040		
Inditex	Fashion	Net zero by 2040		
Stellantis	Automobiles	Carbon net zero by 2038		
adidas	Fashion	Net zero by 2050		
Google	Tech	Net zero by 2030		
Apple	Tech	Carbon neutral by 2030		
Danone	Agrifood	Net zero by 2050		

LOW INTEGRITY	SECTOR	HEADLINE PLEDGE	TRANSPARENCY	INTEGRITY
Ford	Automobiles	Carbon neutral by 2050		
lululemon	Fashion	Net zero by 2050		
Mars	Agrifood	Net zero by 2050		
Microsoft	Tech	Carbon negative by 2030		
Amazon	Tech	Net zero by 2040		
GM	Automobiles	Carbon neutral by 2040		
Meta	Tech	Net zero by 2030		
Nestle	Agrifood	Net zero by 2050		
Volkswagen	Automobiles	Net zero by 2050		

VERY LOW INTEGRITY	SECTOR	HEADLINE PLEDGE	TRANSPARENCY	INTEGRITY
Pepsico	Agrifood	Net zero by 2040		
Shein	Fashion	Net zero by 2050		
Toyota	Automobiles	Carbon neutral by 2050		
JBS	Agrifood	Net zero by 2040		

5-point scale High | Reasonable | Moderate | Poor | Very low . **See individual company analyses.**

Assessments were made based on public information identified by the authors. A poor rating may not necessarily be an indication that a company's climate strategy is weak, but could also indicate that the information was insufficient to confirm good practice. Ambitious companies can improve their ratings by ensuring that all aspects of their climate responsibility strategies are transparently and accurately disclosed, and in the public domain.

1 Halfway through the critical decade for climate action: 2030 emission targets critically undermined by structural obstacles, and the promise of emerging good practices

1.1 2030 emission reduction targets increasingly unfit for purpose

The world has reached the midpoint of the crucial decade for climate action, with the window rapidly closing to stay on track for limiting global warming to 1.5°C. To stand a reasonable chance of meeting this goal, global GHG and CO_2 emissions must decrease by around 43% and 48%, respectively, between 2019 and 2030, and by 84% and 99% by 2050 (IPCC, 2022). Against this backdrop, the CCRM 2025 analysis shows that emission reduction targets alone are increasingly unfit for purpose to guide companies in delivering meaningful sectoral transitions and emissions reductions – particularly in sectors with large scope 3 emissions, where target-setting and validation are more complex. Current validation practices fall short of addressing key limitations and structural obstacles that undermine the effectiveness of these targets.

The collective ambition of companies' 2030 emission reduction targets is becoming increasingly unclear, with only five years remaining in the decade.

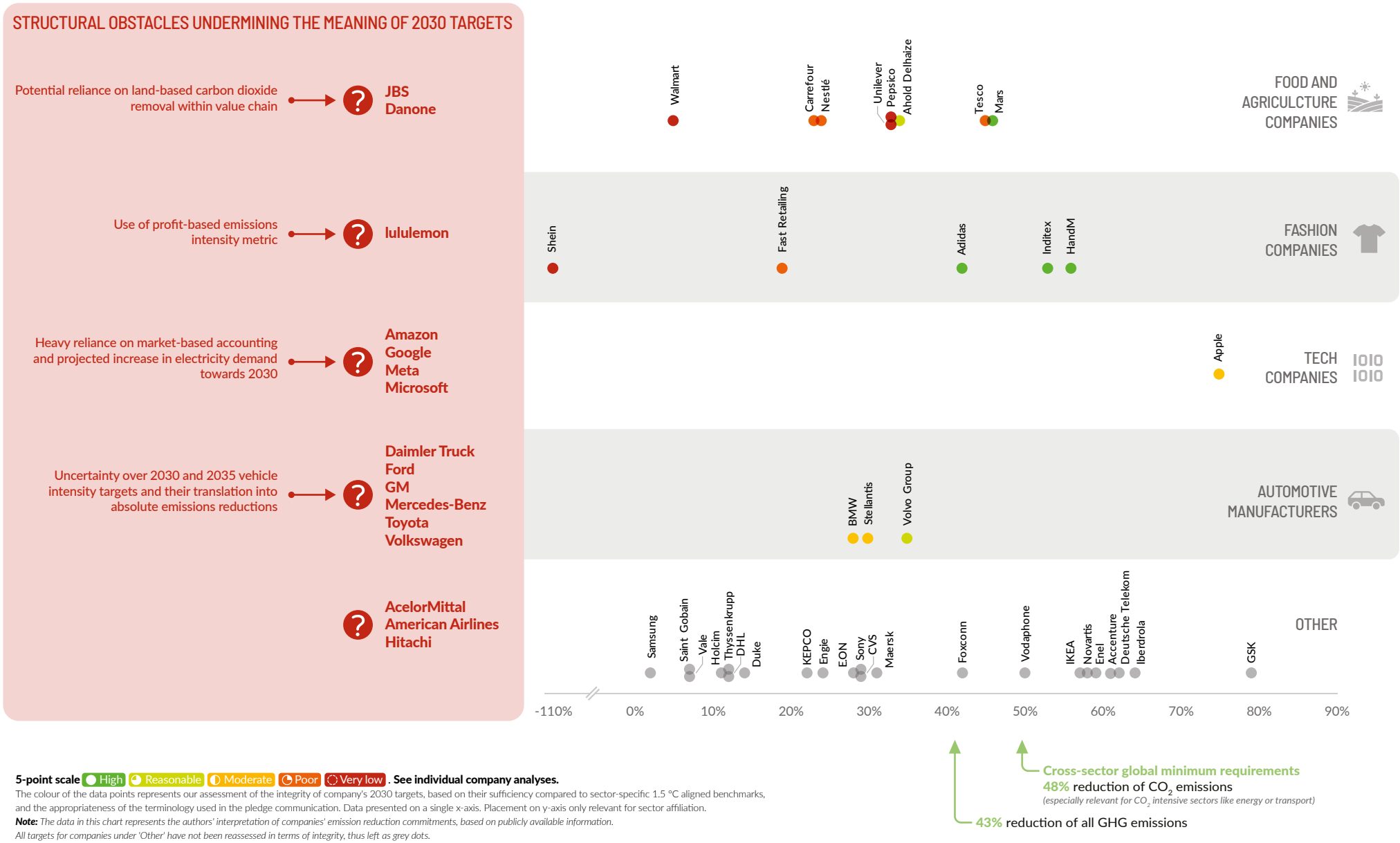
The 2030 target ambition for the 55 companies covered in our CCRM analyses between 2022–2025 becomes increasingly unclear with just five years remaining in the decade. For around a third of companies (16 out of 55), we cannot determine the ambition of their 2030 value chain targets compared to a 2019 baseline *(see Figure 1.3)*. For around another quarter of the companies, the quantification of 2030 targets' ambition becomes increasingly uncertain due to the continued need for assumptions just five years before 2030. This is due to persistent structural obstacles – such as sector-specific accounting malpractices and incomplete emission disclosures *(see Section 1.2)* – which make it increasingly unclear what level of emissions reduction these companies intend to commit to over the next five years. As such, unlike in previous CCRM editions, we are unable to calculate a median reduction commitment for 2030. In last year's analysis, the companies' 2030 commitments translated to a median absolute emission reduction of 30–33% across the full value chain between 2019 and 2030 (NewClimate Institute, 2024, p. 17).

This highlights a key limitation of 2030 GHG emission reduction targets: while they offer a snapshot of ambition, they are increasingly insufficient to guide or assess meaningful sectoral transitions. Without sector-specific target setting and measures focused on key transitions, these headline emission reduction targets are increasingly unfit for driving the meaningful emissions reductions needed.

Despite the increasing uncertainty about the level of companies' individual and collective ambition, our analysis finds no indication of wider *backtracking* across the company sample compared to previous years, for example through actively removing or watering down their emission reduction targets. Several of the 55 companies across different sectors have improved their 2030 targets over the past 12 months. For example, the automobile manufacturer **Stellantis** set an absolute emissions reduction target along the entire value chain for the first time, which we rate as having 'moderate' integrity. Likewise, **adidas**, **H&M Group**, and **Inditex** have all improved their absolute 2030 emission reduction targets over the past two years, all assessed as having 'high' integrity. For all these companies, the critical question remains *how* they will indeed achieve their targets within the next five years.

Figure 1.2: Structural obstacles undermine the meaning of 2030 emission reduction targets five years into the critical decade for climate action

This chart shows the proportion of full value chain GHG emissions that companies commit to reduce between 2019 and 2030.
Data includes 55 companies. 16 companies without clear commitments for 2030 are not included.



5-point scale High | Reasonable | Moderate | Poor | Very low **. See individual company analyses.**
The colour of the data points represents our assessment of the integrity of company's 2030 targets, based on their sufficiency compared to sector-specific 1.5 °C aligned benchmarks, and the appropriateness of the terminology used in the pledge communication. Data presented on a single x-axis. Placement on y-axis only relevant for sector affiliation.
Note: *The data in this chart represents the authors' interpretation of companies' emission reduction commitments, based on publicly available information.*
All targets for companies under 'Other' have not been reassessed in terms of integrity, thus left as grey dots.

Current assessments and validations of companies' 2030 emission reduction targets fail to capture the growing uncertainty around what those targets truly mean.

Various assessment initiatives and organisations evaluate or validate corporate GHG emission reduction targets – among them the SBTi, the Transition Pathway Initiative, the MSCI Net Zero Tracker, Climate Arc and the Planet Tracker.

The comparison of assessments and validations of corporate climate targets, both for 2030 targets and longer-term net-zero targets, reveals notable differences in outcomes across the four focus sectors of the CCRM 2025 *(see Table 1.3)*. In the tech sector, for example, the SBTi and MSCI Net Zero Tracker assess most of these companies' targets as being aligned, or closely aligned, with a 1.5°C-compatible emission pathway *(see Annex 4-A for a full comparison of validations and assessments between these initiatives)*. However, the CCRM's analysis rates the integrity of four of the five tech companies' 2030 targets as 'unclear' or 'very poor'. Such differences are often driven by sector-specific methodological issues and a fundamental challenge for assessors and validators to stay up to date with evolving sectoral developments *(see Annexes 3-A, 4-A, 5-A and 6-A for more detailed overviews per sector)*.

These findings highlight the need for caution when interpreting and comparing the ambition and credibility of corporate climate targets. Stakeholders relying on these assessments – including investors, regulators, the judiciary and civil society – should carefully consider the differences among the initiatives and underlying methodological issues that influence assessment outcomes. At the same time, assessment initiatives and organisations should continuously improve their (sector-specific) methodologies, ensure transparency around critical assumptions (e.g. the use of carbon credits, carbon dioxide removals within the value chain or commodity environmental attribute certificates (EAC) to meet climate targets) and introduce regular review cycles for assessments or validations.

Table 1.3: Comparison between short-, medium- and long-term target integrity assessments by (1) the Corporate Climate Responsibility Monitor (CCRM) 2025, (2) the Science Based Targets initiative (SBTi), (3) the Transition Pathway Initiative, (4) the MSCI Net Zero Tracker, (5) the Transition Arc, and (5) the Planet Tracker; all as of June 2025. Companies listed in alphabetical order for each sector.

COMPANY	CCRM 2025				SBTi		TPI			MSCI*	WBA** via Transition Arc	Planet Tracker
	GHG Targets (Section 2)	Short-term (by 2030)	Medium-term (2031-2040)	Long-term (beyond 2041)	Near-term	Net zero	Carbon Performance Alignment 2027	Carbon Performance Alignment 2027	Carbon Performance Alignment 2027		Targets	Climate alignment
Key issues for difference in outcomes →					2030 target validations based on **methods discontinued by SBTi** and **exclusion of upstream scope 3 emissions**		2030 target validations based on methods discontinued by SBTi and exclusion of upstream scope 3 emissions			Lack of disclosure on method and data	n/a (beta version results)	
Ford	Very poor	Very poor	Very poor	Very poor	1.5°C/Well-below 2°C	Commitment removed	Not Aligned	National Pledges	1.5 Degrees	1,8°C	C	N/A
GM	Very poor	Very poor	Very poor	N/A	1.5°C/Well-below 2°C	Commitment removed	National Pledges	National Pledges	1.5 Degrees	2,2°C	D	N/A
Stellantis	Moderate	Moderate	Reasonable	N/A	N/A	N/A	National Pledges	Below 2 Degrees	1.5 Degrees	1,6°C	E	N/A
Toyota	Very poor	Very poor	Very poor	Very poor	1.5°C/Well-below 2°C	N/A	National Pledges	Below 2 Degrees	1.5 Degrees	2,0°C	D	N/A
Volkswagen	Poor	Poor	Very poor	Unclear	1.5°C/2°C	N/A	Not Aligned	National Pledges	1.5 Degrees	2,1°C	E	N/A
Key issues for difference in outcomes →					**Base year choice** and **allowance of profit-based emissions intensity target** in 2030 and net-zero target validations					Lack of disclosure on method and data		
adidas	Reasonable	High	Very poor	Reasonable	1.5°C	1.5°C	N/A	N/A	N/A	1.5°C	N/A	N/A
H&M Group	High	High	Reasonable	N/A	1.5°C	1.5°C	N/A	N/A	N/A	1.9°C	N/A	N/A
Inditex	High	High	Reasonable	N/A	1.5°C	1.5°C	N/A	N/A	N/A	1.8°C	N/A	N/A
lululemon	Poor	Poor	Very poor	Reasonable	1.5°C	1.5°C	N/A	N/A	N/A	1.7°C	N/A	N/A
Shein	Poor	Very poor	Very poor	Moderate	1.5°C	1.5°C	N/A	N/A	N/A	N/A	N/A	N/A
Key issues for difference in outcomes →					**Accounting for land-based removals in 2030 and net-zero target validations**		Accounting for land-based removals			Lack of disclosure on method and data		Lack of disclosure on method and data
Danone	Poor	Moderate	Very poor	Unclear	1.5°C	1.5°C	No or unsuitable disclosure	No or unsuitable disclosure	No or unsuitable disclosure	2.4°C	N/A	> 2°C
JBS	Very poor	Very poor	Very poor	Very poor	Commitment removed	Commitment removed	No or unsuitable disclosure	No or unsuitable disclosure	No or unsuitable disclosure	>3.2°C	N/A	N/A
Mars	Reasonable	High	Very poor	Reasonable	1.5°C	1.5°C	N/A	N/A	N/A	N/A	N/A	N/A
Nestlé	Poor	Poor	Very poor	Unclear	1.5°C	1.5°C	Below 2 Degrees	1.5 Degrees	1.5 Degrees	1.9°C	N/A	> 2°C
PepsiCo	Very poor	Unclear	Very poor	Unclear	1.5°C	Commited	N/A	N/A	N/A	1.7°C	N/A	> 2°C
Key issues for difference in outcomes →					**Allowance of market-based accounting, unspecified RE targets** and **outdated** 2030 target validations					Lack of disclosure on method and data		
Amazon	Very poor	Very poor	Very poor	Commitment removed	N/A	N/A	N/A	N/A	N/A	2.6°C	N/A	N/A
Apple	Moderate	Very poor	Reasonable	1.5°C	N/A	N/A	N/A	N/A	N/A	1.7°C	N/A	N/A
Google	Unclear	Very poor	Very poor	Commited	N/A	N/A	N/A	N/A	N/A	1.4°C	N/A	N/A
Meta	Very poor	Very poor	Very poor	1.5°C	Commited	N/A	N/A	N/A	N/A	1.3°C	N/A	N/A
Microsoft	Unclear	Very poor	Very poor	1.5°C	N/A	N/A	N/A	N/A	N/A	1.4°C	N/A	N/A

** The MSCI Net Zero Tracker discontinued the public disclosure on its website for single company evaluations in the first half of 2025. Evaluations presented date back to March 2025 before this change in policy.*

*** The Transition Arc assessments use analysis by the World Benchmarking Alliance (WBA) as a default option to assess the alignment of emissions targets. The user can further switch to use Transition Pathway Initiative's (TPI) assessments of 2027, 2035 and 2050.*

1.2 Structural obstacles undermining the integrity of corporate climate strategies

Over the course of the four editions of the CCRM since 2022, we have identified several structural obstacles that undermine the integrity of corporate climate strategies. Our 2025 analysis across four sectors confirms the persistence of three key obstacles: incomplete emissions disclosures, sector-specific accounting malpractices and a lack of transparency on progress in implementing key sectoral transitions. These obstacles make it increasingly difficult to interpret the ambition and track the progress of GHG emission reduction targets.

Emissions disclosures remain incomplete due to underreporting and inconsistent data over the last five years.

Transparent and complete disclosures of companies' value chain emissions – and their trajectories over time – are key to understanding companies' emissions footprint, their decarbonisation challenges ahead and the meaning of their emission reduction targets *(see section 1 in NewClimate Institute, 2025a for detailled explanations)*.

In line with our findings in previous years, emissions disclosures by the 20 companies analysed in the CCRM 2025 remain largely incomplete and inconsistent. This makes it difficult to track emissions trends over time, interpret targets set against historical base years and compare ambition levels across sectors. Among the companies assessed, only **H&M Group** and **lululemon** are assessed as having 'reasonable' integrity in their tracking and disclosure of emissions, with the other companies falling short in providing complete and consistent data.

In addition to these disclosure gaps, the inherent limitations of scope 3 accounting methodologies present a further challenge, as they are neither fully suitable nor originally designed to measure progress over time (Broekhoff and Gillenwater, 2024; NewClimate Institute, 2025b). As a result, our analysis cannot systematically determine the extent to which companies have reduced absolute emissions five years into this critical decade for climate action.

Some companies have made progress in improving emissions disclosures in recent years, despite persistent shortcomings across the broader corporate landscape. For example, for **Volkswagen** and **H&M Group**, as two of the six companies headquartered in the European Union (EU) and reporting for the first time under the EU's Corporate Sustainability Reporting Directive (CSRD), we acknowledge a general improvement in emission disclosure *(see Box 1.1)*. Across the entire sample of 20 companies analysed; however, we cannot draw meaningful conclusions on emission trends.

These findings raise serious concerns about the effectiveness of the current emissions accounting system. The quality of existing disclosures does not allow for a meaningful assessment of progress over time. This lack of clarity may particularly hinder stakeholders and corporate climate accountability initiatives such as the SBTi from meaningfully determining whether companies are on track to meet their climate targets.

Box 1.1: Early observations on the Corporate Sustainability Reporting Directive (CSRD) impact on climate-related corporate reporting

The European Union's Corporate Sustainability Reporting Directive (CSRD) requires companies to report according to the European Sustainability Reporting Standards (ESRS), which specifies climate strategy-related datapoints deemed materially relevant and therefore mandatory for disclosure (European Comission, 2025). These include, for example, annual emission disclosures and climate targets. As of 2025, large companies headquartered in the EU and subject to the Non-Financial Reporting Directive must comply with the CSRD reporting rules. Other companies, including large, small and medium-sized companies as well as non-EU companies, will be required to comply progressively through to 2029.

Six of the 20 companies analysed in the CCRM 2025 – all headquartered in the European Union – have published their annual sustainability reports in alignment with the CSRD (i.e. **adidas**, **Danone**, **H&M Group**, **Inditex**, **Volkswagen**, **Stellantis**). From this sample, we observe encouraging signs of improved transparency, greater data availability and enhanced report readability.

1. **Emerging shift in style and structure of sustainability reports, increasingly aligning with the format of corporate financial reporting:** The sustainability reports of the six companies analysed contain fewer pictures and fewer anecdotal examples of sustainability initiatives. Instead, they are more standardised and data-driven, reflecting the structured requirements of the ESRS. As a result, information tends to be organised consistently across reports, making comparisons easier. For example, **Inditex** explicitly discloses whether it currently uses carbon dioxide removals or carbon credits (Inditex, 2025, p. 362), leaving less room for (mis-)interpretation. This standardisation reduces ambiguity and enhances comparability between reports.
2. **More complete and nuanced emissions disclosure:** Several companies have published more detailed emissions data than in previous years, including breakdowns by emission categories, greater transparency on how emissions data is calculated and whether estimates are based on primary or secondary activity data. These examples include:
    - **Inditex** now discloses scope 3 emissions as absolute emissions numbers for each scope 3 category in its annual report (Inditex, 2025, p. 166). In 2023, it only disclosed scope 3 emissions as a percentage of total emissions. Moreover, for the first time, it discloses intended scope 1, 2 and 3 absolute emissions for the target years 2030 and 2040.
    - **Volkswagen**, for the first time, disclosed scope 3 emissions from its subsidiary Traton producing heavy-duty vehicles (Volkswagen, 2025, pp. 292–293), even if not yet reflected in the company's total aggregated emissions. These previously omitted emissions account for more than 343 $MtCO_2e$ in 2024, representing roughly 43% of total emissions.
3. **More comprehensive sustainability information:** Some of the six companies include more comprehensive information than in previous years, coinciding with new reporting requirements. In the fashion sector, for example, **adidas**, **Inditex** and **H&M Group** for the first time disclosed data on the volume or weight of material use for both textile products and packaging, representing critical data for assessing fashion companies' progress on circularity.
4. **Improvements in target setting:** Coinciding with the first-time reporting of the CSRD, we also identify several improvements in target setting. For example, **Stellantis** set an absolute emission reduction targets for 2030 for the first time (30% below 2021 levels across the entire value chain), complementing its various scope-specific (intensity) targets. While we cannot assume a causal relationship between these improvements and CSRD reporting, the increased transparency and consistency in reporting make it easier to identify such improvements.

Our early observations based on six companies' sustainability reports in 2024 are supported by broader research on CSRD-aligned reporting (Hombach *et al.*, 2025), which found improvements in harmonised and consistent reporting across key metrics and companies. Based on this early evidence, the introduction of the CSRD marks a significant step toward increased corporate accountability by enhancing transparency and enabling more consistent, comparable data, thereby empowering key stakeholders such as researchers, civil society organisations and consumers to conduct more effective analyses and scrutiny of corporate climate strategies.

Emissions accounting malpractices persist at the sector level.

Problematic GHG emissions accounting practices specific to each sector highlighted in previous CCRM editions have become more prevalent in some sectors, as evidenced by recent corporate climate strategies. These practices obscure the real meaning of emission reduction targets and how companies intend to achieve them within the remaining five years to 2030. In the 2025 edition of the CCRM, we identify the following key issues across four focus sectors:

Food and agriculture

Agrifood companies increasingly rely on undefined amounts of non-durable land-based carbon dioxide removals (CDR) to meet their emission reduction targets *(see section 3 for further explanations)*. This aggregation of such removals with emission reductions is scientifically inaccurate and appears to be obscuring the lack of action on key emission sources and non-CO_2 greenhouse gases. In addition, some companies are prematurely using so-called commodity Environmental Attribute Certificates (EACs) – which lack physical traceability – to claim that the ingredients they are sourcing are 'deforestation-free' or 'responsibly sourced' *(see Box 3.2 in section 3)*. However, there is significant uncertainty about the meaning and credibility of these claims in reducing deforestation and promoting sustainable farming practices.

Tech

Tech companies increasingly rely on outdated and potentially misleading market-based accounting for their scope 2 and scope 3 emission targets. These market-based accounting approaches allow companies to claim a reduction in GHG emissions even when their actual, location-based emissions may not decrease at all. The quality of actions that can be taken under market-based accounting is so variable that this accounting approach fails to differentiate between highly ambitious renewable energy procurement strategies – those that meaningfully support the transition of the energy sector – and the mere purchase of standalone renewable energy certificates (RECs) that often lack real climate benefits. The integrity of target setting by tech companies thus critically depends on the extent to which they apply criteria that go beyond the requirements of current market-based accounting methodologies. Those include pursuing high-integrity hourly and local matching of renewable electricity, as well as avoiding reliance on non-renewable technologies like fossil fuel generation with carbon capture and storage (CCS).

Fashion

Similar to the tech companies, fashion companies rely on outdated and potentially misleading market-based accounting for their scope 2 and scope 3 emission targets, such as the purchase of standalone RECs. In addition, companies in the sector often frame biomass as a 'renewable' fuel. However, bioenergy is not an emissions-free energy source: Emissions may occur, for example, when land with a high carbon stock is cleared to produce bioenergy crops or when converting biomass into fuels or electricity *(see methodology section 3.1.3 for further details)*.

Automotive manufacturers

One of the core issues of automotive manufacturers' climate strategies remains the underreporting of annual emissions *(see section 1.1)*, especially when estimating vehicles' use-phase emissions. However, the companies in the sector might soon expand the use of market-based accounting from scope 2 emissions, as already done (i.e. use of standalone RECs) to upstream scope 3 emissions. Some companies engage with the use of commodity EACs for purchased commodities such as steel and other materials *(see for example Volvo Cars, 2024)*, for which key underlying issues like physical traceability remain undefined at this stage.

These findings point to the urgent need for voluntary standard setters, regulators and companies to provide greater clarity and consistency on the metrics used for target setting, the accounting approaches used and what is counted towards corporate climate targets. This need is particularly acute at the sector level, where inconsistent methodologies can significantly undermine the credibility of reported progress and hinder meaningful emission reductions. The current revision processes of the SBTi and the GHG-P aim to address these shortcomings, but it remains to be seen whether the final outcomes will effectively address the identified shortcomings *(see section 2.2 for detailed recommendations to SBTi and GHG-P based on our CCRM 2025 analysis)*.

There is a lack of transparency and limited measurable progress on sectoral transitions.

Implementing key sectoral transitions for deep emission reductions is the backbone of ambitious corporate climate strategies. As transition challenges towards a decarbonised economy vary widely across sectors, there is no standardised set of key transitions that all companies can implement. Instead, the integrity and robustness of companies' decarbonisation efforts must be evaluated in the context of sector-specific transitions *(see section 3 in NewClimate Institute, 2025a for detailed explanations)*.

For the first time, the CCRM 2025 systematically assesses how companies are progressing on key sectoral transitions to achieve deep emission reductions. Across the 20 companies analysed in four sectors, our findings show limited progress in implementing most of these transitions or a lack of transparency in reporting any progress in the first place *(see Figure 1.3)*. Midway through the critical decade for climate action, we identify only a few notable positive examples. These include **H&M Group**'s efforts to increase the use of renewable electricity in its supply chain, or **Danone** and **Mars** making progress towards non-deforestation for commodities in the supply chain.

Figure 1.3: Lack of transparency and limited progress on key sectoral transitions across 20 multinational companies in the Corporate Climate Responsibility Monitor 2025

AUTOMOBILE MANUFACTURERS	PROGRESS OVER LAST FIVE YEARS				
	FORD	GM	STELLANTIS	TOYOTA	VOLKSWAGEN
Stagnating progress in increasing sales shares in key markets for a full phase-in of electric vehicles, despite existing commitments	✗	+	+	↩	+
Lack of disclosure and limited progress on procurement of near-zero steel and aluminium despite some purchase agreements with producers	STEEL ?	✗	?	?	✗
	ALUMINIUM ?	?	?	?	?
Lack of disclosure on progress toward the decarbonisation of battery production in the absence of concrete commitments	?	?	?	?	?

TECH	PROGRESS OVER LAST FIVE YEARS				
	AMAZON	APPLE	GOOGLE	META	MICROSOFT
Some progress achieved to procure renewable electricity for own operated data centres but well-off track considering need to decarbonise electricity system	✗	+	+	+	+
Lack of disclosure and uncertain progress to procure renewable electricity for third-party operated data centres, considering inadequate future commitments	?	+	?	?	?
Lack of disclosure and uncertain progress to use of renewable energy in the supply chain to manufacture hardware, also considering few public commitments	?	+	?	?	?

FASHION	PROGRESS OVER LAST FIVE YEARS				
	ADIDAS	H&M	INDITEX	LULULEMON	SHEIN
Lack of disclosure and uncertain progress to electrify manufacturing processes in the supply chain, considering inadequate future commitments.	↩	?	?	?	?
Mixed progress to use of renewable electricity in the supply chain for manufacturing processes	✗	✓	?	✗	?
Lack of disclosure and uncertain progress to reduce overproduction and curb growth in virgin products	?	?	?	?	?

FOOD & AGRICULTURE	PROGRESS OVER LAST FIVE YEARS				
	DANONE	JBS	MARS	NESTLÉ	PEPSICO
Lack of disclosure and uncertain progress on shift to plant-based proteins, also considering very few public commitments.	?	↩	?	?	?
Lack of disclosure and uncertain progress towards the reduction in fertilizer use in farming practices	?	?	?	?	?
Some progress achieved in commitments to stop deforestation, land conversion and peat burning but uncertainties remain	✓	↩	✓	+	?

✓ Right direction, on track
\+ Right direction, off track
✗ Well off track
↩ Wrong direction, critically off track
? No progress identified or insufficient data
? No benchmarking possible.

Note: *For visualisation purposes, we only display the progress assessments for three out of the at least five key transitions assessed in each sector. All other progress assessments can be found in the sector-specific deep dives in Chapters 3-6.*

1.3 Emerging good practices for sectoral transitions

The identified pitfalls around current emission reduction targets highlight the need to reconceptualise corporate target setting by introducing transition-specific alignment targets.

Transition-specific alignment targets are metrics that directly measure a company's progress on key climate change mitigation transitions (NewClimate Institute, 2025b), tailored to their specific sectors and business activities. Unlike broad value chain emission reduction targets, transition-specific alignment targets provide a more accurate and actionable guide to support and measure companies' transitional efforts. Examples include the percentage of annual sales of battery electric vehicles for automakers, or the proportion of near-zero-emission steel procured for vehicle production.

In some sectors, transition-specific alignment targets have already proven to be a useful complement to emission reduction targets. For example, in the food and agriculture sector, halting deforestation has been a key focus of policymaking, advocacy and climate negotiations for several decades. Four of the five largest agrifood companies assessed in the report – namely **Danone**, **Mars**, **Nestlé** and **PepsiCo** – have set no-deforestation commitments for some or all high-risk commodities where deforestation is most prevalent. These examples demonstrate how transition-specific alignment targets can complement emission reduction targets to guide sector-specific corporate transitions. The lessons learned from operationalising them can inform their broader rollout across all major transitions within a given sector.

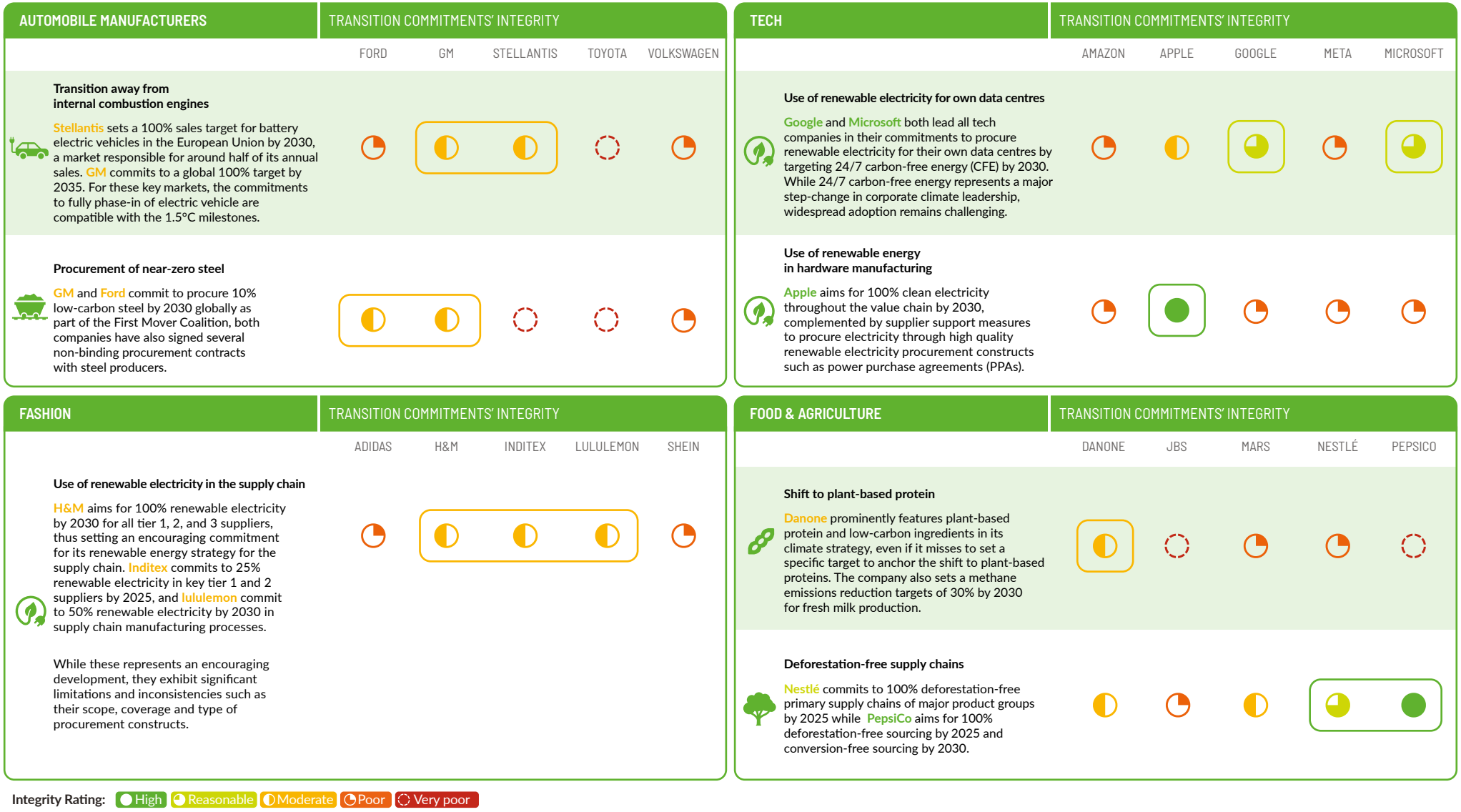
Corporate climate accountability initiatives like the SBTi can play an important facilitating role in streamlining the concept of transition-specific alignment targets and defining concrete next steps, for example, by initiating science-aligned processes to identify key transitions for each sector. The SBTi's Discussion Paper on Scope 3 Target Setting (SBTi, 2024) set out a potential framework requiring companies to identify and prioritise the most critical emission sources and related transitions within their sectors, as part of the ongoing revision of the existing SBTi Corporate Net Zero Standard. For these prioritised emission sources and transitions, companies would need to commit to specific 'alignment targets' during the interim period, leading up to their longer-term net-zero targets.

Even as most companies fall short of implementing all necessary sectoral transitions, several frontrunners already set meaningful transition-specific alignment targets, offering clear examples of how rapid climate progress can be achieved today.

Despite increasing uncertainty around companies' 2030 emission reduction targets and limited progress on sectoral transitions to date, the CCRM 2025 analysis across four focus sectors identifies several frontrunning companies that are setting and implementing transition-specific alignment targets *(see Figure 1.4)*. Notable examples include **Stellantis** and **GM** setting electric vehicle sales targets; **Google** and **Microsoft** pursuing 24/7 carbon-free energy; **H&M Group** aiming for 100% renewable electricity by 2030 across all suppliers; and **Danone** targeting methane emissions reductions in fresh milk production while increasing the share of plant-based protein product offerings.

Even though none of the companies assessed has implemented all key transitions needed in their respective sectors, these examples of meaningful target setting show that companies already have opportunities to take accelerated, high-integrity climate action in the short term.

Figure 1.4: Emerging good practices in transition-specific target setting across the food and agriculture, fashion, tech and automobile manufacturers sectors



2 The evolution of corporate accountability standards in 2025

In the absence of comprehensive regulation, voluntary standards play a key role in shaping corporate climate accountability. They set the bar for ambition, provide guidance and establish benchmarks that can inform future policy. However, as outlined in *Section 1*, current assessment and validation practices fall short of addressing the growing ambiguity surrounding GHG reduction targets. The ongoing revisions of major standards present a critical window of opportunity. In this section, we examine the current state and recent evolution of corporate climate accountability standards *(Section 2.1)* and outline how they should be strengthened to guide meaningful and credible corporate climate action *(Section 2.2)*.

2.1 Corporate accountability standards 1.0: not (yet) leading to meaningful transitions and deep emission reductions

The first generation of corporate accountability standards – referred to here as corporate accountability standards 1.0 – successfully mobilised a large number of corporate actors and fostered a high degree of convergence.

In the wake of the Paris Agreement in 2015, corporate climate accountability initiatives and standards played a key role in building momentum for climate action by encouraging companies to set targets, disclose emissions and publish transition plans. Their underlying theory of change has centred on mobilising corporate actors around voluntary standards to act on climate and rallying companies across sectors and geographies. What began as a niche space for a handful of first movers has now grown into a global movement, with thousands of companies adopting net-zero targets. As of June 2025, nearly 1,200 companies are tracked by the Net Zero Tracker and over 8,000 companies have validated targets under the SBTi (Net Zero Tracker, 2025b; SBTi, 2025).

Although participation has been voluntary, initiatives like the SBTi, the GHG-P, CDP, RE 100 and other member organisations of the UNFCCC's Race to Zero orchestration campaign have proven highly influential in shaping the corporate climate accountability landscape. In the absence of binding regulatory frameworks, they have guided sector-specific ambition levels, provided benchmarks and helped establish the parameters of credible climate action. Over time, they have not only influenced business practices but also informed policy processes and broader understandings of the corporate actors' role in global climate action.

Over recent years, a notable level of convergence has emerged across major standards. While technical and interpretative differences remain, many of these initiatives increasingly align in their overarching direction (Net Zero Tracker, 2023, 2025a). In principle, this convergence – combined with the broad participation of corporate actors – suggests that a significant portion of the global economy has aligned with Paris-compatible ambitions.

Despite this high degree of convergence and the successful mobilisation of corporate actors, the first generation of corporate accountability standards has not effectively guided companies towards deep emission reductions and meaningful sectoral transitions *(see Sections 1.1 and 1.2)*. This is partly because corporate accountability standards 1.0 contain loopholes and allow for overly broad flexibility, leading to widely varying ambition levels among companies. Good practices are not clearly distinguished from laggards *(see Section 1.3)*, which discourages genuine corporate climate leadership and limits opportunities for replication. In this context, corporate accountability standards 1.0 face a dual challenge: limited climate impact despite widespread target adoption and weak incentives for effective corporate climate strategies.

Box 2.1: The evolution of corporate accountability standards

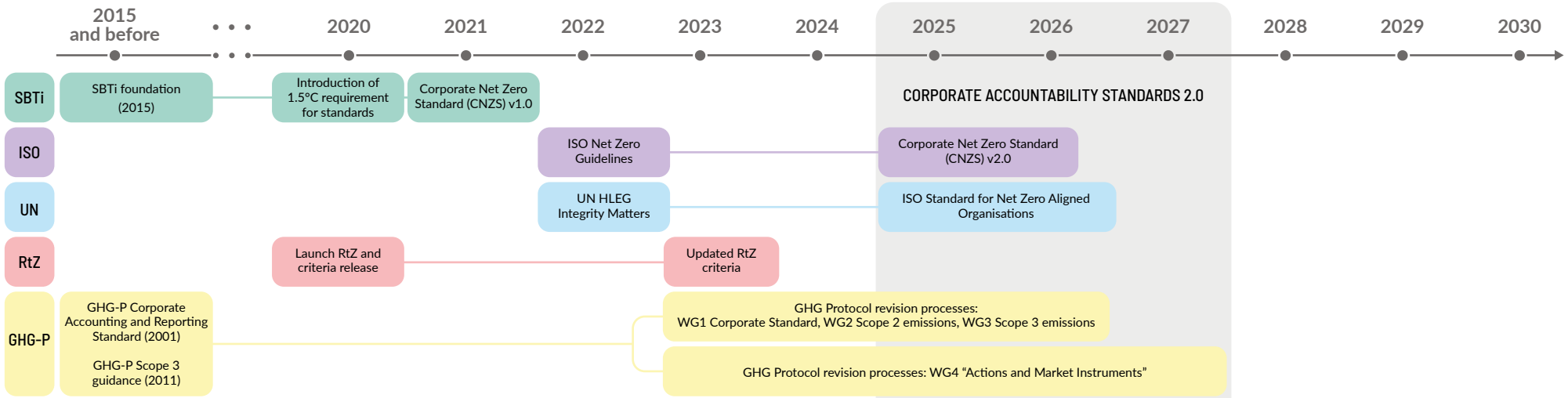
The **Greenhouse Gas Protocol (GHG-P)**, developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), was first released in 2001 and has served as the foundational standard for accounting for corporate greenhouse gas emissions. The GHG Protocol introduced the widely used framework of emission scopes – scopes 1, 2 and 3 – and has been expanded over the years through additional guidance, such as the Scope 3 Standard published in 2011 (GHG Protocol, 2011). It is broadly perceived as the backbone of corporate climate reporting and therefore, indirectly, for target-setting frameworks. Since 2022, it has been undergoing a comprehensive revision to reflect evolving practices and science and to ensure relevance and robustness in the fast-moving landscape of corporate climate accountability. This revision includes updates to the guidance around scope 3 emissions, land sector emissions and removals, scope 2 accounting methodologies and other potential market-based accounting instruments. According to the latest planning, the GHG Protocol is publishing revised drafts for the Corporate, Scope 2 and Scope 3 Standards in 2026, which will be open for public consultation in the same year. Revised final standards are currently expected in 2027 (GHG Protocol, 2025).

The **Science Based Targets initiative (SBTi)**, founded in 2015, has become a key player in the corporate target-setting landscape. The SBTi has been one of the first initiatives developing sector-specific guidance and gained traction and momentum by validating corporate climate targets against its standards. In 2020, SBTi announced its ambition to require alignment with the 1.5°C Paris temperature goal. Responding to the rise in net-zero targets, SBTi launched the first Corporate Net-Zero Standard (CNZS) for companies in 2021. In 2025, SBTi published a draft CNZS 2.0 that was open to public consultation until 1 June 2025. Over the summer of 2025, Expert Working Groups will provide input on several key topics, including, but not limited to, the role of removals in net-zero targets, beyond value chain mitigation (BVCM), market instruments and scope 3 emission reduction strategies. For further insights, see NewClimate Institute's input on the update of the CNZS (NewClimate Institute, 2025c).

The **ISO Net Zero Guidelines** were launched at COP27 (2022) to establish a common understanding of what achieving net-zero emissions entails and to provide guidance to governments, organisations, companies and other actors. The guidelines outline key principles and expectations for reaching net zero in a credible and consistent manner. Since mid-2024, efforts are underway to transform the guidelines into an official **ISO Standard for Net Zero Aligned Organisations**, in line with formal ISO procedures (ISO, 2024). The finalised standard is expected to be published in early 2026 for public consultation and is anticipated to serve as a widely accepted benchmark for net-zero alignment.

The **High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities (HLEG)** was established by UN Secretary-General António Guterres to address growing concerns around greenwashing. Its mandate was to develop clear, credible and enforceable standards for net-zero pledges made by businesses, investors, cities and regions. At COP27 in 2022, the group released its flagship report, *Integrity Matters*, which set out key credibility criteria for net-zero commitments (UN HLEG, 2022). The report has since been recognised as a bar-raising benchmark in the field, pushing for greater ambition, accountability and transparency. It has also served as an influential reference for the development of other frameworks, including those by ISO and the SBTi, contributing to a more coherent and rigorous net-zero landscape. Though officially dissolved, HLEG's *Integrity Matters* report remains influential.

Figure 2.1: Overview of timelines for voluntary and other international standards (updated 18 June). Based on non-official insights and not necessarily accurate.



Legend: SBTi = Science Based Targets initiative; ISO = International Organization for Standardization; UN = United Nations; RtZ = UNFCCC Race to Zero; GHG-P = Greenhouse Gas Protocol

Source: Authors.

2.2 Corporate accountability standards 2.0: opportunity to get it right

Corporate accountability standards 2.0 must drive short-term, deep and structural emission reductions by reorienting the accountability system toward key transitions, addressing technical ambiguities and establishing mechanisms to limit undue corporate influence.

Corporate accountability standards are currently undergoing a pivotal phase of revision, offering a unique opportunity to shift from a mobilisation-focused system to one that drives meaningful climate action. The next generation of standards – corporate accountability standards 2.0 – should address key weaknesses and refocus the system on deep, near-term emission reductions through concrete sectoral transitions. In addition, corporate accountability standards 2.0 need to address technical ambiguities and establish mechanisms to limit undue corporate influence. In doing so, these standards can form the building blocks for future regulations across jurisdictions.

From our detailed analysis of companies' strategies and progress, we identify the following issues as fundamental to guiding companies towards more credible climate action in the coming decade.

Spotlight on key transitions

Our findings across all sectors indicate that GHG emission reduction targets are often not fit for purpose unless substantiated by transition-specific alignment targets. By setting transition-specific alignment targets in addition to GHG emission reduction targets, companies could guide and measure the progress of their climate strategies in a more targeted and transparent way (NewClimate Institute, 2025b). The neglect of key transitions in the sectors we assessed underscores the need for target-setting frameworks, such as the SBTi Corporate Net Zero Standard and the forthcoming ISO Standard for Net Zero Aligned Organisations, to focus more specifically on key transitions by requiring companies to set transition-specific targets. The GHG Protocol could support this by facilitating more granular climate impact inventories that capture more specific transition-related indicators.

Renewable electricity targets and claims

Outdated market-based accounting makes it increasingly difficult to understand what companies' targets mean and does not encourage the replication of emerging good practice *(see, for example, section 4 on the tech sector)*. The transition to 24/7 matching of renewable electricity procurement should be expedited and mainstreamed into all appropriate accounting frameworks, data platforms and target setting standards. The renewable electricity transition is a cross-cutting topic of key relevance in all sectors and for all actors of the corporate accountability system, including regulators, standard setters and the GHG Protocol. 24/7 matching of renewable electricity would be a pivotal transition-specific alignment target for companies in many sectors, but companies may not be able to set or effectively monitor progress against 24/7 renewable electricity until such accounting frameworks and infrastructure are available.

Targeted supplier engagement

Emissions accounting and target-setting practices for upstream scope 3 emissions are not granular enough to understand how companies are engaging with their supply chains. The currently poor granularity of GHG emissions data for procured products and services (scope 3 category 1) can make it difficult to identify the key emission hotspots against which targets should be set. A handful of companies are only just starting to set specific targets for renewable electricity in the supply chain, although this is a major source of emissions for companies in several sectors. Such targeted supplier engagement efforts should be replicated. The GHG Protocol can support this by requiring greater granularity in the categorisation of emission sources, to identify key emission sources and transitions.

Separation of targets for emission reductions and removals in the land-use sector

Counting removals towards emission reduction targets obscures the lack of action on key transitions *(see for example section 3 on agriculture and food sector)*. Separate targets for emission reductions and removals – as proposed by the latest draft version of the GHG Protocol Land Sector and Removals Guidance of 2022 (GHG Protocol, 2022a, 2022b) – are key to improve the accountability, transparency and robustness of companies' targets and climate strategies related to land-use emissions, while driving action on key transitions.

Caution with commodity EACs and other emerging instruments

To date, the lack of clear guidance on the role of market mechanisms has left room for companies to interpret, or misinterpret, how tools such as carbon credits or commodity EACs can be used to claim target achievement. The next generation of corporate accountability standards needs to introduce robust guardrails that specify when, how and to what extent such instruments may be applied, including strict criteria for legitimate use cases. The approach to use commodity EACs toward targets would introduce risks that must be carefully considered. EACs from beyond companies' supply shed or with lower value chain traceability may be best suited for standalone targets and claims related to contributions to sector transformation. Such targets and claims should be distinct from companies' own transition-specific alignment targets or GHG emission reduction targets.

Guidance on broader business model transitions

A coordinated effort to advance research and build consensus on complex issues like recycling, circularity and fast-output business models is necessary to define the right transition-specific alignment targets in some sectors, and especially in sectors that rely heavily on rapid product turnover, such as fashion.

Improved governance mechanisms

The integrity of the corporate accountability system depends on improved governance mechanisms for corporate climate accountability initiatives. This includes formal grievance, complaint and whistleblowing channels, as well as the creation of independent technical and scientific advisory councils with decision-making authority (Hans *et al.*, 2023). Initiatives should establish mechanisms to limit undue corporate influence and ensure accountability in their own processes.

Further sector-specific recommendations for corporate accountability standards 2.0 can be found in the following chapters of this report.

Food & agriculture

→ *see Chapter 3.1 for detailed recommendation for voluntary initatives working on food and agriculture companies.*

Tech

→ *see Chapter 4.1 for detailed recommendation for voluntary initatives working on tech companies.*

Fashion

→ *see Chapter 5.1 for detailed recommendation for voluntary initatives working on fashion companies.*

Automobile manufacturers

→ *see Chapter 6.1 for detailed recommendation for voluntary initatives working on automobile manufacturers.*

SECTION B:
COMPANY ANALYSES

This section of the 2025 *Corporate Climate Responsibility Monitor* presents an in-depth assessment of the integrity of climate change mitigation strategies adopted by 20 of the world's largest companies.

We assess five of the largest global companies – excluding majority state-owned companies – from four key sectors: agrifood producers, automobile manufacturing, tech, and fashion.

- For the **agrifood sector**, we selected the largest agrifood companies with high relevance for the SBTi FLAG guidance development (e.g. targets validated by the SBTi as 1.5°C-compatible), excluding companies solely focusing on beverages, agricultural raw materials or retailing. These companies include Danone, JBS, Nestlé, Mars, and PepsiCo. This specific sample selection is to test the hypothesis that the SBTi's FLAG guidance can incentivise higher transparency and integrity of agrifood companies' targets.
- For the **tech sector**, we selected the top five global tech companies according to their annual revenue in 2023 (Net Zero Tracker, 2025b), excluding companies primarily focused on electronics manufacturing. These companies include Amazon, Apple, Google, Meta and Microsoft.
- For the **fashion sector**, we selected some of the largest global apparel and sportswear companies according to their annual revenue in 2023 (Net Zero Tracker, 2025b), excluding luxury brands. These companies include adidas, H&M Group, Inditex, lululemon, and Shein.
- For **automobile manufacturers**, we selected the top five global incumbent manufacturers of light-duty vehicles by revenue, ensuring the inclusion of at least two companies headquartered in the United States. This enables analysis of the climate strategies of US-headquartered manufacturers, which were not the focus of previous *Corporate Climate Responsibility Monitor* editions that concentrated on European and Asian manufacturers. The selection includes Ford, General Motors, Stellantis, Toyota and Volkswagen.
- We excluded majority state-owned companies because we perceive fundamental differences in their management and decision-making structures related to climate strategies. These differences may significantly reduce the comparability of their plans and the insights we can draw from the sample.

The key objective of this analysis is to identify replicable best practices by evaluating the integrity of the most influential global corporations presenting themselves as climate leaders and role models. Scrutiny of their plans is also necessary to determine whether these influential leaders are setting the right examples, and whether the frameworks and guidance they rely on are adequate. In this context, most of the 20 companies assessed have committed to high-profile climate change mitigation pledges under the Science Based Targets initiative, although this was not a selection criterion for this iteration of the *Corporate Climate Responsibility Monitor*.

The 20 companies covered by this monitor account for approximately USD 2.97 trillion of revenue in 2023 (Net Zero Tracker, 2025b). Their total self-reported GHG emission footprints in 2019, including scope 3 emissions, amount to approximately 3.4 $GtCO_2e$. This is equivalent to roughly 7% of global GHG emissions. Sixteen of the 20 companies selected through the process described above were also assessed in the previous 2022, 2023 or 2024 editions of the *Corporate Climate Responsibility Monitor*.

3 Food and agriculture sector

3.1 Sector highlights

This section presents a selection of key insights from the detailed analysis of the climate strategies of five major food and agriculture companies: Danone, JBS, Mars, Nestlé and PepsiCo *(see Section 3.2 for detailed company case studies).*

In this report, we focus on companies' GHG emission reduction targets, and the key transitions that are necessary for deep emission reductions in the food and agriculture (hereafter, agrifood) sector.

We evaluate agrifood companies' transition targets based on the sector-specific transition framework set out in *Figure 3.1*. Since the majority of the agrifood sector's emissions footprint derives from a variety of upstream agricultural processes, we identify five key transitions aimed at reducing these emissions across different timeframes and scales. **We find that increasing the share of plant-based protein, halting deforestation, reducing fertiliser application and cutting food loss and waste are key transitions for the sector to achieve longer-term emission reductions**, though implementation needs to begin now. In the short term, accompanying measures targeting emissions from areas such as energy use and packaging materials are also important (NewClimate Institute, 2025).

We find that agrifood companies present measures that are unlikely to lead to structural, deep emission reductions in the sector.

- The assessed agrifood companies do not have strong commitments to shifting to plant-based protein thereby neglecting the most important measure to cut methane emissions.
- Most of the assessed agrifood companies are committed to halting deforestation. However, details on implementation are generally lacking, and deforestation targets do not cover all commodities.
- Only one company explicitely mentions the importance of reducing the use of synthetic fertiliser.
- Three of the five assessed agrifood companies present measures and targets to reduce food loss and waste, while the others do not address the issue at all in their climate strategies.
- Four of the five assessed agrifood companies present measures to reduce emissions in the short term, but these are unlikely to lead to structural, deep emission reductions in the sector in the long term.

We find that agrifood companies' emission reduction targets are currently undermined by the undefined role for land-based carbon removals.

- Three of the five assessed agrifood companies are explicit about relying on an unspecified amount of land-based carbon dioxide removal (CDR) to claim progress towards target achievement.
- The dependence on an undefined role for land-based CDR heavily undermines agrifood companies' emission reduction targets and distracts from their lack of commitments to deep, structural emission reductions, especially regarding methane emissions.
- The GHG Protocol's draft Land Sector and Removals Guidance requires companies to set separate reduction and removal targets, but we interpret that the Forest, Land and Agriculture (FLAG) guidance from the Science Based Targets initiative (SBTi) allows for an unspecified role for land-based CDR to count towards meeting emission reduction targets.

Standard setters need to anchor the need for deep and structural emission reductions in their voluntary standards and guidelines, guided by key transitions for the sector, and need to call for separate targets for emission reduction and removal.

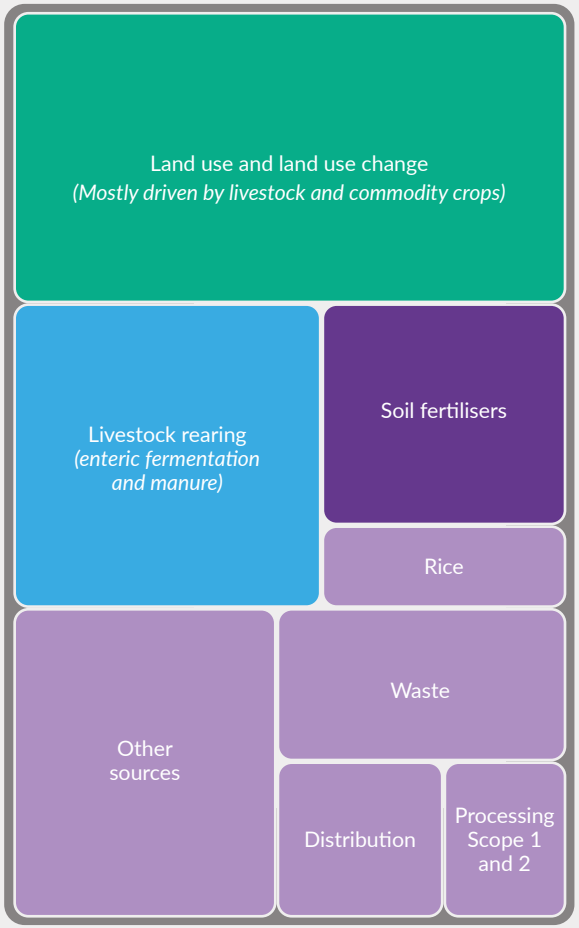
- The SBTi's FLAG Guidance should require separate targets for emission reduction and land-based CDR, as currently proposed in the GHG Protocol's draft Land Sector and Removals Guidance. This would drastically increase the transparency and robustness of targets in the agrifood sector.
- The SBTi's FLAG Guidance and other standard setters should define what share of short- and long-term targets can be met through land-based removals.
- Standard setters, guidelines and sectoral campaigners should call for stronger commitments to key sectoral transitions; companies should lead in delivering them.
- Standard-setters should call for specific emission reduction targets for methane and nitrous oxide; companies should lead in following this practice.

Agrifood companies use land-based removals to distract from their lack of commitments to key transitions.

Figure 3.1: Key transition framework for an agrifood company and summary of CCRM 2025 ratings

GHG EMISSIONS FOOTPRINT

Indicative distribution of emission sources across agricultural value chain



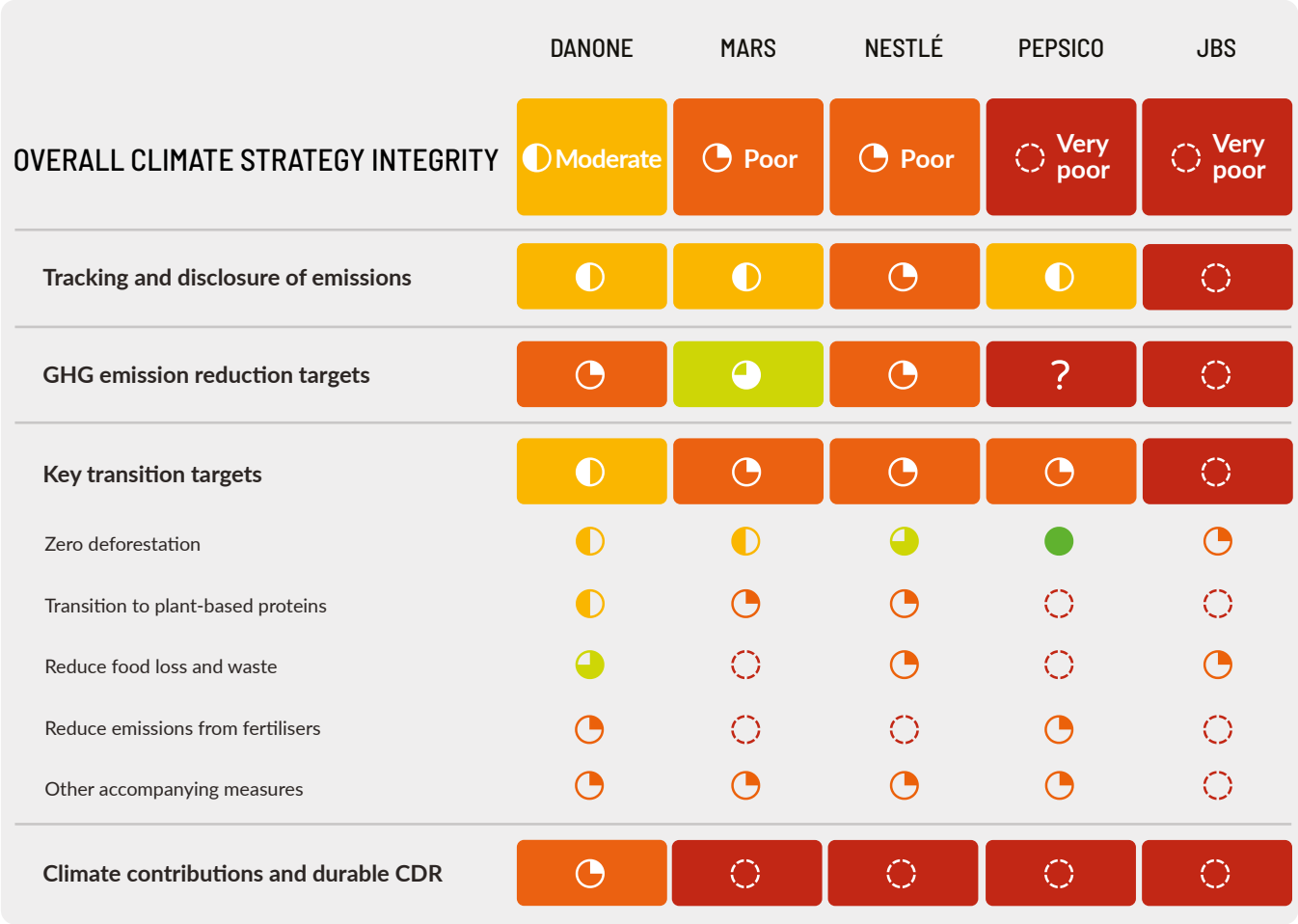
5 KEY TRANSITIONS

Most relevant transitions to address major emission sources

1	Zero deforestation	Land use and land-use change are the biggest sources of agricultural emissions. This is mostly driven by expansion of agricultural land for livestock, feed for livestock, and commodity crops. Addressing deforestation, as well as the conversion of other key ecosystems such as peats and mangroves is crucial to reaching the Paris Agreement 1.5°C temperature limit.
2	Transition from animal- to plant-based products	Livestock rearing is the largest single driver of emissions in global agricultural value chains. Shifting production away from animal protein, especially ruminants (beef, sheep and goat), can significantly reduce land requirements and GHG emissions (Searchinger *et al.*, 2019).
3	Reduce emissions from fertilisers	Fertiliser use is the third largest source of emissions in the agricultural sector, accounting for 25% of total agricultural GHG emissions in 2019 (UNEP, 2022). One-third of fertiliser emissions occurs during synthetic fertiliser production due to the synthesis of ammonia, and two-thirds of emissions from fertilisers are attributable to nitrogen emissions during fertiliser use (Gao and Serrenho 2023). To address fertiliser emissions, fertiliser use can be carried out according to the so-called 4-R strategy, where fertilisers are applied at the right rate, with the right type, at the right time and the right place (De Vries *et al.* 2022).
4	Reduce food loss and waste	About a quarter of food is lost or wasted between production and consumption each year, leading to higher levels of emissions linked to additional food production, as well as downstream landfill emissions (Boehm *et al.*, 2023; Searchinger *et al.*, 2019). Addressing food loss and waste could therefore curb emissions by reducing the projected growth in demand for food in coming years (Boehm *et al.* 2023).
5	Other accompanying measures	A combination of many additional measures along the supply chain are needed to decarbonise the food and agriculture sector. These measures include transitioning to renewable energy on farms and reducing emissions from packaging, transport, and distribution.

→ *See Evolution of corporate climate targets (NewClimate Institute, 2025) for further details on this sector transition framework and potential alignment target indicators.*

Figure 3.2: Summary of CCRM 2025 ratings for agrifood companies (NewClimate Institute, 2025)



Integrity : 5-point rating scale:
High | Reasonable | Moderate | Poor | Very poor
Integrity refers to the quality and credibility of the approach.
? *Integrity assessment is unclear.*

→ *See Annex 3B and 3C for further details on our integrity assessments for companies' targets and key transitions.*

Agrifood companies' emission reduction targets are undermined by an undefined role for land-based carbon dioxide removals

We interpret that the *Forest, Land and Agriculture Guidance* by the Science Based Targets initiative allows for land-based removals to count towards the achievement of emission reduction targets, in contrast to the draft *Land Sector and Removals Guidance* by the Greenhouse Gas Protocol.

Most companies assessed in this report – including Danone, Mars, Nestlé and PepsiCo – have set emission reduction targets that align with the Science Based Targets initiative (SBTi) guidance for the Forest, Land and Agriculture (FLAG) sector. This FLAG Guidance, first published in 2022 and updated in December 2023, outlines mitigation requirements for companies with significant emissions from agriculture and other land-intensive sectors. Specifically, companies with FLAG-related emissions that exceed 20% of their value chain emissions are required to set FLAG targets in addition to targets for reducing energy-related emissions to receive SBTi validation (SBTi, 2023a, p. 18). The FLAG Guidance identifies a range of land-based mitigation opportunities, drawing on the findings from Roe *et al.* (2021). These opportunities are divided into two key components for 2050: 62% of the global mitigation potential is expected to come from emission reductions, while 38% may come from removals. The emission reduction opportunities align with key transitions for the sector proposed by NewClimate Institute (2025), which form the basis of the company analysis in this report. These include halting land-use change (i.e. halting deforestation), shifting to plant-based protein and reducing food loss and waste.

The FLAG Guidance does not specify emission reduction requirements for FLAG targets; the GHG Protocol's draft Land Sector and Removals Guidance, however, calls for separate removal and reduction targets. In the nearer term, the FLAG Guidance describes an emission reduction requirement of net 30.3% by 2030 below 2020 levels (SBTi, 2023a, p. 53), but it does not specify an emission reduction requirement for 2050. However, the SBTi's Corporate Net Zero Standard states that the agricultural sector needs to reduce emissions by at least

net 72% by 2050 (SBTi, 2025, p. 59). While the 2030 and 2050 benchmarks provide minimum ambition levels, the FLAG Guidance remains ambiguous on the extent to which land-based carbon dioxide removals (CDR) may be used to meet these emission reduction targets. The land-based mitigation opportunities adapted from Roe *et al.* (2021) suggest that a maximum of 38% could be achieved through land-based CDR by 2050, but the FLAG Guidance does not make this explicit. Rather, we – and, based on our assessments, several major agrifood companies – interpret that it permits the use of an undefined amount of land-based CDR to claim FLAG target achievement for both 2030 and 2050.[1] It does not prescribe what portion of any given target should be met through reductions versus removals. In contrast, the latest draft of the GHG Protocol Land Sector and Removals Guidance explicitly calls for separate targets for emission reductions and removals and requires companies to report on reductions and removals separately *(see Box 3.1)*.

1 *Land-based CDR cannot be accounted towards energy-related emissions and targets for energy and industry-related emissions, as FLAG targets are separate from those.*

Aggregating land-based removals with emission reductions in the food sector is problematic for two key reasons.

Aggregating land-based removals with emission reductions can obscure the lack of action on key emission sources and non-CO_2 greenhouse gases. While our analysis does not identify any signs that land-based CDR is currently being used to directly offset methane, land-based removals are in some cases included in total CO_2-equivalent figures. This creates a misleading sense of progress towards emission reductions and key transitions, even though methane – a highly potent greenhouse gas – must decline rapidly to limit global warming (Reisinger *et al.*, 2021). In other words, it shifts attention away from crucial changes like the shift to plant-based proteins, as it obscures the lack of progress at a higher level. In addition, the potential impact of land-based CDR is uncertain and, more importantly, carries high risks of limited permanence. For example, carbon stored in grasslands can be quickly re-released if land is mismanaged. This risk is also acknowledged by the SBTi itself (SBTi, 2022, p. 16). In addition, enhanced soil carbon sequestration has recently been associated with lower yields (Mcclelland *et al.*, 2025). While land-based removals are important at the global level, they should not be treated the same as actual emission reductions and should be reported separately. Aggregating land-based removals and actual emission reductions can exaggerate progress and delay much-needed changes in the food sector.

Companies often do not specify the role for land-based removals in meeting their targets. Despite the associated uncertainty, companies' reliance on land-based CDR appears substantial. Nestlé, for example, has indicated that up to 80% of its target could be met using land-based removals (Nestlé, 2023b, p. 20). This raises concerns about the transparency and robustness of already claimed emission reductions. Although companies nominally commit to the required 30.3% reduction by 2030, compared to 2020 levels, many plan to include land-based CDR to claim target achievement. These companies mention the development of the GHG Protocol Land Sector and Removals Guidance, whose new version is expected in late 2025. Although the current draft Guidance requires separate removal and reduction targets, Danone, Mars and PepsiCo mention their intentions to include removals in emission accounting as soon as the new Guidance allows for it with a high degree of confidence. Danone, Mars, Nestlé and PepsiCo state that they want to include land-based removals in their target achievement. Nestlé already presents land-based CDR as part of its emissions footprint. In sum, the real meaning of agrifood companies' emission reduction targets is uncertain. The uncertainty would further increase if the practice were normalised by the GHG Protocol Land Sector and Removals Guidance, though the current draft suggests the opposite.

Table 3.1: GHG emission reduction targets of food and agriculture companies

	Danone	JBS	Mars	Nestlé	PepsiCo
Overall integrity of GHG targets	Poor	Very poor	Reasonable	Poor	Unclear
Near-term targets	By 2030, compared to 2020 levels: • Reduce scope 1 and 2 energy and industry-related emissions by 46.3% • Reduce scope 3 energy and industry-related emissions by 42% • Reduce scope 1 and 3 FLAG emissions by 34.8% • Reduce CH_4 emissions from fresh milk by 30%	By 2030, compared to 2019 levels: • Reduce scope 1 and 2 emissions intensity by 30%	By 2025, compared to 2015 levels: • Reduce scope 1, 2 and 3 emissions by 27% By 2030, compared to 2015 levels: • Reduce scope 1, 2 and 3 emissions by 50%	By 2025, compared to 2018 levels: • Reduce emissions by 20% compared to 2018 levels By 2030, compared to 2018 levels: • Reduce scope 3 FLAG emissions by 50% • Reduce energy and industry-related scope 1, 2 and 3 emissions by 50%	By 2030, compared to 2022 levels: • Reduce scope 1 and 2 emissions by 50% • Reduce scope 3 FLAG emissions by 30% • Reduce scope 3 energy and industry emissions by 42%
Medium- and long-term targets	By 2050, compared to 2020 levels: • Net-zero emissions • Reduce scope 1, 2 and 3 energy and industry-related emissions by 90% • Reduce scope 1 and 3 FLAG emissions by 72%	By 2040: • Net-zero emissions No specific deep emission reduction target alongside the net-zero pledge.	By 2050, compared to 2019 levels: • Net-zero emissions • Reduce scope 1, 2 and 3 energy and industry-related emissions by 90% • Reduce scope 3 FLAG emissions by 75%	By 2050, compared to 2018 levels: • Net-zero emissions • Reduce scope 1, 2 and 3 energy and industry-related emissions by 90% • Reduce scope 3 FLAG emissions by 75%	By 2050: • Net-zero emissions • Reduce scope 1 & 2 emissions by 90% • Reduce scope 3 energy and industry-related emissions by 90% • Reduce scope 3 FLAG emissions by 72%
SBTi FLAG-aligned, validated target	✓	✗	✓	✓	Claims to have SBTi-validated FLAG targets, but not presented on SBTi's website yet.
Role for land-based CDR in targets	**Undefined volume, but states that it will play a future role** Danone currently does not account for land-based CDR yet but plans to include it as soon as possible. Danone's emission reduction targets will rely on an unspecified volume of land-based CDR. Danone gives an estimate of residual emissions, in which land-based CDR has likely already been accounted for.	**Unclear** JBS does not specify whether land-based CDR will be included or excluded from its 2030 emissions intensity target.	**No use of land-based CDR** Mars explicitly states that its targets currently do not depend on land-based CDR but plans to include land-based CDR as soon as possible.	**Defined volume for 2030 targets but unclear for 2050 target** Nestlé presents a variety of land-based CDR measures alongside emission reductions, incl. the expected volume of removals for its 2030 targets. Land-based CDR will continue to play a role for its 2050 target, but Nestlé does not specify this role. Nestlé already claims a lower emissions footprint through land-based CDR.	**Undefined volume, but states that it will play a future role** PepsiCo's 2030 and 2050 targets will partially be met through an unspecified volume of land-based CDR.
Changes from previous assessments in 2023 and 2024	Danone is now explicit about its intention to count land-based CDR towards target achievement. The rating for short-term targets was changed from Reasonable to Moderate integrity. The rating for long-term targets was changed from Moderate to Unclear integrity.	Net-zero target assessed as 'very poor' instead of 'unclear' but overall integrity rating remains the same.	There have been no changes to integrity ratings compared to the 2024 analysis.	There have been no changes to integrity ratings compared to the 2024 analysis.	PepsiCo is now explicit about its intention to count land-based CDR towards target achievement. This did not affect the rating for short-term targets. The rating for long-term targets was changed from Very Poor to Unclear. The overall integrity rating for targets was changed from Very Poor to Unclear.

Integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Integrity refers to the quality and credibility of the approach.

? *Integrity assessment is unclear.*

BOX 3.1: Critical inconsistencies between the GHG Protocol's draft Land Sector and the Removals Guidance and SBTi's FLAG guidance

The Greenhouse Gas Protocol is in the process of finalising the Land Sector and Removals Standard and accompanying Guidance. The first draft of the Guidance was released for consultation in 2022, and the final Guidance is planned for publication in the final quarter of 2025 (GHG Protocol, 2025). After going through a consultation and pilot testing phase, the Guidance is being finalised in consultation with an Advisory Committee and newly created Forest Carbon Accounting Technical Working Group. The Guidance will explain how companies can account for and report on activities linked to land management and land-use change, CDR and carbon storage, and products derived from technological CDR, such as biogas. This will help harmonise the process for calculating and accounting for emissions in the agrifood sector. The Guidance will also have wider implications for emission reduction targets, as it will explain how companies should set targets that cover removals and clarify the role of removals in achieving net-zero targets.

The 2022 draft Guidance requires companies to report emissions and removals separately. The draft Guidance requires companies to measure scope 1 and 3 emissions linked to land management and makes reporting scope 1 and 3 removals optional. However, if companies choose to report on removals, this would need to be reported separately from emissions (GHG Protocol, 2022a, p. 22). This is positive, as it would increase the transparency of emission inventories and facilitate the assessment of companies' progress towards emission reduction targets.

In contrast to the SBTi's FLAG Guidance, the draft Land Sector and Removals Guidance explicitly requires companies to set emission reduction targets and states that such targets should be independent of any removals (GHG Protocol, 2022a, p. 209). If companies choose to set net targets, when emissions and removals are aggregated, or removal targets, these should be separate and additional to emission reduction targets (GHG Protocol, 2022a, p. 209). This goes against the current version of the SBTi's FLAG guidance, which allows companies to aggregate emission reductions and removals within FLAG targets and meet their FLAG targets using an undefined amount of land-based CDR. If this requirement remains in the final draft of the Guidance, it could potentially increase the transparency and integrity of agrifood companies' emission reductions targets. However, most companies refer to the GHG Protocol Guidance and appear confident that, in addition to merely reporting on land-based CDR, they will be able to count land-based CDR towards emission reduction targets when the final version is published *(see Danone, Nestlé and PepsiCo)*. This would be in contrast to the current draft Guidance. Moreover, it remains unclear if, and how, the SBTi's FLAG Guidance would change if the requirement to set separate targets remains in the GHG Protocol Guidance's final version. The GHG Protocol states that it has been working closely with the SBTi on the relationship between both guidance documents (GHG Protocol, 2023), but to date, we have not been able to determine what this collaboration means in practice.

The draft Guidance sets out the requirements for counting land-based CDR in emission inventories. Companies will need to guarantee ongoing storage monitoring and traceability, use only primary data, account for uncertainty and account for reversals (GHG Protocol, 2022a, p. 93). The draft Guidance uses a 'storage monitoring framework' to implement the 'permanence principle' (GHG Protocol, 2022a, p. 89). This means that land-based CDR could be considered permanent if a monitoring framework is in place to show that carbon remains stored in carbon pools (GHG Protocol, 2022a, p. 89). The draft Guidance proposes varied data sources for monitoring carbon stock changes, which would depend on the type of removal.

Under the 'permanence principle', if carbon losses were to occur or if companies could no longer monitor carbon stocks, companies would need to report reversals in future inventory years. This could be problematic if companies are allowed to set targets that combine reductions and removals, as is current practice under the SBTi's FLAG Guidance. This is because a company could make significant claims towards target achievement using land-based removals in one year, while the removals could be reversed the next year. Not only would this make holding companies accountable for target achievement nearly impossible, but it could also allow for substantial fluctuations in emissions footprints year –on year. This is why it is crucial that the final version of the Guidance, which is to be released later this year, continues to require companies to report emissions and removals separately and to set emission reduction targets independent of any removals.

Agrifood companies do not commit to transitioning to plant-based protein, despite some early promising measures, neglecting the urgent need to reduce methane emissions

Most of the assessed companies stop short of transitioning to plant-based protein. Livestock production is a major contributor to global greenhouse gas emissions, accounting for close to 15% of global anthropogenic GHG emissions and around 80% of global agricultural methane emissions (Reisinger *et al.*, 2021; Ward, Atkins and Atkins, 2024). Methane is a highly potent greenhouse gas, and reducing its emissions delivers immediate benefits for limiting global warming (Reisinger *et al.*, 2021). As such, a shift away from diets reliant on livestock – particularly meat and dairy – towards plant-based protein sources represents a key transition for the agrifood sector (NewClimate Institute, 2025). Despite this, most companies stop short of explicitly promoting plant-based diets as a core mitigation strategy. While many refer to the use of 'low-carbon' ingredients, these are rarely specified as plant-based.

Danone is the only one of the five assessed companies with a quantitative methane reduction target. The company has a target to reduce its methane emissions associated with fresh milk production by 30% by 2030, compared to 2020 levels. In line with this ambition, Danone also plans to expand its plant-based portfolio (Danone, 2023a, pp. 35–36, 2025, pp. 203, 214). However, Danone has not yet explicitly committed to the plant-based protein transition in the form of a clear target *(see Figure 3.3)*. Other companies refer to growing their plant-based offerings but do not present plans to *reduce* dairy or meat production. Nestlé, for example, emphasises the importance of dairy for global health and nutrition (Nestlé, 2025a, p. 35). This might imply that plant-based products are merely add-ons, rather than substitutes for dairy and meat products – which would actually reduce methane emissions. Although this is a step in the right direction, a credible emission reduction strategy for the agrifood sector needs to include a clear commitment and related measures to replace high-emission products, not just diversify portfolios.

Figure 3.3: Plans to transition from animal-based to plant-based protein

	DANONE	JBS	MARS	NESTLÉ	PEPSICO
APPROACH TO TRANSITIONING TOWARDS PLANT-BASED PROTEIN PRODUCTS	Plant-based protein and low-carbon ingredients are quite prominent in Danone's climate strategy, but no target in place.	JBS is purchasing plant-based protein brands but shows no sign of transitioning away from animal farming. Plant-based brands are an add-on to its business model.	Mars acknowledges the need to transition to protein ingredients that require less land to be produced but does not present a strategy to transition at scale towards such ingredients.	Nestlé presents an emission reduction potential related to plant-based protein and numerous measures, but the potential is limited (an equivalent of <1% of its reported emissions) and has decreased compared to its previous climate strategy.	PepsiCo has a target to increase the share of 'diverse ingredients', which includes plant-based ingredients among several other types of ingredients. However, the target formulation does not translate to a clear commitment.
TARGET INTEGRITY	Moderate	Very poor	Poor	Poor	Very poor

ONE OF THE WORLD'S LARGEST DAIRY PRODUCERS HAS PLANS IN PLACE TO INCREASE THE SHARE OF PLANT-BASED PROTEIN

Alongside its target to reduce methane emissions related to fresh milk production, Danone plans to increase its share of plant-based protein. Danone is one of the market leaders for dairy alternatives, with brands such as Alpro and Silk increasingly being mainstreamed. Danone does not present its plans for plant-based protein as a mere add-on to its core business. Rather, we understand that the company aims to diversify its product portfolio and increase the share of plant-based sales. However, Danone has not committed to a target or clearly pledged to this key transition.

Integrity : 5-point rating scale:
High | Reasonable | Moderate | Poor | Very poor
Integrity refers to the quality and credibility of the approach.

All companies commit to halting deforestation, but clear plans on implementation are lacking

Most agrifood companies, apart from JBS, have commitments in place to only source deforestation-free commodities by 2025, with some also committed to sourcing conversion-free commodities by either 2025 or 2030. These targets are in line with the SBTi's FLAG Guidance requirements (SBTi, 2023a, p. 39), which are based on the Accountability Framework initiative's guidance[2] (AFi, 2023). Halting deforestation has been a key focus in policymaking, campaigning and climate negotiations over the past decades. Combined with clear end dates and a political consensus on needed commitments, this could explain why companies are setting targets and making progress on this indicator. Indeed, Danone, Mars, Nestlé and PepsiCo have set no-deforestation commitments on some or all high-risk commodities where deforestation is most prevalent: palm oil, cocoa, soy, beef and timber. Most of the companies report their progress for each commodity separately.

Despite encouraging performance on this transition, zero-deforestation commitments include some caveats: limited coverage of commodities, only covering direct suppliers and the use of commodity certificates without physical traceability. Zero-deforestation commitments therefore still need to be strengthened and cover all commodities as well as indirect suppliers and small-holder farms. Targets on sourcing deforestation-free cocoa appear to be the weakest: Nestlé is not on track to reach its 2025 commitment, PepsiCo does not provide information on its progress, and Mars does not present a target year for sourcing 100% deforestation-free cocoa (Mars, 2024, pp. 16–17; PepsiCo, 2024d; Nestlé, 2025b, p. 54). There is likely to be a mismatch between companies' reported progress on ending deforestation and actual rates of deforestation in their supply chains, due to a lack of data transparency and use of commodity certificates *(see Box 3.2)*. For example, recent investigations have shown that illegal deforestation was still taking place in JBS's supply chain in 2024, calling into question the company's progress towards halting it (Mighty Earth and AidEnvironment, 2024).

It is unclear how companies are pushing for halting deforestation beyond sourcing certified products and monitoring their supply chains – an issue that is particularly salient as we reach the deadline for zero-deforestation commitments. Current commitments do not address leakage, which occurs when deforestation is excluded from one company's supply chain but continues elsewhere due to continued demand for deforestation-linked commodities like soy and palm oil. In this context, reductions in deforestation rates may be less significant at a global level, while companies claim to be deforestation-free. Only one company, Mars, ties its ingredient sourcing strategy to its impact on deforestation and land use (Mars, 2019), while other companies do not mention how demand-side measures, such as changes in diets, impact deforestation at a global level, both in their supply chains and beyond. Mars also has a target to hold its land-use footprint stable even as its business grows, which would force it to switch to ingredients that use less land, such as plant-based proteins (Mars, 2019). As key players in the agrifood sector, these companies have a responsibility to push for more ambitious measures targeting deforestation and land-use change, for example by addressing one of the key drivers of deforestation: livestock and animal feed farming.

2 *The Accountability Framework initiative is a 'collective effort of diverse organisations dedicated to protecting forests, natural ecosystems, and human rights by making ethical production and trade the new normal' (AFi, 2025). Its secretariat is run by the Rainforest Alliance.*

BOX 3.2 – Emission reduction claims based on commodity EACs are premature and potentially misleading

Companies are purchasing commodity certificates without physical traceability to claim that the ingredients they are sourcing are 'deforestation-free' or 'responsibly sourced'. There are two broad categories of commodity certificates: those where the 'identity' of the commodity is preserved (i.e. certified and non-certified commodities are kept separate), and those where these are mixed during processing. The certificates most purchased by agrifood companies fall under the latter and include mass balance and book-and-claim certificates. Book-and-claim certificates can be used to purchase commodities beyond the company's supply shed. According to the GHG Protocol's draft Land Sector & Removals Guidance, a supply shed, also known as a sourcing region or supply base, is a 'predefined, spatially explicit land area that supplies harvested biogenic materials to the first collection point or processing facility in a value chain' (GHG Protocol, 2022a, p. 143). Book-and-claim certificates therefore do not guarantee a link or traceability between the commodity and the company's supply chain. On the other hand, mass balance certificates are derived from within the supply shed. This means that these certificates are generated within the sourcing region of a company's supply chain, although the certificate cannot be traced to an exact farm.

For example, companies can purchase certificates for 'deforestation-free' soy. As soy is a major driver of deforestation emissions worldwide (Ziegert and Sotirov, 2024), claiming to use 'deforestation-free soy' can substantially decrease the reported emissions footprint of an agrifood company. To be able to generate such certificates, soy needs to be grown in an area that has not been recently deforested. By comparing old and recent satellite images, certification bodies check whether the farmland has been deforested since the decided cut-off date, after which no deforestation can occur. The soy farmer receives a certificate and can claim 'deforestation-free' soybean production, and intermediary parties sell these certificates to buyer companies (Oudman, 2025). However, the 'deforestation-free' soy is pooled together with soy that may be associated with deforestation. Buyers can purchase a book-and-claim or mass balance certificate that does not guarantee traceability at the farm level and therefore may purchase soy from mixed origins. In other words, any purchased soy is not guaranteed deforestation-free (Oudman, 2025). Moreover, commodities purchased through book-and-claim certification may not necessarily be associated with the company's actual supply chain (GHG Protocol, 2022b, p. 22) and therefore may not prevent deforestation in the regions that the company sources from.

We interpret from Nestlé's sustainability reporting that the company purchases certificates through book-and-claim and mass balance constructs to claim emission reductions, although these certificates are not fully traceable and may not necessarily reduce deforestation in Nestlé's supply chains. Mars, PepsiCo and Danone use mass balance certificates to reach their deforestation-free and responsible sourcing commitments, while Nestlé purchases certificates through both mass balance and book-and-claim constructs. However, book-and-claim certificates are not necessarily specific to the reporting company's supply chain, and there is a lack of traceability provided by such certificates. Using these certificates for claiming emission reductions is particularly problematic, as the lack of segregation between certified and non-certified commodities could lead to double-counting, where emission reductions are claimed by multiple actors along the supply chain. Especially when 'deforestation-free' soy originates from a region where deforestation is predominantly non-existent, there may be a surplus of the associated certificates. For these reasons, the GHG Protocol's draft Land Sector and Removals Guidance *(see Box 3.1)* does not allow for certificates without physical traceability to count towards reductions in emissions from deforestation (GHG Protocol, 2022b, p. 22).

It is unclear how the use of commodity certificates, especially those without physical traceability, will lead to a reduction in deforestation or an increase in sustainable farming practices. Unlike for hard-to-abate emission sources, where EACs could support innovation and development of new technologies for *future* application (NewClimate Institute, 2024d), certificates instead reward farming on land that has been deforestation-free since the decided cut-off date. Whether certification will lead to less deforestation *today* or *in the future* remains uncertain. As such, there is no guarantee that purchasing certificates for 'deforestation-free' and 'responsibly farmed' commodities will prevent deforestation in supply chains where deforestation remains a significant problem, or whether it only rewards farmers and regions that are already aligned with certification requirements.

Due to the remaining uncertainty surrounding commodity certificates and their impact, we recommend that companies refrain from counting emission reductions associated with their purchases of mass balance and book-and-claim commodity certificates towards target achievement. In some circumstances, commodity EACs derived from interventions within a specific supply shed can be a reasonable means to claim emission reductions in a company's value chain. However, the approach would also introduce risks that must be carefully considered. The case-specific development of high-integrity, commodity-specific crediting mechanisms will be highly challenging and susceptible to influence from actors with significant interests. Decades of experience with Renewable Energy Certificates has also shown that the procurement of EACs alone, without consideration of the specific procurement constructs, may be unlikely to lead to significant emission reductions (NewClimate Institute, 2024d). As guidelines for the definition and the use of commodity EACs are still under development, emission reduction claims associated with purchases of book-and-claim and mass balance certificates, presented with minimal explanation, may be premature.

Measures and targets to reduce emissions from fertilisers are lacking from company climate strategies

None of the five assessed agrifood companies acknowledges the need to reduce fertiliser use on farms. Fertilisers, both synthetic and organic, lead to significant GHG emissions and are the biggest source of nitrous oxide (NO_2) emissions. Two-thirds of emissions from fertilisers occur during application, in the form of nitrogen emissions, while one third of GHG emissions occur due to the burning of fossil fuels during the production of synthetic fertilisers (Gao and Serrenho, 2023). Companies that mention fertilisers focus on changing the type of fertiliser sourced, which at best reduces emissions from fertiliser production. For instance, Danone and Nestlé report that they are replacing some synthetic fertilisers with organic fertilisers, using cow manure to fertilise crops and pastures (Danone, 2023a, p. 24; Nestlé, 2025b, p. 30). While replacing synthetic fertilisers with manure addresses emissions from synthetic fertiliser production (Paul *et al.*, 2023), it does not address on-farm nitrous oxide emissions. There is also some evidence that using manure to fertilise soils could increase nitrous oxide emissions (Zhou *et al.*, 2017). Companies should therefore reduce overall fertiliser use, whether they switch to organic fertilisers or not. PepsiCo is the only company that mentions it is piloting the use of low-carbon fertilisers made from renewable or low-carbon ammonia (PepsiCo, 2025d, p. 17). Reducing on-farm nitrous oxide emissions will require companies to increase fertiliser use efficiency through the implementation of fertiliser management plans and by using precision fertilisers, among several key measures.

Regenerative agriculture is presented as the most important measure to reduce emissions from fertiliser use, though it remains unclear how it can contribute to a reduction in nitrous oxide emissions. Both Danone and Nestlé highlight that regenerative agriculture will lead to fewer GHG emissions due to decreased synthetic fertiliser use (Danone, 2023a, p. 24; Nestlé, 2025b, p. 45). It is unclear whether regenerative agriculture will lead to fewer nitrous oxide emissions, as different regenerative agriculture practices geared towards sequestering more carbon in soils may, in fact, require an increase in fertiliser application (Giller *et al.*, 2021; NewClimate Institute, 2024b). PepsiCo also mentions nutrient management as a key component of regenerative agriculture (PepsiCo, 2025d, p. 16) but only Danone has clear requirements for farmers to implement fertiliser management plans under its regenerative agriculture framework. Other companies have yet to present significant measures towards reducing emissions from fertilisers.

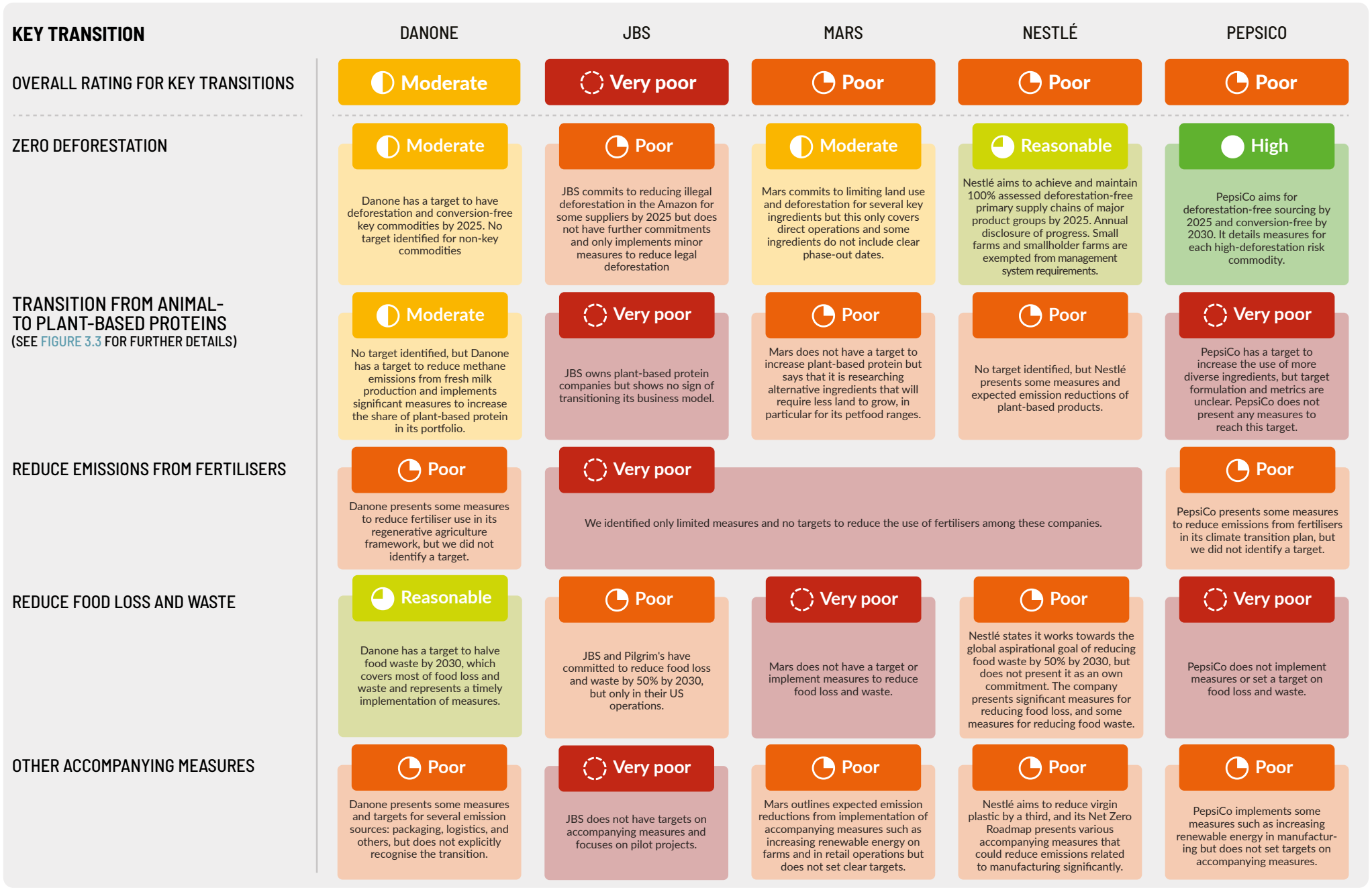
Companies are making some progress on other key transitions, but targets and progress data are still missing

Most agrifood companies disclose how they are addressing other key measures needed to decarbonise the industry. Agricultural production and agrifood supply chains are complex, and decarbonising food systems requires the implementation of many measures at both the farm and distribution stages. We group these measures under 'accompanying measures' as a key transition. Accompanying measures include transitioning to renewable energy on farms, decarbonising farming equipment, using electric or low-emission vehicles for logistics and distribution, and implementing circularity measures for packaging. All companies under assessment, except for JBS, mention they are implementing some or all of the necessary accompanying measures. However, quantitative targets are uncommon.

We identified several targets in relation to packaging, but progress on reducing absolute tonnage of plastic is mixed. Packaging is a major source of emissions for the industry. For example, a quarter of PepsiCo's emissions stem from packaging (PepsiCo, 2024c), while packaging accounts for just over 10% of Danone's emissions (Danone, 2025, p. 211). Danone, Mars, Nestlé and PepsiCo have set targets on packaging. These targets include designing packaging to be reusable and recyclable and reducing intensity and absolute plastic use. Danone and Nestlé report that overall virgin plastic use has reduced against their baseline years. In contrast, PepsiCo reports an increase in virgin plastic use, and Mars reports that it will likely not reach its 2025 targets. PepsiCo also reduced the ambition of its packaging targets in 2025 (Giles, 2025; PepsiCo, 2025c). While it is encouraging that companies address this source of emissions, measures should be ramped up for companies to reach their packaging targets, and it remains unclear how effective the implemented measures will be in reducing emissions from packaging. We could not identify scientific benchmarks in the literature for reducing emissions from packaging and plastics despite these being a significant contributor to overall emissions. Packaging tends to be addressed from a waste and circularity perspective, and less often from a climate and emissions standpoint, so that the pathway towards decarbonising this emissions source remains uncharted territory.

Commitments and progress on reducing food loss and waste are noticeably absent from companies' decarbonisation strategies. Only Danone has a credible and ambitious food loss and waste target, aligned with the global Sustainable Development Goal (SDG) to halve food loss and waste by 2030 (Danone, 2025, p. 169). Nestlé reports that it is working towards the SDG target and outlines some measures to address food loss and waste, although it does not report progress (Nestlé, 2025b, p. 62). JBS has a target to reduce food loss and waste, but the target only covers the US operations of its subsidiary Pilgrim's (JBS, 2025). Other companies mention some measures but do not commit to waste reduction targets. Food producers may be less able to address food waste than food retailers. However, companies can implement measures such as engaging with their suppliers and distributors to reduce waste, as well as implementing food loss and waste programmes (Boehm *et al.*, 2023).

Figure 3.4: Food and agriculture companies' strategies for key transitions *(see Section 3.2 for further details in company case studies)*



→ *See Annex 3C for further details on our integrity assessments for companies' key transitions*

Recommendations for companies

- **Set separate targets for emission reduction and removal.** Agrifood companies should aim for deep, structural emission reductions, as well as enhanced land-based removals. They should, however, not aggregate removals with reductions to claim progress towards target achievement. Counting removals towards meeting emission reduction targets obscures the lack of action on key transitions. Separate targets for reduction and removal would improve the accountability, transparency and robustness of agrifood targets and climate strategies, while driving action on key transitions.
- **Commit to key transitions and break emission reduction targets into specific greenhouse gases.** Companies should specify their emission reduction commitments by greenhouse gas type to be able to link emission reduction targets with key transitions and to track progress more accurately. Methane can be most effectively addressed by reducing livestock farming; therefore, companies should commit to shifting to plant-based protein. Nitrous oxide emissions need to be addressed by reducing fertiliser use on farmland.
- **Expand the coverage of deforestation targets to include all key commodities, especially cocoa, as well as indirect suppliers.** Companies should expand on the measures they take to reduce deforestation in their supply chains, beyond purchasing deforestation-free certificates and increasing supply chain traceability. Companies should aim to use commodity certificates that guarantee physical traceability to increase the integrity of their deforestation-free commitments and to reduce the risk of double-claiming.
- **Refrain from counting emission reductions associated with EACs towards target achievement until further guidance is developed.** As guidelines for the definition and use of commodity EACs are still under development, emission reduction claims associated with purchases of book-and-claim and mass balance certificates, presented with minimal explanation, may be premature. Companies can, however, report on any progress made with the help of EACs in their sustainability disclosures in the form of climate contributions.

Urgent priorities for SBTi, GHG Protocol and ISO standard development processes:

- **Ensure clarity around emission reduction requirements for the agrifood sector.** The existing guidelines, most notably from the SBTi's FLAG Guidance, allow for an unspecified role for land-based removals to count towards target achievement. It remains unclear what the *actual* emission reduction requirements are for companies that want to comply with the SBTi's FLAG Guidance. A breakdown of emission reduction requirements into separate greenhouse gases would guide the sector to more accurately and more effectively support key transitions.
- **Require separate targets for emission reduction and removal.** Standard setters should require that companies commit to sufficient emission reductions for the sector and should not allow land-based removals and emission reductions to be aggregated. Separate targets would increase transparency and robustness of climate strategies and ensure accountability. The latest draft version of the GHG Protocol Land Sector and Removals Guidance of 2022 includes this criterion – we strongly recommend that the standard setters retain this criterion in the final version.

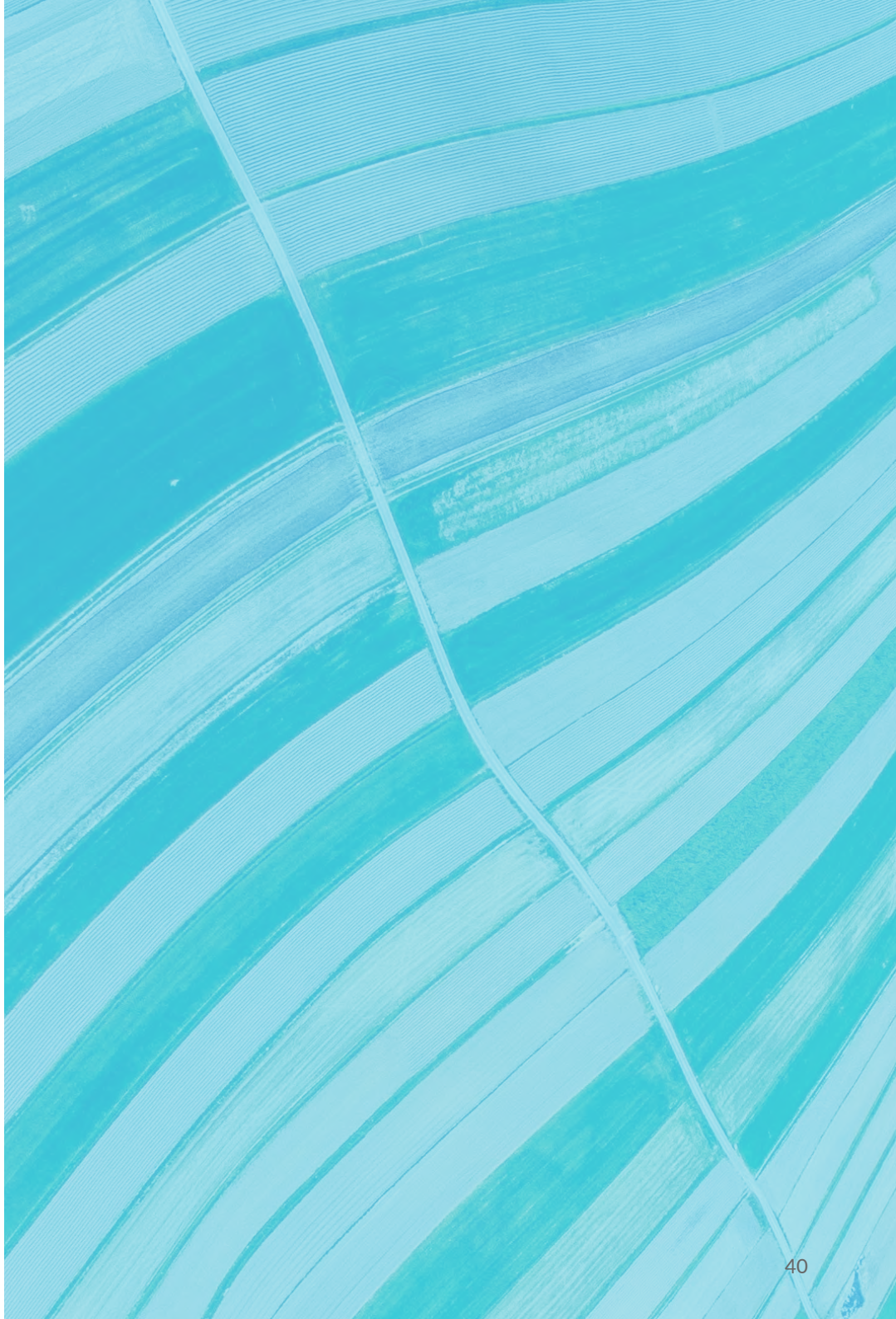
Agrifood companies' targets should be set separately for emission reductions and removals and clearly linked to key transitions to drive meaningful action.

3.2 Company analyses

The following pages set out our detailed analyses of **Danone**, **JBS**, **Mars**, **Nestlé** and **PepsiCo**.

→ *See the assessment methodology for the Corporate Climate Responsibility Monitor. Guidance and assessment criteria for good practice corporate emission reduction and net-zero targets: Version 5.0 (NewClimate Institute, 2025).*

Disclaimer: *Our evaluation of the transparency and integrity of companies' climate strategies represents the authors' views and interpretations of publicly available information that is self-reported by the companies assessed. Due to the fragmentation, inconsistency and ambiguity of some of the information provided by the assessed companies, as well as the fact that the authors did not seek to validate the public self-reported information provided by those companies, the authors cannot guarantee the factual accuracy of all information presented in this report. Therefore, neither the authors nor NewClimate Institute makes representations or warranties as to the accuracy or reliability of any information in this report. The authors and NewClimate Institute expressly assume no liability for information used or published by third parties with reference to this report.*



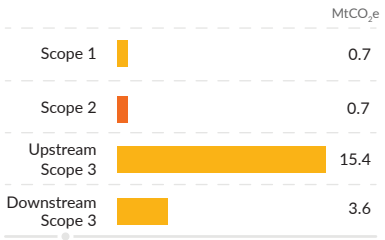
Danone

Danone's milk and dairy production accounted for 75% of its value chain emissions in 2022. The company has SBTi FLAG-aligned targets for 2030 and 2050 targets, but both depend on an undefined role of land-based CDR. Danone also has a target to reduce its methane emissions related to fresh milk production by 30% by 2030, which is substantiated with plans to increase its share of plant-based protein products. Danone presents targets to end deforestation and limit food loss and waste and presents significant measures to reduce for other key emissions.

	TRANSPARENCY	INTEGRITY
	Moderate	Moderate

1 TRACKING AND DISCLOSURE OF EMISSIONS

Danone provides an emissions breakdown into conventional categories and relevant emission sources. Only historical data of base year and one year prior to reporting year are provided.



MAJOR EMISSION SOURCES

- Livestock rearing
- Land use and land-use change
- Soil fertilisers
- Other

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net zero by 2050*

			TRANSPARENCY	INTEGRITY
Short term	?	*By 2030, compared to 2020 levels: reduce scope 1 & 2 energy & industry-related emissions by 46.3%, scope 3 energy & industry-realted by 42%, FLAG emissions by 34.8%, CH_4 from fresh milk by 30%. Target achievement depends on an undefined role for land-based CDR. Methane target is, based on available information, independent from removals.*		
Medium term	N/A	*No target identified.*		
Longer term	?	*Net-zero target is accompanied by emission reduction targets, but these depend on an undefined role of land-based CDR. Danone gives an estimate of residual emissions, in which land-based CDR has likely already been accounted for.*		?

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Shift to plant-based protein	*No target identified, but Danone has a target to reduce methane emissions from fresh milk production and implements significant measures to increase the share of plant-based protein in its portfolio.*		
Reduction in food loss and waste in operations and supply chain	*Danone has a target to halve food waste by 2030, which covers most of food loss and waste and represents a timely implementation of measures.*		
Reduction in fertiliser use	*Danone mentions over-application of fertiliser in its sustainability reporting, but does not signal the need for the transition. We identified some measures to reduce fertiliser use in its regenerative agriculture framework.*		
Commit to no-deforestation, no land conversion and no peat-burning	*Danone has a target to have deforestation and conversion-free key commodities by 2025. No target identified for non-key commodities.*		
Accompanying measures	*Danone presents some measures and targets for several emission sources: packaging, logistics, and others, but does not explicitly recognise the transition.*		

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*Danone contributes through two funds to climate action beyond and within its value chain. The associated reductions generate carbon credits that Danone can claim, potentially used for carbon neutrality claim of factories. Offset credits explicitly do not count toward achievement of net-zero target.*		
Support for durable carbon dioxide removals	*Danone says it will invest in durable CDR to claim neutralisation of residual emissions, by buying carbon removal credits. No specific actions identified.*		

EMISSION TRENDS

✔ *Emissions have decreased significantly since the target base year of 2020. Reduction rate appears to be in line with SBTi benchmarks for the sector (annual reduction of 3.03% from 2020). Currently, land-based CDR is not included in the emissions reporting.*

TRANSITION PROGRESS

?

? *Danone presents data on its progress towards its zero deforestation target. Based on its own reporting, Danone is on track to meet this target. For other transitions, no progress data identified but Danone presents significant measures and progress in qualitative terms on transitions regarding plant-based protein, food loss and waste, and accompanying measures.*

?

✔

?

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- ✚ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Danone (2023a, 2025).*

Danone

Danone S.A. is a French corporation that mainly produces dairy and dairy products. The largest share of its emissions is related to milk and dairy ingredients, accounting for 75% of its value chain emissions in 2022. Danone has committed to 2030 and 2050 targets, in line with the Science Based Targets initiative's guidance for forest, land and agriculture companies. Both its 2030 and 2050 targets depend on an undefined role of land-based carbon removals, as currently allowed in the SBTi FLAG guidance. Therefore, it remains unclear to what extent Danone is committed to permanent emission reductions. In addition to its FLAG targets, the company has a target to reduce its methane emissions related to fresh milk production by 30% by 2030 compared to 2020 levels. This target is substantiated with plans to increase its share of plant-based protein products. Danone also presents targets to end deforestation and reduce food loss and waste, along with significant measures for other key emission sources.

Key developments: We have identified several developments and updates to Danone's climate strategy since the previous analysis was published in April 2024 (NewClimate Institute, 2024a). Danone now presents emission reduction targets alongside its net-zero target and is more explicit about land-based carbon dioxide removals (CDR) playing a role in target realisation. The volume of anticipated land-based CDR remains unclear. We were unable to quantify Danone's targets based on full value chain emissions, because its CDP disclosure is no longer publicly available. We added analyses on Danone's commitments to key transitions and its climate contributions.

Danone's short-term targets towards 2030 reflect the need for rapid emission reductions in the sector, but the intended role of land-based removals for its target realisation remains unclear. The company aims to reduce scope 1 and 2 energy and industrial greenhouse gas (GHG) emissions by 46.3% by 2030, compared to 2020 levels, and aims to reduce scope 3 energy and industry-related emissions by 42% within the same timeframe. Danone also commits to reducing scope 1 and 3 FLAG emissions by 30.3% by 2030, compared to 2020 levels (Danone, 2025, p. 216). Though Danone was not explicit about the role of removals for target realisation previously, the company now states that the targets include 'FLAG emissions and removals' (Danone, 2025, p. 216). The company also plans to rely on soil carbon sequestration as a means to enhance removals and heavily leans on regenerative agriculture throughout its climate strategy (Danone, 2025, p. 209). However, it remains unclear how Danone's regenerative agriculture practices will lead to deep emission reductions (NewClimate Institute, 2024b). To date, Danone has not yet reported on achieved volume of removals and states that it is awaiting guidance to be developed under the forthcoming GHG Protocol's Land Sector and Removals guidance (Danone, 2025, pp. 209, 221), of which the current draft actually requires companies to set separate reduction and removal targets *(see Section 3.1)*. The company also estimates that remaining emissions in 2030 amount to 14.3 $MtCO_2e$ (Danone, 2025, p. 205), which translates to a reduction of roughly 40% compared to 2020 baseline emissions. It remains unclear if removals are already accounted for in this estimate of remaining emissions. In addition to Danone's SBTi-validated FLAG targets, the company has a target to reduce methane emissions related to fresh milk production by 30% *(see below)*. Though not made explicit, we understand that this target is independent of land-based removals.

Danone's net-zero target for 2050 is accompanied by emission reduction targets, but these will be reached through an undefined amount of land-based carbon removals. In line with SBTi's FLAG guidance, Danone has set targets to reduce energy and industry-related emissions by 90% and FLAG emissions by 72% by 2050. However, the company does not specify the role of land-based carbon removals for its FLAG targets. This could mean that the share of permanent emission reductions is limited. The company estimates that its residual emissions will be 4.7 $MtCO_2e$ in 2050 (Danone, 2025, p. 219). The estimated volume of residual emissions implies emission reductions of roughly 80% compared to its 2020 baseline emissions, but it remains unclear if land-based removals are already accounted for in this estimate. Since public disclosure does not include all scope 3 emissions categories as per the GHG Protocol (Danone, 2025, p. 218), we were unable to quantify what Danone's long-term and short-term targets mean compared to full value chain emissions *(see NewClimate Institute (2024a) for our previous quantification)*. Danone describes that it will purchase carbon credits associated with permanent removals to reach net zero, and that it will involve own removal projects, without specifying further (Danone, 2025, p. 219).

Danone presents comprehensive emission reduction measures, including plans to increase the share of plant-based protein. In its earlier *Climate Transition Plan* and latest sustainability report, Danone acknowledges the need to transition to more plant-based protein, and presents significant measures to contribute to the transition (Danone, 2023a, pp. 18; 35, 2025, pp. 203, 214, 350). Although Danone describes the importance of dairy for 'healthy, sustainable and accessible diets' (Danone, 2023b, p. 4) and remains one of the world's largest dairy producers, it also highlights its plans to further increase the share of plant-based and low-carbon products (Danone, 2023a, pp. 35–36, 2025, pp. 203, 214). Furthermore, Danone describes that the carbon footprint of products plays a critical role in decision-making processes regarding product innovation. This set of measures significantly strengthens the integrity of Danone's longer-term climate strategy. Since the implementation of Danone's planned measures for the short term would mean reaching the technical and physical limitations of methane reductions in the livestock sector without reducing dairy production, increasing the share of plant-based protein is a crucial measure to achieve deeper emission reductions (Reisinger *et al.*, 2021). By increasing the share of plant-based protein production, the company creates an opportunity to transition away from an emissions-intensive business model, and to achieve deeper emission reductions in the long term.

Danone's climate strategy also addresses deforestation, food loss and waste, accompanying measures, and – to some extent – fertiliser use. The company has significant measures in place for those first three key emission sources and presents targets for transitions regarding deforestation and food loss and waste. Danone has a target to make its key commodities deforestation- and conversion-free by 2025 and presents various policies and tracking tools supporting this (Danone, 2025, pp. 169, 233). The company aims to halve food loss and waste by 2030 and describes some measures contributing to this target (Danone, 2025, pp. 169, 238, 244–246). For emission sources such as packaging, logistics and energy, Danone furthermore describes a multitude of measures and some underlying targets (Danone, 2025, pp. 241–242, 349). In the context of regenerative agriculture, Danone requires farmers to implement fertiliser management plans (Danone, 2021). The company says that measures will reduce fertiliser use and related emissions (Danone, 2023a, p. 24), but further elaboration in public-facing documentation would be needed to independently assess the robustness of that claim.

Danone's climate strategy includes a target to reduce methane emissions related to fresh milk production by 30%, compared to 2020 levels. Danone is a signatory to the Global Methane Pledge and is one of the first major agrifood companies to set a target for reducing methane emissions (Danone, 2023b, p. 3, 2025, p. 219). Methane emissions from livestock are one of the most challenging and critical emission sources of the sector (Reisinger *et al.*, 2021). Danone's target does not cover all of its methane emissions. Only 37% of Danone's emissions are related to milk production – a share of that is methane (Danone, 2025, p. 347), and the target does not cover secondary methane products. During COP28, Danone pledged to start reporting on its methane emissions in 2024 (Douglas, 2023) and now includes methane emissions in its latest reporting (Danone, 2025, p. 207).

Danone describes that it is contributing to climate action beyond its own value chain, but potentially uses generated carbon credits to claim carbon neutrality for factories. Danone invests in its Livelihoods Carbon Fund and its Livelihoods Fund for Family Farming (Danone, 2025, pp. 175, 219), which could be considered climate contributions if kept independent of any neutralisation claims. It describes that the projects generate carbon credits that are then returned to investors, of which Danone is one. It remains unclear what claim Danone is using these carbon credits for. Some of Danone's factories use carbon credits to make carbon neutrality claims, but it is unclear whether these are separate credits or those generated through the livelihoods funds (Danone, 2025, pp. 175, 219). It is commendable that Danone is making such investments, but these should remain independent from any neutrality claim. In addition, more information on the recipients and the scale of the climate contributions is needed to understand the potential impact of the contributions.

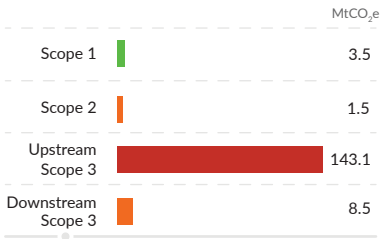
JBS

JBS's commitment to reach net-zero emissions by 2040 is not accompanied by an emission reduction target. JBS plans to continue growth in a GHG emission-intensive industry; we did not find evidence that JBS is embarking on key transitions in the sector that would enable deep emission reductions. Its interim targets for 2030 would lead to a 1% emission reduction compared to its reported 2019 emissions, if interpreted generously. The company's 2030 and net-zero commitments were removed from the Science Based Targets initiative's (SBTi) website in 2024.

	TRANSPARENCY	INTEGRITY
	Very poor	Very poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

JBS discloses scope 1, 2 and 3 emissions since 2021 but does not disclose emissions from land use change.



MAJOR EMISSION SOURCES

- Livestock rearing
- Land use and land-use change
- Soil fertilisers
- Other

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net zero GHG emissions by 2040*

			TRANSPARENCY	INTEGRITY
Short term	Unclear	*JBS's target to reduce scope 1 & 2 emissions intensity by 30% by 2030 vs 2019, even if interpreted as an absolute emission reduction target, would only lead to a 1.1% emission reduction by 2030 below 2019 levels.*	◌	◌
Medium term	Unclear	*Target to reach net-zero GHG emissions by 2040 is not accompanied by an emission reduction target.*	◌	◌
Longer term	N/A	*No target identified.*	◌	◌

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Shift to plant-based protein	*JBS owns plant-based protein companies but shows no sign of transitioning its business model.*	◌	◌
Reduction in food loss and waste in operations and supply chain	*JBS and Pilgrim's have committed to reduce food loss and waste by 50% by 2030, but only in their US operations.*	◐	◔
Reduction in fertiliser use	*JBS does not have a target or implement measures to reduce fertiliser use.*	◌	◌
Commit to no-deforestation, no land conversion and no peat-burning	*JBS commits to reducing illegal deforestation in the Amazon for some suppliers by 2025 but does not have further commitments and only implements minor measures for legal deforestation.*	◔	◔
Accompanying measures	*JBS does not have targets on accompanying measures and focuses on pilot projects.*	◌	◌

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*JBS appears to be using JBS Fund for the Amazon to generate carbon credits. It is unclear if credits will be used for offsetting to reach its targets.*	◌	◌
Support for durable carbon dioxide removals	*No support for durable CDR identified.*	◌	◌

EMISSION TRENDS

✖ *Slight decrease in emissions in recent years, but no signs of a rapid reduction. Insufficient data for years until 2021 to investigate trends in detail.*

TRANSITION PROGRESS

↩ ? ? ↩ ?

JBS shows no sign of progress on transitioning away from emissions intensive practices. JBS addresses illegal deforestation, but does not report progress on emissions from land-use change, nor does it have a commitment to phase out legal deforestation.

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- ✚ Right direction, off track
- ✖ Well off track
- ↩ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *JBS (2020, 2024, 2025), SBTi (2024).*

JBS

JBS S.A. (JBS) is a meat processor headquartered in Brazil. Scope 3 emissions accounted for 97% of its reported emissions in 2023. The company plans to continue growth in a GHG emission-intensive industry; we did not find evidence that JBS is embarking on key transitions in the sector that would enable deep emission reductions. JBS does not have an emission reduction target alongside its net-zero emission target for 2040. Its interim targets for 2030 would lead to a 1% emission reduction compared to its reported 2021 emissions, if interpreted generously.

Key developments over the past year: We have identified only limited developments and minor updates to JBS's climate strategy since the previous analysis was published in 2023 (NewClimate Institute, 2023, pp. 98–99). JBS now includes some methane emissions in its emissions calculations but still excludes emissions from land-use change. Other estimates of JBS's methane emissions place the company as the fifth largest corporate methane emitter (Greenpeace Nordic, 2024). The company's 2030 and net-zero commitments were removed from the Science Based Targets initiative's (SBTi) website in 2024 (SBTi, 2024).

JBS does not specify what share of its 2040 net-zero target will be based on emission reductions and what share will rely on offsetting. In its communication related to its net-zero target, JBS says that it wants to reduce direct and indirect GHG emissions, while offsetting residual emissions (JBS, 2024, p. 33). We could not identify an emission reduction target accompanying its net-zero headline pledge. It is therefore unclear what share of JBS's emissions footprint will be offset by 2040. Given the limited detail on emission reduction measures and the expected continuous growth of the company, this share could be significant. JBS does not specify any details regarding what kind of offsetting projects it will procure credits from, the potential volume of credits it envisages needing, nor general criteria for ensuring robust environmental integrity in any offsetting claims it may make. In addition to the uncertainties around the true meaning of the net-zero commitment, JBS has also recently announced that it is an aspiration, rather than a target (Eschenbacher, Novaes Magalhaes and Jessop, 2025).

JBS's emissions intensity target for scope 1 and 2 is highly insufficient, omitting the company's main emission sources. JBS says it wants to reduce scope 1 and 2 emissions intensity by at least 30% by 2030 compared to 2019 (JBS, 2024, p. 29) while still presenting it as an absolute target on its website (JBS, 2025). This inconsistency undermines the transparency of the target. Moreover, since its reported scope 3 emissions accounted for 97% of its total emissions footprint in 2023 (JBS, 2024, p. 32), the target is also highly insufficient, amounting to around 1% reduction by 2030 below 2021, if interpreted generously, according to our own calculations. The company's 2030 and net-zero commitments were removed from the Science Based Targets initiative's (SBTi) website in 2024 (SBTi, 2024), because by the end of 2023, JBS was not able to submit or revise its plans to be aligned with limiting global warming to maximum 1.5°C, in accordance with the SBTi's standards (Bryan and Pooler, 2024; Jones and Mitchell, 2024). JBS claims its commitment was removed in response to changes in SBTi's FLAG guidance published in 2023 (SBTi, 2023a). JBS does not intend to set new targets in accordance with the FLAG guidance (JBS, 2024, p. 33).

JBS still excludes emissions from land-use change related to meat production in its emissions disclosure (JBS, 2024, p. 32). JBS says that key emission sources including enteric fermentation, feed and manure management are included in its reported scope 3 emissions, but the company does not provide a breakdown of the emissions to these sources (JBS, 2024, p. 32). Moreover, land-use change emissions related to rearing cattle are not covered for its emissions reporting as these calculations 'are currently being improved' (JBS, 2024, p. 32). With the current level of detail, JBS's emissions disclosure does not allow for a thorough understanding of the emission sources and effectiveness of potential mitigation measures. Moreover, third-party estimates exceed JBS's estimates substantially, putting JBS's emissions at close to 300 $MtCO_2e$ in 2021 (Changing Markets Foundation and IATP, 2022, p. 16), an estimate that is over 100 $MtCO_2e$ higher than its self-reported 2021 emissions (JBS, 2024, p. 32).

JBS is not transitioning away from its highly emissions intensive cattle farming industry; rather it is expanding its industrial animal farming operations. These emissions are primarily related to cattle rearing, including emissions from enteric fermentation, feed, manure and deforestation, and pig and poultry farming. We did not identify a comprehensive emission reduction strategy: the company provides minimal detail on how it wants to realise its targets, focusing on case-studies and anecdotal evidence that it is testing certain decarbonisation measures. JBS has set a target on cutting food loss and waste in its US JBS and Pilgrim's operations by 50% by 2030 (JBS, 2025). Except for this, JBS does not set targets on key transitions needed to decarbonise the food and agriculture sector, and instead presents accompanying measures such as limiting overgrazing, using feed additives, and increasing feed efficiency (JBS, 2024, pp. 35–38). Even so, these measures all appear to be in piloting or trial stages without any clear timelines for how these measures will be scaled up. We did not identify substantial transition targets for JBS's most important emission sources in scope 3: investments into scope 3 emission reduction measures have been found to remain very minimal (Greenpeace Nordic, 2024). JBS also emphasises regenerative grazing as a key measure to reduce emissions from livestock (JBS, 2024, pp. 35–38), though evidence on the efficacy of regenerative grazing is currently lacking (NewClimate Institute, 2024b). These measures, although important, should be used in addition to diversifying away from livestock rearing. JBS mentions that it is expanding into plant-based proteins through its acquisition of several plant-based protein brands, but this is only in addition to its current activities (JBS, 2024, p. 81). Rather, JBS is investing in the expansion of its US beef production, indicating that it is not transitioning away from this industry (Casey, 2025). JBS supports policy on sustainable agricultural intensification but does not appear to support climate policy related to transitioning diets away from GHG intensive protein products (InfluenceMap, 2024). Without major innovations to drastically reduce the emissions footprint of meat production or diversifying away from this highly GHG emissions intensive industry, it is not credible for livestock agribusinesses to claim that they are on a path to deep decarbonisation.

JBS does not present ambitious targets or measures to end deforestation in its supply chain. JBS has set a target to deliver zero illegal deforestation in all Brazilian biomes by the end of 2025 for direct and tier 1 indirect cattle suppliers (JBS, 2024, p. 47). However, it does not present any targets to end legal deforestation. Even then, recent investigations have shown that illegal deforestation was still taking place in JBS's supply chain in 2024, so it is unlikely that JBS is making real progress on its illegal deforestation target (Mighty Earth and AidEnvironment, 2024). JBS presents only few measures to address illegal deforestation beyond 2025, in particular investing in supplier and cattle traceability (JBS, 2024, p. 51). JBS does not mention legal deforestation in the Amazon or ecosystem conservation as an issue it needs to address. JBS also mentions that it intends to address the underlying drivers of deforestation (growing demand for animal protein products, especially beef), but only intends to do this through sustainable intensification, integrated farming systems and restorative land practices rather than reducing production and livestock numbers (JBS, 2024, p. 46).

JBS aims for 60% renewable electricity in its facilities by 2030 but provides little information about current and planned renewable energy supply constructs. We could no longer find a reference to its previous target to procure 100% renewable electricity by 2040 (JBS, 2023, p. 39). The company claims that renewable electricity accounted for only 8% of its consumption in 2023, down from 45.1% in 2022 (JBS, 2023, p. 39), but does not explain why this share has dropped so significantly. JBS has some renewable energy generation on-site, using solar systems and residue biogas, and mentions it is also procuring 'virtual renewable energy' (JBS, 2024, p. 61). The company aims for 60% renewable electricity by 2030 (JBS, 2024, p. 29), which is misaligned with global renewable electricity benchmarks (IEA, 2023). To achieve this, on-site generation and high-quality energy procurement structures are necessary. However, the company does not specify what procurement constructs it currently uses and what it plans to use. It remains unclear whether these targets are credible.

With its JBS Fund for the Amazon and JUNTOS programmes, JBS claims it will contribute to several projects in the Amazon biome without claiming neutralisation, but it appears that JBS will be using the funds to generate carbon credits (JBS, 2024, pp. 49, 54). With projects such as 'RestaurAmazônia' and 'Release Credit for Forest Bioeconomy', JBS wants to support projects related to 'low-carbon livestock farming', bioproducts and agroforestry in the Amazon biome (JBS, 2024, p. 54). It is unclear exactly what kind of practices are covered under 'low-carbon livestock farming', but JBS implies that it partially entails increasing soil carbon sequestration in pastures (JBS, 2024, p. 54). Although we did not find evidence that JBS intends to claim neutralisation of emissions based on the projects' outcome, a figure in the company's sustainability report suggests it will generate carbon credits through these projects (JBS, 2024, p. 49). We could not determine if JBS will use these carbon credits to reach its emission reduction and net-zero targets. JBS will contribute a maximum USD 100 million to the fund up to 2030 (JBS, 2020), equal to roughly 0.01% of its revenue annually (annual revenue was USD 73 billion in 2023 (JBS, 2024, p. 8)). The volume of this financial contribution is equivalent to a carbon price on the company's emissions footprint of approximately just 0.06 USD per tonne CO_2e. This is substantially lower than the range of emerging carbon price recommendations for meaningful climate contributions, that equate to at least 100 USD per tonne of CO_2e *(see Section 4 in the Methodology)*.

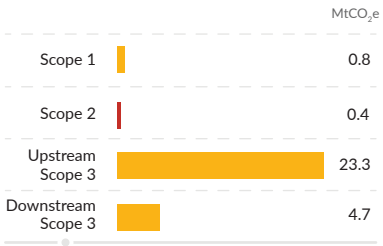
Mars

Mars has a net-zero target for 2050 which includes an emission reduction commitment of 80%, and a 2030 emission reduction target of 50%. Mars's short-term targets and planned measures appear in line with 1.5°C-aligned benchmarks, but we did not identify measures that would lead to deep emission reductions after 2030. Its short-term targets will be reached independently from land-based CDR.

	TRANSPARENCY	INTEGRITY
	Moderate	Poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Mars reports its emissions in its 2023 public-facing reporting, but does not provide historical emissions. Disclosure of scope 1 and 2 emissions remains superficial.



MAJOR EMISSION SOURCES

- Livestock rearing
- Land use and land-use change
- Soil fertilisers
- Other

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net-zero GHG emissions by 2050 in full value chain.*

			TRANSPARENCY	INTEGRITY
Short term	46%	*Targets to reduce scopes 1, 2 and 3 by 27% by 2025 and 50% by 2030 below 2015 are compatible with 1.5°C-aligned sectoral and cross-sector benchmarks.*		
Medium term	N/A	*No target identified.*		
Longer term	79%	*Target to reduce scope 1, 2 & 3 emissions by 80% below 2015 alongside net-zero target is compatible with benchmarks for the food sector.*		

EMISSION TRENDS

Mars's absolute emissions have reduced 9% since 2019. Intensity emissions have also reduced. It seems unlikely it will reach its 2025 target, but its 2030 target may still be within reach if reductions are accelerated.

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Shift to plant-based protein	*Mars does not have a target on plant-based protein, but is researching alternative ingredients, mostly for its petfood.*		
Reduction in food loss and waste in operations and supply chain	*Mars does not have a target or implement measures to reduce food loss and waste.*		
Reduction in fertiliser use	*Mars does not set a target or implement measures to reduce fertiliser use.*		
Commit to no-deforestation, no land conversion and no peat-burning	*Mars commits to limiting land use and deforestation for several key ingredients but this only covers direct operations and some ingredients do not include clear phase-out dates.*		
Accompanying measures	*Mars outlines expected emission reductions from implementation of accompanying measures but does not set clear targets.*		

TRANSITION PROGRESS

Mars is progressing on reducing its emissions related to packaging and against its deforestation targets. Mars does not provide enough details to evaluate progress on other transitions.

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions or offsetting claims identified. Carbon neutrality claims for specific brands but information is insufficient to determine the integrity of claims.*		
Support for durable carbon dioxide removals	*No support for durable CDR identified.*		

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- \+ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Mars (2019, 2023a, 2023b, 2023c, 2023d, 2024).*

Mars

Mars Incorporated, headquartered in the US, is a private company that produces confectionery and pet food, and provides animal care services. Over 95% of Mars's emissions occur in its supply chain, specifically during agricultural production and land use change, which account for 38% and 27% of the company's emissions respectively. Mars has a net-zero target for 2050, which includes an emission reduction commitment of 80%, and a 2030 emission reduction target of 50%. The company presents its 2030 target with a range of accompanying measures which appear aligned with the targeted level, despite leaving out key sector transition indicators. These reductions are independent of measures for land sequestration carbon dioxide removals. Mars's ambition in the short term is in line with 1.5°C-aligned benchmarks, but the company does not present an emission reduction strategy for after 2030. Mars's 2024 disclosure of its 2023 emissions is more transparent compared to past years but information on progress against key transition indicators is still missing.

Key developments over the past year: We have identified only limited developments and minor updates to Mars' climate strategy since the previous analysis was published in April 2024 (NewClimate Institute, 2024a, pp. 84–86). In 2024, the company started disclosing its annual GHG emissions in its sustainability report. We also included analysis of progress made and transition targets.

Mars's targets up to 2030 are in line with sectoral and global 1.5°C-aligned benchmarks and currently do not count on contentious removal claims. Mars has emission reduction targets for 2025 and 2030 of 27% and 50% respectively, compared to 2015 levels (Mars, 2023d, p. 12, 2023c, p. 8). These targets result in the same level of emission reductions when compared to 2019 value chain emissions. Therefore, the targets are in line with benchmarks for the food sector *(see Annex 3B)*. Alongside its targets, Mars presents a diverse set of measures that, in total, would reduce emissions to the targeted levels by 2030 (Mars, 2023c, pp. 25–32). They signal the need for a rapid decrease in Mars's value chain emissions and represent commitments to real emission reductions in the short term: the company explicitly states that the targets do not depend on offsets or carbon sequestration on farms (Mars, 2023c, p. 26). However, the company also states in its 2023 sustainability disclosure that land-based carbon sinks are important and plans to include CDR in its emissions footprint 'in the near future' (Mars, 2024, p. 15). If Mars starts counting CDR towards its emission reduction targets, this would significantly reduce the transparency and integrity of its climate commitments. It is crucial that Mars continues to prioritise deep emission reductions over contentious removal claims as it has done in the past (Mars, 2023a).

It remains unclear how Mars plans to further reduce emissions beyond 2030 as the company only commits to only a few key transitions for the sector. Although Mars's strategy until 2030 appears to be aligned with 1.5°C decarbonisation benchmarks, significant gaps remain for after 2030, both in terms of emission reduction measures as well as targets. Deeper emission reductions would depend on the implementation of transformational measures, which may be very difficult to achieve in the next decade if not already planned for today. Mars has committed to sourcing deforestation-free soy and beef by 2025 and reports to have sourced 100% deforestation-free palm oil since 2020 (Mars, 2024, pp. 16–17), in line with sectoral guidance on deforestation (AFi, 2023). We could not identify a target year for having a deforestation-free cocoa supply chain, despite cocoa representing its biggest share of land-use (Mars, 2019). Aside from halting deforestation, Mars does not present targets or emission reduction plans on other key transition measures. With regards to dairy production, the company mentions that it is considering replacing the raw materials it sources with materials that require 'less land to grow' and that provide 'equivalent nutritional value', potentially pointing to the need for plant-based or less land-intensive protein ingredients (Mars, 2019). Mars is researching alternative ingredients for its petfood recipes (Mars, 2024, p. 15) but does not substantiate these intentions further with commitments and measures for its dairy ingredients. Ingredient formulation only accounts for 4% of expected emission reductions until 2030, indicating only marginal changes (Mars, 2024, p. 14).

Mars's 2050 net-zero target is substantiated with an 80% emission reduction target, but potential reliance on land-based carbon dioxide removal leaves doubts on the target's integrity. By specifying that the net-zero target means a reduction of at least 80% of its value chain emissions, Mars indicates a long-term ambition that could be in line with sectoral benchmarks (Mars, 2023c, p. 9). However, it is unclear whether Mars will continue to rule out the use of land-based carbon dioxide removal (CDR) towards its 2030 and 2050 targets. The company previously said it is ruled out, but now implies that land-based CDR will indeed count towards achieving its short- and long-term emission reduction targets (Mars, 2024, p. 15).

Mars's progress over the last year to reduce emissions from key emission sources and implement sectoral transitions remains unclear due to limited disclosed information. Mars started improving its emissions disclosure only recently, publishing a breakdown of its 2023 and base year scope 1, 2 and 3 emissions, alongside other sustainability indicators for the first time this year (Mars, 2024, p. 40). Mars could further improve the transparency of its sustainability disclosure by disclosing historical emissions for all three scopes. In its 2023 sustainability report, Mars highlights progress on its deforestation reduction and packaging targets, and mentions it is implementing 'climate-smart' and regenerative agriculture practices (Mars, 2024, p. 14), but does not present progress on the measures in its net-zero roadmap. As of 2023, Mars has reduced its absolute emissions by 16% since 2015 (Mars, 2024, p. 10), so based on recent emissions data, it seems unlikely that its 2025 target is still within reach.

Mars's claim that it procures 59% renewable electricity to power its operations is mainly based on high-quality procurement constructs but is undermined by the matching method. Renewable electricity is key to Mars's emission reduction strategy, mainly to reduce scope 3 emissions. To date, the company provides only little information on planned procurement constructs. For its own operations, Mars describes its ambition to procure 100% renewable energy by 2040 (Mars, 2023d, p. 12), and affirms 59% of its electricity came from renewable sources in 2023 (Mars, 2024, p. 41). Around 72% of renewable electricity was procured via PPAs in 2022, with the rest mostly procured using unbundled RECs (Mars, 2023b). Given that PPAs are generally more likely to contribute to additional renewable capacity, the share of higher-quality procurement indicates Mars's commitment to a more ambitious decarbonisation strategy for its operations. However, the company also reported to have reached its limit for onsite wind and solar capacity (Mars, 2023c, p. 33) and is still finding solutions for replacing thermal energy with renewable sources (Mars, 2024, p. 14). The company states that it plans to use more PPAs but does not provide any more details on this, nor on the measures it will take to support the use of renewable electricity in the supply chain (Mars, 2023c, p. 33). More information is needed to assess whether this will lead to real and meaningful emission reductions.

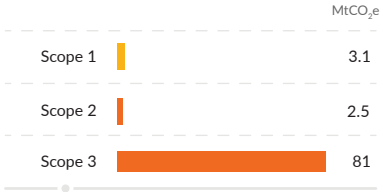
Nestlé

Nestlé commits to reaching net-zero GHG emissions in 2050, and has set SBTi FLAG-aligned targets in 2023. Nestlé's targets remain potentially misleading and ambiguous due to an unspecified amount of land-based carbon dioxide removals within the value chain in both the short and the long term. Therefore, we continue to interpret that Nestlé's target of cutting emissions by 50% by 2030 translates to reductions of just 13–26%. We could not identify clear plans for deep and structural decarbonisation of agricultural emissions, and were not able to independently verify Nestlé's claim to have reduced emissions by 20%.

TRANSPARENCY	INTEGRITY
Poor	Poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Emissions disclosure contains very limited detail and no breakdown of scope 3 emissions. Breakdown of emissions in Net Zero Roadmap not updated. Market-based emissions scope 2 are used for aggregates.



MAJOR EMISSION SOURCES

- Livestock rearing
- Land use and land-use change
- Soil fertilisers
- Other

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net zero by 2050.*

			TRANSPARENCY	INTEGRITY
Short term	14-24%	*Reduce scope 1, 2 & 3 emissions by 20% by 2025. By 2030, reduce non-FLAG scope 1, 2 & 3 emissions by 50% and scope 3 FLAG emissions by 50% (2018 baseline). Limited emission reduction commitment based on targets and measures presented in Net Zero Roadmap, which includes a mix of land sequestration CDR and emission reductions.*		
Medium term	N/A	*No targets identified.*		
Longer term	?	*Net-zero emissions by 2050, and reduce non-FLAG scope 1, 2 & 3 emissions by 90% by 2050; reduce absolute scope 3 FLAG GHG emissions by 75% by 2050 (2018 baseline). Undefined role for land-based CDR in net-zero target and FLAG target.*		?

EMISSION TRENDS

? *Emissions disclosure does not provide sufficient details to assess whether Nestlé is making progress on reducing its emissions and to verify claimed emission reductions. Claimed emission reductions depend on commodity EACs; insufficient information available to assess that claim.*

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Shift to plant-based protein	*No target identified, but some measures and expected emission reductions of plant-based products presented.*		
Reduction in food loss and waste in operations and supply chain	*Nestlé states it works towards the global aspirational goal of reducing food waste by 50% by 2030, but does not present it as an own commitment. Significant measures for reducing food loss presented, and a few measures for reducing food waste.*		
Reduction in fertiliser use	*No target identified, but some limited measures and plans to transition to organic fertiliser presented.*		
Commit to no-deforestation, no land conversion and no peat-burning	*Nestlé aims to achieve and maintain 100% assessed deforestation-free primary supply chains of major product groups by 2025. Annual disclosure of progress. Small farms and smallholder farms are exempted from management system requirements.*		
Accompanying measures	*Nestlé aims to reduce virgin plastic by a third, and its Net Zero Roadmap presents various accompanying measures that could reduce emissions related to manufacturing significantly.*		

TRANSITION PROGRESS

? ? ? + ?

No targets identified for transitions, except for deforestation. Based on presented data, Nestlé is progressing well towards this target for most commodities, but smallholder farms are likely exempted from this reporting and limited progress regarding cocoa.

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions identified. Nestlé brands purchase offset credits to make carbon neutrality claims.*		
Support for durable carbon dioxide removals	*No support for durable CDR identified, but Nestlé pursues soil carbon sequestration and other types of land-based CDR to claim (partial) target achievement.*		

Transparency & integrity: 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- \+ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Nestlé (2021, 2022, 2023a, 2023b, 2024, 2025a, 2025b), SBTi (2023b).*

Nestlé

Switzerland-based Nestlé S.A. (Nestlé) is the world's largest food and beverage company by revenue, with brands such as KitKat, Nesquik, and Nespresso. The biggest share of Nestlé's emissions is related to agricultural activities. Nestlé commits to reaching net-zero GHG emissions in 2050, and published targets aligned with the Science Based Targets initiative (SBTi) Forest, Land and Agriculture (FLAG) guidance in 2023. Nestlé's targets remain potentially misleading and ambiguous due to an unspecified amount of land-based carbon dioxide removals within the value chain in the long term, referred to as 'carbon scope 3 removals', as well as a significant role of removals presented as emission reductions for different emission sources. We continue to interpret that Nestlé's pledge to reduce emissions by 50% by 2030 translates to emission reductions of just 13–26% based on measures presented in Nestlé's Net Zero Roadmap. We could not identify clear plans for deep and structural decarbonisation of agricultural emissions. Although Nestlé says it is progressing quickly towards achieving its 2030 targets, the provided information is not sufficiently detailed to verify this claim.

Key developments over the past year: We have identified several developments and updates to Nestlé's climate strategy since the previous analysis was published in April 2024 (NewClimate Institute, 2024a). We updated our quantification of targeted emission levels and updated our findings about key measures and transitions using Nestlé's latest reporting but also continued to base our analysis on Nestlé's Net Zero Roadmap, dated March 2023. We also identified new information about the use of carbon credits and commodity EACs.

Nestlé's emission reduction pledges may be misleading. We interpret that the pledge to reduce emissions by 50.4% by 2030 translates to only 13–26% emission reductions compared to the company's emissions in 2019. Nestlé's SBTi-validated targets include emission reduction targets of 20% by 2025 and 50.4% by 2030, with 2018 as a base year. The company presents a separate 50% reduction target in FLAG emissions by 2030 (SBTi, 2023b). In its Net Zero Roadmap, Nestlé shows its interim emission reduction targets for each emission source compared to a business-as-usual scenario, showing the targeted emission levels for each emission source for 2030 (Nestlé, 2021, p. 4). We estimate from the figures presented in the company's Net Zero Roadmap that the company's commitments translate to just a 13% reduction of the company's full value chain emissions in 2019, or a maximum of 26% under the most optimistic interpretation *(see Annex 3B)*.

Nestlé's 2050 net-zero pledge remains ambiguous due to limited scope coverage and an unspecified role of carbon dioxide removals (CDR). Based on the company's Net Zero Roadmap, we understand that Nestlé's 2050 net-zero pledge covers 83% of Nestlé's 2018 emissions footprint (Nestlé, 2022). This falls short of SBTi requirements for net-zero targets to cover at least 90% of a company's emissions. In 2025, Nestlé published updated base year emissions in its latest sustainability reporting, which decreased by 11.4 $MtCO_2e$, or 11% of 2024 value chain emissions, compared to base year emissions reported in its Net Zero Roadmap (dated 2023) (Nestlé, 2025b, p. 38). We could not identify an explanation for this decrease. The company's net-zero pledge includes a 90% emission reduction commitment for energy and industry-related emissions and a 75% emission reduction target for FLAG emissions by 2050 (Nestlé, 2025b, p. 28). The latter, however, includes an undefined role for land-based CDR that hinders an independent understanding of what share of emissions Nestlé actually wants to reduce. The current version of SBTi's FLAG guidance allows for this practice, although this can constitute a highly contentious shortcoming that could potentially undermine the integrity of companies' emission reduction targets *(see Section 3.1)*. Further clarification on the role of land-based CDR in the long term is needed to understand whether the 2050 pledge represents a commitment that will lead to deep reductions of agricultural emissions.

Nestlé plans to achieve a large share of its 2030 targets with land-based CDR. The company continues to describe land-based CDR taking place within its value chain in its public-facing documents, claiming to have removed 1.64 $MtCO_2e$ in 2024, which is a notable drop from the reported removals of 4.3 $MtCO_2e$ in 2022 (Nestlé, 2023a, p. 12, 2025b, p. 39). The company no longer describes this land-based CDR as 'insetting', but uses the terminology of 'carbon scope 3 removals' (Nestlé, 2023b, pp. 19; 44). The company plans to 'neutralise' 13 $MtCO_2e$ of its 2030 emissions using land-based CDR and its Net Zero Roadmap also presents land-based CDR alongside emission reduction measures. Nestlé states that up to 80% of its 2030 targets can be achieved with land-based removals (Nestlé, 2023b, p. 20). The actual planned volume of the latter category remains unclear as these removals are presented against a business-as-usual scenario (Nestlé, 2023b, pp. 13; 18; 38). However, the *current* volume removals as reported is significantly lower than the *planned* volume of removals. Land-based CDR may not be appropriate for claiming neutralisation of emissions due lack of durability and other limitations *(see Section 3.1)*. We identified only few planned measures that could lead to deep reductions of agricultural emissions, so it remains unclear how Nestlé plans to realise its 2030 targets.

For its emissions in 2024, Nestlé reports a 20% reduction, or 18.12 $MtCO_2e$, compared to its 2018 base year emissions, but this potentially depends mainly on a premature use of commodity Environmental Attribute Certificates (EACs). Nestlé presents a breakdown of its emission reductions, claiming that close to 12 $MtCO_2e$ of emission reductions are achieved in 2024 through 'responsible sourcing', 'dairy and livestock' and 'soil and forest' (Nestlé, 2025b, p. 40). The company does not present its emissions footprint in conventional categories as per the Greenhouse Gas (GHG) Protocol on an annual basis, impeding an independent verification of this claim. In a footnote attached to the breakdown of emission reductions, Nestlé describes that it (co-)finances emission reduction projects on farms in its supply sheds (Nestlé, 2025b, p. 40), further explaining how it defines ownership of those reductions in its data annex (Nestlé, 2025b, p. 153). Claiming emission reductions through commodity-based EACs on a commodity basis is a recently emerging practice in the corporate climate accountability space (NewClimate Institute, 2024d). Although the use of commodity EACs could be a credible practice to claim emission reductions in a company's supply chain, it depends heavily on how 'supply shed' is defined. Currently, there is a real risk that the supply *shed* is too disconnected from a company's actual supply *chain* (NewClimate Institute, 2024d). The Greenhouse Gas Protocol has yet to define supply shed, which is expected in its forthcoming Land Sector and Removals Guidance expected 2025 (The AIM Platform, 2024). As guidelines for the definition and use of commodity EACs are still under development, Nestlé's associated emission reduction claims, presented with only little explanation, may be premature. We did not identify other measures in Nestlé's reporting that could have led to such substantial and structural reductions in emissions.

Nestlé's publicly available plans do not lay out sufficiently transformational measures to achieve deep decarbonisation of agricultural emissions in the long term. The majority of Nestlé's GHG emissions derive from upstream agricultural activities, with dairy and livestock accounting for ~27% of reported value chain emissions in 2024. The agricultural sector faces major challenges for decarbonisation; currently-available technologies and measures to mitigate the emissions intensity of many agricultural products have limited potential, especially for the livestock sector. Nestlé's range of emission reduction measures are expected to lead to a respectable 48% reduction of manufacturing emissions by 2030. However, they will reduce emissions from dairy, livestock, soil, and forests, which represent far more significant and challenging emission sources, by just 6% between 2018 and 2030 (Nestlé, 2021b, p. 9,12,14,17). These emission reduction estimates exclude measures to claim that emissions are offset through non-durable carbon capture. Nestlé has a commitment to halt deforestation related to key ingredients by 2025, which it seems to achieve based on presented progress data (Nestlé, 2025b, p. 54). However, we did not identify quantifiable targets for other key transitions.

Nestlé continues to highlight a substantial role for regenerative agriculture in its climate strategy (Nestlé, 2025b, pp. 56, 115), despite the lack of a commonly agreed, science-based definition of the practice, and its framework not requiring farmers to actually reduce emissions (NewClimate Institute, 2024b). It may not be credible for agri-businesses to claim that they are on a path to deep decarbonisation without major innovations to drastically reduce the emissions footprint of livestock agriculture or diversifying away from this highly GHG emissions intensive industry. Contrary to the need for a shift away from animal protein, Nestlé underlines the importance of dairy and the dairy industry repeatedly (Nestlé, 2025a, p. 35). The estimated emission reductions from plant-based ingredients have also decreased from 1.4 $MtCO_2e$ in its Net Zero Roadmap (Nestlé, 2023b, p. 22) to 0.7 $MtCO_2e$ in its latest sustainability reporting (Nestlé, 2025b, p. 33).

Nestlé states that it will not 'rely on offsetting' (Nestlé, 2023a, p. 12), but continues to claim carbon neutrality for certain brands. In 2023, Nestlé made global headlines announcing its brands will no longer make carbon neutrality claims, but the company continues to claim carbon neutrality for Nescafé and other brands based on carbon credits (Nestlé, 2024, 2025b, p. 41). Although the company says it will not rely on offsetting for target realisation, it also describes that Nestlé's brands purchase carbon credits to 'support' carbon-neutral certifications and claims (Nestlé, 2025b, p. 41). The company states that these credits are bought as additional contributions to climate action. It is potentially misleading to claim contributions to climate action while also claiming to offset emissions. Nestlé reports on the volume of carbon credits purchased in 2024 (0.052 $MtCO_2e$), but does not provide details on the type of carbon credits (Nestlé, 2025b, p. 153).

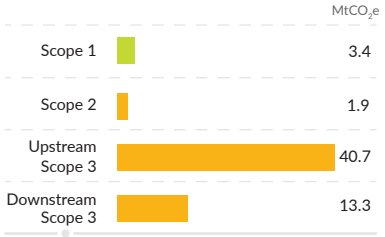
PepsiCo

PepsiCo commits to reaching net-zero emissions by 2050 and now presents accompanying emission reduction targets. These translate to an 86% reduction across its value chain by 2050 below 2022 levels, but we understand that target achievement depends on an unspecified amount of land-based carbon dioxide removals. The company states it will purchase carbon credits to claim neutralisation of residual emissions in 2050. For the short term, PepsiCo's updated targets translate to an emission reduction of 31% by 2030 below 2022 levels. We found limited evidence for commitments to transitions that are necessary for a 1.5°C-aligned food and agriculture sector.

	TRANSPARENCY	INTEGRITY
	Poor	Very poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Public disclosure of current and historical emissions, but information is scattered and no breakdown for scope 3 emissions by scope. Updated Climate Transition Plan provides different 2022 emissions from previously reported data.



MAJOR EMISSION SOURCES

- Livestock rearing
- Land use and land-use change
- Soil fertilisers
- Other
- Packaging

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net-zero emissions by 2040*

			TRANSPARENCY	INTEGRITY
Short term	33%	*Targets to reduce scopes 1&2 by 50%, scope 3 FLAG by 30% and a subset of energy and industry-related emissions by 42% by 2030 below 2022. Targets are aligned with the lower end of benchmarks for the food and agriculture sector, but targets may depend on an unspecified amount of land-based carbon dioxide removals.*		?
Medium term	N/A	*No target identified.*		
Longer term	86%	*Targets alongside PepsiCo's net-zero target translate to an emissions reduction of 86% by 2050 below 2022 levels. These targets are compatible with benchmarks for the food sector, but may depend on an unspecified amount of land-based carbon dioxide removals.*		?

EMISSION TRENDS

✖ *Emissions peaked in 2021 but have increased since 2019. Emissions intensity has declined. Emissions have risen on average 2% each year 2019-2023.*

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Shift to plant-based protein	*PepsiCo has a target to use more diverse ingredients, including plant-based ingredients, but target formulation and metrics are unclear. We did not identify clear measures.*		
Reduction in food loss and waste in operations and supply chain	*PepsiCo mentions food loss and waste is an issue but we did not identify measures or a target.*		
Reduction in fertiliser use	*PepsiCo describes some measures to reduce emissions from fertiliser production and use and plans to source low-GHG fertilisers, but further details are missing.*		
Commit to no-deforestation, no land conversion and no peat-burning	*PepsiCo aims for deforestation-free sourcing by 2025 and conversion-free by 2030, in line with AFi guidance. The target covers most of PepsiCo's supply chain, but leave out information on cocoa.*		
Accompanying measures	*PepsiCo implements accompanying measures such as increased RE in manufacturing and electrification of third-party vehicle fleet, but does not set targets on these indicators.*		
Reduce use of plastics, increase share of recycled products	*PepsiCo has several targets to reduce waste from packaging and tracks progress, but no there are no clear decarbonisation benchmarks for packaging.*		?

TRANSITION PROGRESS

? ? ? ? ? ↩

PepsiCo is progressing on its packaging targets but absolute tonnage of virgin plastic increased in 2023. PepsiCo tracks progress against its target to increase diverse ingredients but information is too unclear to assess progress. PepsiCo does not track progress on other key transitions.

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions identified.*		
Support for durable carbon dioxide removals	*No support for durable CDR identified.*		

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- ✚ Right direction, off track
- ✖ Well off track
- ↩ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *PepsiCo (2023, 2024, 2025a, 2025b, 2025c, 2025d, 2025e).*

PepsiCo

PepsiCo, Ltd. (PepsiCo) is a US-based food and beverages company, known for brands such as Pepsi, Lay's, Quaker and Gatorade. Its major emissions are from agriculture, packaging, and distribution. PepsiCo pushed its target to reach net-zero emissions back by 10 years, from 2040 to 2050, but now presents accompanying emission reduction targets. These translate to an 86% reduction across its value chain by 2050 below 2022 levels, but we understand that target achievement depends on an unspecified amount of land-based carbon dioxide removals. The company states it will purchase carbon credits to claim neutralisation of residual emissions in 2050. For the short term, PepsiCo's updated targets translate to an emission reduction of 31% by 2030 below 2022 levels. The company describes that it wants to increase the use of regenerative agriculture in its value chain, but it is not clear how this will contribute to deep and structural emission reductions. We found limited evidence for commitments to transitions necessary for a 1.5°C-aligned food and agriculture sector.

Key developments since 2023: PepsiCo has published a new Climate Transition Plan (PepsiCo, 2025d) and new emission reduction targets aligned with the SBTi FLAG guidance since the previous analysis was published in 2023 (NewClimate Institute, 2023). PepsiCo has pushed back its net-zero target from 2040 to 2050, but its net-zero target is now accompanied by emission reduction targets. For both its long-term and short-term targets, we understand that PepsiCo is now explicit about its intention to count land-based CDR towards target achievement. The company's emissions have continued to decline, although they remain above 2019 emissions. We also included analysis of progress made and of transition targets.

PepsiCo's has updated its short-term reduction targets, but its non-FLAG emission reduction targets have not increased in ambition. In the short term, PepsiCo aims to reduce its scope 1 and 2 emissions by 50%, part of its scope 3 energy and industry emissions by 42% and its Forest, Land and Agriculture (FLAG) emissions by 30% by 2030, compared to 2022 emission levels (PepsiCo, 2025d, p. 5). These targets translate to a reduction of 31% compared to its 2022 value chain emissions. It is unclear how these targets compare to its previous commitments as PepsiCo's new 2022 baseline is approximately 7 MtCO2e lower than it had previously reported (PepsiCo, 2023). PepsiCo does not explain the drop in its new 2022 emissions calculations. In its new Climate Transition Plan, the company also presents a 'gap' regarding the total emission reduction potential of presented measures that could be hard for PepsiCo to bridge within the years that remain until 2030 (PepsiCo, 2025d, p. 11). Moreover, the company's energy and industry-related emission reduction target only translates to a 30% reduction by 2030 below 2022 due to significant scope exclusions. This target falls far behind cross-sector benchmarks to nearly halve emissions by 2030 (IPCC, 2022). While FLAG emissions might face specific barriers towards decarbonisation, PepsiCo could set more ambitious targets to reduce its energy and industry-related emissions in the short term.

PepsiCo has pushed its net-zero target year from 2040 to 2050 but now presents emission reductions targets alongside its 2050 net-zero pledge. The company commits to reducing its scope 1, 2 and scope 3 energy and industry-related emissions by 90% and its scope 3 FLAG emissions by 72% by 2050 below 2022 levels (PepsiCo, 2025d, p. 5). These targets translate to an 86% reduction by 2050 compared to its 2022 value chain emissions, but the company describes in a footnote that the scope includes 'net CO2 emissions' related to land management (PepsiCo, 2025d, p. 5). We interpret that this means PepsiCo will depend on an unspecified volume of land-based carbon dioxide removals (CDR) for target achievement. Furthermore, the company specifies that it will purchase carbon credits to balance residual emissions in 2050 (PepsiCo, 2025d, p. 5). PepsiCo's net-zero pledge is more transparent with the inclusion of emission reduction targets, but these could be undermined by overreliance on land-based CDR associated with limited permanence and limited commitments to key transitions for the sector. In addition, its updated net-zero pledge marks a significant delay in the company's decarbonisation trajectory.

PepsiCo describes its reliance on land-based CDR in a footnote without any further specification. In its 2025 Climate Transition Plan, PepsiCo no longer presents 'insetting' as a key measure to reach its emission reduction targets, but specifies in a footnote that FLAG emissions include 'land management net CO2 emissions' (PepsiCo, 2025d, p. 5 footnote 3). PepsiCo neither transparently communicates the role of removals in reaching its targets nor describes the expected extent of the reliance. On its website, PepsiCo mentions that it does not count land-based CDR from regenerative agriculture towards its scope 3 emissions, but plans to do so once the GHG Protocol releases its Land Sector and Removals Guidance (PepsiCo, 2025a).

PepsiCo presents its emission reduction strategy in thematic areas and presents the expected emission reductions from some of these measures. Its reduction strategy covers major emission sources such as deforestation, agriculture, transport, energy consumption, and packaging. However, the company shows the current climate impact of only a few of these issues and does not publish a breakdown of its scope 3 emissions outside of its CDP disclosure. Packaging as one of the major sources of emissions for PepsiCo accounts for over a quarter of its emissions in 2023 (PepsiCo, 2025a). PepsiCo has set transparent targets to reduce virgin plastic use in line with the Ellen MacArthur Foundation's Global Plastic Commitment targets (Ellen MacArthur Foundation, 2024), but it reduced the ambition of its targets in 2025 (PepsiCo, 2025c). PepsiCo shows that the reduction in packaging use will lead to some emission reductions by 2030, although it is unclear exactly by how much (PepsiCo, 2025d, p. 15). PepsiCo says it is striving to reach deforestation-free sourcing in its value chain by 2025 and conversion-free sourcing by 2030 (PepsiCo, 2025b). It remains unclear if its deforestation strategy covers cocoa and dairy (PepsiCo, 2025b). For other major emission sources such as food loss and waste, methane emissions from livestock, and fertiliser use, PepsiCo does not provide estimates of the emission reduction potentials.

Although PepsiCo presents several decarbonisation approaches, targets on key sectoral transition measures for the sector are missing. PepsiCo's agriculture-related emissions accounted for more than a third of its 2023 emissions footprint (PepsiCo, 2025a). The company's main strategy to reduce agricultural emissions relies on implementing regenerative agriculture, leading to expected removals and reductions of 3 MtCO2e (PepsiCo, 2025d, p. 16). It remains unclear to what extent its regenerative agriculture program would lead to deep emission reductions measures (NewClimate Institute, 2024b, p. 34). Even then, regenerative agriculture would lead to a net emission reduction of only 6% by 2030 compared to 2022 levels. PepsiCo does not expand on how it will reduce emissions from other major emission sources including food loss and waste, methane emissions from livestock, and fertiliser use. The company has set a target to use 'more diverse ingredients', including, for example, plant-based proteins, fruits, vegetables and nuts, to deliver 145 billion portions of diverse ingredients annually by 2030. However, we could not identify sufficient information and benchmarks to assess the adequacy of this target with regards to the transition to plant-based proteins (PepsiCo, 2024, p. 67). The company also plans to reduce emissions through 'product reformulation' but it is unclear what this entails (PepsiCo, 2025d, p. 15). PepsiCo's emissions peaked in 2021, and its emissions intensity per unit of revenue has also reduced each year since 2020. This falls far short of the fundamental transformation of the global agriculture sector that would be necessary to align with 1.5°C-compatible decarbonisation trajectories (Boehm *et al.*, 2023, p. 132).

PepsiCo predominantly uses lower-quality renewable electricity procurement constructs for its claims to decarbonise electricity consumption in its operations. PepsiCo claims that 80% of its 2023 electricity consumption was from renewable sources (PepsiCo, 2025d, p. 7). PepsiCo further claims that its operations in 40 of 200 countries were 100% based on renewable electricity (PepsiCo, 2025e). However, less than 20% of its electricity consumption is from higher-quality procurement constructs, such as PPAs, or self-generation (PepsiCo, 2023, pp. 88; 120–167, 2025e). The lion's share of its renewable electricity is procured with unbundled EACs and GOs, both also known as RECs. RECs do not guarantee that the consumed electricity truly stems from additional renewable energy sources (NewClimate Institute, 2024c). Claiming that its electricity consumption is 80% renewable is therefore highly contentious. Although the company says it wants to finance the development of new wind and solar installations with PPAs, but it does not specify the volume of finance or the size of these installations (PepsiCo, 2025e). Stronger commitments to increase the share of renewable power procured with high-quality PPAs or generated on site would make PepsiCo's claims for energy emissions more credible and would have a more meaningful impact in reducing the company's scope 2 emissions.

4 Tech Sector

4.1 Summary

This section presents a selection of key insights from the detailed analysis of the climate strategies of five major tech companies: Amazon, Apple, Google, Meta and Microsoft *(see section 4.2 for detailed company case studies)*. For the analysis, we focus on companies' GHG emission reduction targets and the key transitions necessary for achieving deep emission reductions in the tech sector.

We evaluate tech companies' transition targets based on the sector-specific transition framework set out in *Figure 4.1*. Since the majority of the tech sectors' emissions footprint derive from electricity use in data centres and energy use for hardware production upstream, we identify **renewable electricity for data centres** and **renewable electricity in the supply chain** as key transitions for the sector. **Increasing the lifespan of devices** and the **use of more recycled components for hardware production** are also important measures to reduce energy-related emissions in the supply chain (NewClimate Institute, 2025).

We find that the tech sector is facing a climate strategy crisis. However, revamped target-setting frameworks and the replication of demonstrated good practices can steer it back on track:

- Tech companies' GHG emission targets appear to have lost their meaning amid soaring energy demand and outdated emissions accounting rules, which are currently under revision.
- Promising strategies for renewable electricity in data centres (Google and Microsoft) and the supply chain (Apple) can be further optimised and replicated by others.
- Other key transitions – including renewable energy in the supply chain and for third-party operated data centres – remain neglected by either companies or standard setters.
- Other initiatives continue to validate some companies targets as 1.5 °C-aligned, without reflecting these uncertainties. This may mislead investors, regulators, and the wider public, giving an inaccurate impression of the tech sector's climate impact.

Climate strategy for the tech sector needs a rethink, to put the spotlight on the sector's key transitions, and to incentivise the replication of promising strategies.

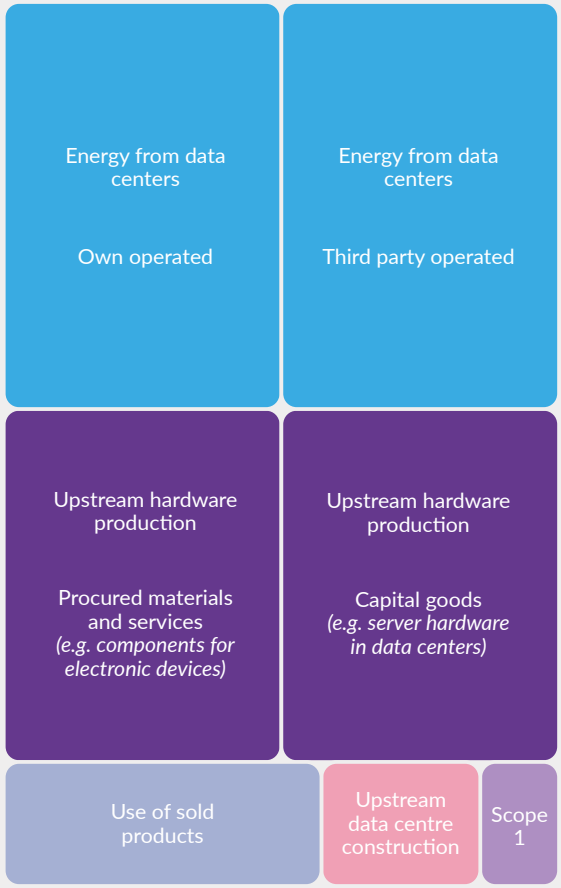
- By setting transition-specific alignment targets in addition to GHG emission reduction targets, companies can guide and measure the progress of their climate strategies in a more targeted and transparent way.
- Major standard setters, crucial in guiding corporate climate strategies, have a critical opportunity to establish robust approaches for accounting and target setting for electricity-related emissions, thereby enhancing the integrity of corporate climate action and closing existing loopholes.
- Governments need to take a lead on regulating the unconstrained growth in energy consumption of the sector, recognising that individual companies demonstrating unilateral leadership may risk being left behind without the transition happening at the sector level.

The tech sector has a climate strategy crisis

Figure 4.1: Key transition framework for a tech company (NewClimate Institute, 2025)

GHG EMISSIONS FOOTPRINT

Indicative distribution of emission sources for average tech company



5 KEY TRANSITIONS

Most relevant transitions to address major emission sources

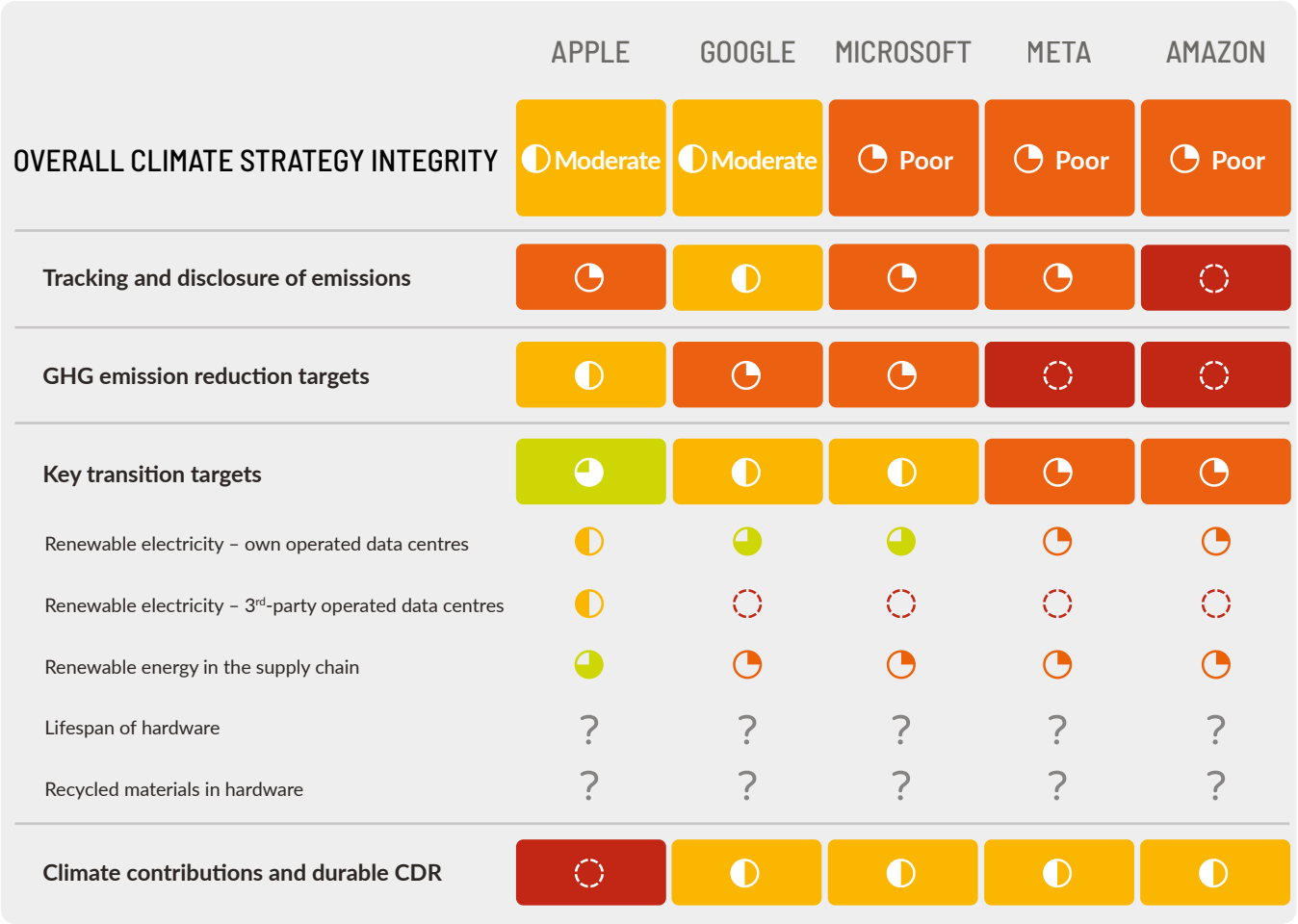
1	**Renewable electricity for own data centres** *(hourly matched)* *	Emissions from data centres are a key emissions source for tech companies. The magnitude of emissions from third-party owned data centres is unclear. Research suggests that half of tech companies' data centre capacity comes through third-party contracts (Synergy Research Group 2023), but many tech companies do not report emissions from third-party data centres. Electricity demand from data centres is expected to increase rapidly until 2030, although the extent of growth is uncertain (IEA 2024). Switching to 24/7 matching of renewable electricity can substantially reduce emissions from data centres, controlled by third parties or tech companies themselves.
2	**Renewable electricity for 3rd-party operated data centres** *(hourly matched)* *	
3	**Renewable energy in the supply chain** *(hourly matched)* *	We estimate that at least a third of the emissions footprint from tech sector companies comes from the use of energy in the supply chain to manufacture hardware. A large share of tech companies' scope 3 emissions stem from procured materials and services, such as components for electronic devices, and capital goods, for instance the server hardware in data centres. Switching to renewable electricity in the supply chain can significantly reduce these emission sources. As data centre capacities expand rapidly to accommodate AI applications, server hardware production is increasing simultaneously.
4	**Increase the lifespan of hardware** **	The majority of emissions from electronic devices and hardware occurs during the production phase, in particular chip manufacturing (Gupta *et al.* 2020). Companies can reduce emissions from procured materials and capitals by increasing the life span of electronic devices sold to consumers and hardware used in, for instance, data centres (Narendra Singh and Oladele A. Ogunseitan 2022). Repair and replacement of spare parts can also prolong the lifespan of electronic devices.
5	**Increase share of recycled materials in hardware** **	We were unable to identify what share of tech companies' emissions stem from mining critical minerals, such as manganese and cobalt, and other raw materials. However, we suggest that tech companies set targets on the share of recycled minerals and materials in their electronic devices, since mining critical minerals is an energy intensive process and is often associated with negative environmental and social impacts. Demand for critical minerals is expected to significantly increase in future years.

** **Hourly matching for renewably electricity:** Whereas matching renewable energy on an hourly basis has potential to drive grid decarbonisation, research has shown that matching renewable electricity on an annual basis has very limited to no effect (Xu et al. 2023). Companies who do not source renewable electricity around the clock remain dependent on – often times – carbon-intensive electricity grids. For instance, a data centre operator may sign a contract to procure electricity from a solar park, but data centres consume electricity also at night or on cloudy days. During these times, the data centre relies on the grid for its electricity and most likely consumes fossil-power.*

*** **Benchmarks for device lifespan and recycling:** We were unable to identify clear indicators or benchmarks for increasing product lifespan or using recycled materials. More research is necessary to understand what measures aimed of increasing product lifespan and using recycled materials are effective, and what potential caveats could be.*

→ *See Evolution of corporate climate targets* (NewClimate 2025) for further details on this sector transition framework and potential transition alignment target indicators.

Figure 4.2: Summary of CCRM 2025 ratings for tech companies



Integrity : 5-point rating scale:
High | Reasonable | Moderate | Poor | Very poor
Integrity refers to the quality and credibility of the approach.
? *Integrity assessment not possible due to lack of benchmarks for the transition.*

→ *See Annex 4B and Annex 4C for further details on our integrity assessments for companies' targets and key transitions.*

Tech companies' GHG emission targets appear to have lost their meaning and relevance

Amazon, Apple, Google, Meta and Microsoft have all committed to net zero or carbon neutrality by 2030 or 2040. Of these, Apple, Google and Microsoft have further supported those pledges with specific emission reduction targets. However, whether these targets reflect real progress and translate in meaningful action remains unclear for two key reasons:

Firstly, the five tech giants have set market-based emissions targets based on current GHG Protocol methodologies which are outdated and under revision. Market-based accounting allows companies to claim a reduction in GHG emissions with renewable energy certificates or other instruments, although their actual (location-based) emissions may not decrease at all. All of these companies use market-based accounting to report scope 2 emissions, mostly power consumption from data centres. Most of them (Amazon, Apple, Meta and Microsoft) also use market-based accounting for scope 3 emissions, although this is not standard practice under the current GHG Protocol standards (GHG Protocol, 2024, p. 2).

The methodologies for market-based GHG emissions accounting are currently being revised–an essential step toward elevating the integrity of corporate climate ambition. This means that it is unclear what the companies' targets will actually mean in practice. For example, the revision process is considering key issues, such as whether annual or hourly energy matching should be used and whether or how companies can account for Scope 3 emissions using market-based methods. These factors could significantly impact the ambition implied by their climate targets. The companies will likely need to update their targets in accordance with the revised accounting rules. This uncertainty makes it difficult to fully understand the implications of the 2030 GHG emission targets these companies initially committed to in 2019 and 2020.

Secondly, the rapid expansion of AI and soaring energy demand calls into question whether companies can still really deliver significant emission reductions this decade. The location-based emissions of all five major tech companies in this report increased rapidly from 2019 through to 2023, the most recent reporting

year *(see company case studies in section 4-2)*. Energy demand for data centres increased at an average rate of 12% per year between 2017 and 2024, and is projected to double between 2024 and 2030 (IEA, 2025), as AI is mainstreamed into various processes and applications for businesses, institutions and individuals. If energy consumption continues to rise unchecked and without adequate oversight, these tech companies' existing GHG emissions reduction targets may likely be unachievable, as companies may struggle to install additional renewable electricity generation fast enough to meet this increase as well as reduce existing emissions. Companies and regulators both need to accept responsibility to address this collaboratively, and transparency on these challenges and their implications is key *(see Box 4.1)*.

The uncertainty surrounding GHG emissions accounting methodologies, coupled with the tech sector's increasing energy demands, risks creating an environment where some companies try to influence market-based accounting rules to address their own climate strategy crisis. Tech companies are among the most active stakeholders lobbying for specific market-based accounting rules. For example, the Emissions First Partnership, co-founded by Amazon and Meta, advocates for proposals that would allow companies to make claims about their climate progress based on action that they support elsewhere in other geographies. In contrast, the hourly matching methodologies proposed by Google and Microsoft offer a more transparent and constructive approach to addressing corporate responsibility in the energy transition (NewClimate Institute, 2024b).

Assessments and validations of some initiatives currently do not reflect the identified uncertainties around tech companies' climate targets. For example, the Science Based Targets initiative (SBTi) and MSCI Net Zero Tracker assess most of these companies' targets as being aligned—or closely aligned—with a 1.5°C-compatible emission pathways *(see Annex 4A for a full comparison of validations and assessments between these initiatives)*. However, these initiatives' assessment approaches appear either outdated or overly lenient regarding the integrity of tech companies' targets. This may mislead investors, regulators and the wider public, giving an inaccurate impression of the tech sector's climate impact. This highlights the need to rethink how climate leadership in the tech sector is demonstrated and assessed.

Box 4.1: Responsibility to curb the unconstrained growth of electricity demand

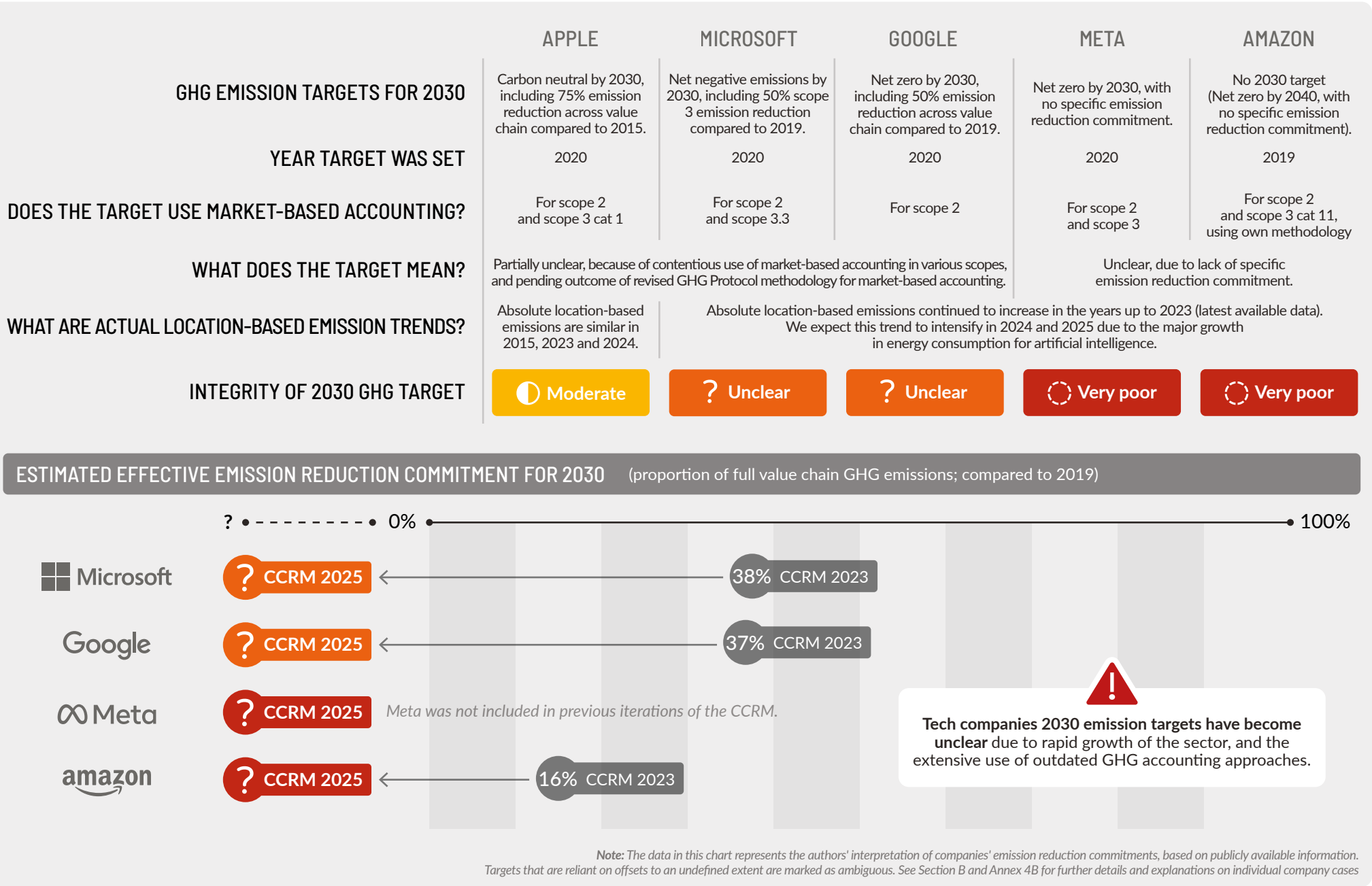
As AI becomes a central component in nearly all sectors, energy consumption of the tech sector is growing at an exponential rate, potentially undermining companies' climate pledges. Accordingly, curbing the unconstrained growth of electricity demand is a key transition for the sector to align with pathways for net-zero emissions.

Governments need to take more responsibility to regulate the unconstrained growth in energy consumption of the sector, recognising that individual companies demonstrating unilateral leadership may risk being left behind without the transition happening at the sector level. As the AI race is increasingly viewed as a matter of national security and economic growth, regulatory efforts to address this issue have been limited, despite the risks that this poses to national energy transition plans.

Companies have an important role to play in raising awareness on this issue and collaborating for solutions, even if they face challenges to curb the growth of electricity demand directly in the current situation:

- Companies have the responsibility to communicate transparently about what the growth of AI and data centre energy demand means for their climate impact. We perceive that there is rather an inclination to use renewable electricity targets and claims to distract from the severity of this issue and what it means for companies' targets.
- Companies claiming climate leadership should advocate through coalitions or individually to urge policymakers at national and regional levels to adopt policies for more responsible and sustainable AI development. Such positions and advocacy activities should be public.

Figure 4.3: Unclear GHG emission reduction targets of tech companies



Note: The data in this chart represents the authors' interpretation of companies' emission reduction commitments, based on publicly available information. Targets that are reliant on offsets to an undefined extent are marked as ambiguous. See Section B and Annex 4B for further details and explanations on individual company cases

Transition-specific targets: The procurement and accounting approaches for renewable electricity determine real climate leadership in the tech sector

The current limitations and uncertainties surrounding GHG emissions accounting methodologies highlight the need for a systematic change in how tech companies set climate targets. GHG emissions targets alone appear increasingly unfit for purpose as a standalone metric for corporate climate strategies. Rather than relying solely on GHG emissions targets, the emphasis should shift to transition-specific targets that better reflect the structural changes needed for sector-wide decarbonisation. Relevant transition-specific targets include increasing renewable electricity procurement for data centres, expanding renewable electricity in the supply chain, extending the lifespan of devices, and using more recycled components for hardware production (*see summary of the key transition framework for the tech sector in Figure 4.1*).

Increasing renewable electricity for data centres should be one of the key transition-specific targets for the tech sector, given the vast amount of electricity they consume around the clock. Running data centres, which host the infrastructure for training large AI models among other things, requires significant computing power, driving up energy demand and GHG emissions. Electricity use in data centres is a major source of emissions for most of the tech companies assessed; location-based scope 2 emissions account for an average of around 30% of the reported[1] emission footprints from Amazon, Apple, Google, Meta and Microsoft. The IEA projects rapid growth in data centre electricity use through 2030 (IEA, 2024). We estimated based on the available data that scope 2 emissions from data centres more than doubled between 2019 and 2023 for these five companies (*see company cases in section 4-2*), though the overall growth of emissions in the sector is uncertain due to underreported third-party data centre usage and potential bottlenecks in supply chains and grid permitting (IEA, 2024).

Reflecting the importance of this transition, all the major tech companies assessed in this study explicitly acknowledge the need for renewable electricity procurement for data centres. In most cases, their renewable electricity procurement targets are among their headline climate-related pledges.

However, in expanding renewable electricity for data centres, how companies procure this electricity is particularly important, setting frontrunners apart in corporate climate action. While several strategies are being discussed, the procurement of renewable electricity through hourly matching strategies (24/7), rather than annual matching, should be prioritised, as it directly reduces reliance on fossil fuels and lowers emissions associated with electricity consumption. Unlike traditional GHG emissions targets, where companies can claim to have neutralised emissions through the purchase of Renewable Energy Certificates from different times and locations, transition-specific targets focused on the share of hourly-matched renewable electricity offer greater transparency and accountability for this critical transition.

On the surface, all of these companies appear to have similar renewable electricity procurement targets and claims: they all aim for 100% renewable or carbon-free energy by 2025 or 2030, or claim to have already achieved this. However, a closer look at their renewable electricity strategies reveals significant differences in the real meaning of these targets and the underlying strategies to achieve them (*see Figure 4.1*). The details of how renewable electricity is measured and reported matter greatly for the transparency and ambition of companies' targets. Companies can nearly eliminate their electricity-related emissions with hourly matching strategies (24/7) and contribute to decarbonising electricity systems (Riepin and Brown, 2024; Samarakoon *et al*., 2024; Xu *et al*., 2024). In contrast, matching electricity consumption with renewables on an annual basis has a very limited effect on electricity-related emissions and grid decarbonisation.

Standard setters crucial in guiding corporate climate strategies, such as the GHG Protocol, SBTi, and ISO, are currently developing new standards for electricity-related emissions accounting and renewable electricity targets. These rules are of significant importance for most sectors, not just tech. The majority of companies' emissions derive from electricity use throughout their value chains, including their own operations, supply chains, and downstream through the use of their products. Across many sectors, the integrity of companies' climate strategies will depend on how these companies and their suppliers account for electricity consumption in the value chain, as well as the interventions they make to support suppliers in using renewable electricity.

As the revision process of renewable electricity accounting rules presents a critical opportunity to shape the direction of corporate climate action over the next decade, major tech companies are actively seeking to influence it. Some, like Microsoft and Google, are supporting a shift toward more granular renewable electricity accounting, such as the 24/7 Carbon-Free Energy model (24/7 Carbon-Free Energy Compact, 2024). In contrast, Amazon and Meta are co-founders of Emissions First Partnership (Emissions First Partnership, 2023), which advocates for accounting based on the metric of avoided or reduced emissions, rather than matching electricity consumption with renewable electricity generation (NewClimate Institute, 2024b).

We interpret that key aspects of the Emissions First Partnership proposal are simply a repackaging of the controversial offsetting model, allowing companies to count the impacts of interventions in other countries to offset their own electricity-related emissions, instead of addressing them directly. This approach could distract from and delay from the need for companies to take responsibility for the decarbonisation of their own grids (NewClimate Institute, 2024b). The theory of offsetting to achieve the largest emission reductions has not worked in practice. The notion that a greater climate impact can be achieved by installing renewable electricity on the most emissions-intensive grids rather than one's own grid also fails to accurately reflect the situation or the challenges of the energy transition. This overlooks the fact that 1.5 °C-aligned pathways for the electricity sector depend on decarbonising grids in all regions, with industrialised economies taking the lead (IEA, 2024). The largest electricity consumers need to take responsibility and work together to overcome the significant challenges of decarbonising the grids they use, which become increasingly challenging at deeper levels of decarbonisation progress.

To ensure corporate climate targets drive real decarbonisation in the tech sector (by addressing key emission sources), it is critical that the ongoing processes of the GHG Protocol, SBTi and ISO establish robust approaches for accounting and target setting for electricity-related emissions. These rules must reflect the clear scientific consensus on the superiority of matching renewable electricity on a local and hourly basis, reinforcing corporate accountability and supporting a credible transition to renewable electricity at scale.

For further details: *Briefing: 24/7 renewable electricity matching is a far more credible approach for the GHG Protocol and the SBTi than the Emissions First Partnership proposal* (NewClimate Institute, 2024b)

1 *We calculated the share of location-based scope 2 emissions using GHG emissions disclosed in the companies' annual sustainability reports or independent assurance statements.*

Figure 4.4: Divergent renewable electricity strategies and replicable good practice

	APPLE	META	AMAZON	GOOGLE	MICROSOFT
EMISSIONS FROM OPERATION OF OWN DATA CENTRES (mostly scope 2; estimate based on available data)	~5% of reported emissions footprint.	~37% of reported emissions footprint.	~18% of reported emissions footprint.	~46% of reported emissions footprint.	~33% of reported emissions footprint.
2030 RENEWABLE ELECTRICITY TARGET FOR OWN OPERATIONS (inc. RE for data centres)	100% renewable electricity (already claimed since 2018)	100% renewable electricity (already claimed since 2020)	100% carbon-free energy (already claimed since 2023)	100% carbon-free energy	100% carbon-free electricity
ACCOUNTING APPROACHES					
Matching	Annual	Annual	Annual	Hourly, local grid	Hourly, local grid
Generation technologies	Renewable technologies and bioenergy		"Carbon-free energy" includes not only renewable energy technologies but also bioenergy, nuclear, and potentially fossil fuel generation combined with CCS.		
Procurement constructs	Most RE is procured through long-term contracts with new, local RE installations, either through PPAs or utility programmes.	PPAs, utility programmes, and "project-specific contracts" (unclear meaning; 47% of electricity in 2022).	Combination of PPAs, utility programmes and RECs.	Most RE is procured through long-term contracts with new, local RE installations, either through PPAs or utility programmes.	Combination of PPAs, utility programmes and RECs.
TARGET INTEGRITY	Moderate	Poor	Poor	Reasonable	Reasonable
ADVOCACY POSITIONS	Apple acknowledges that 24/7 clean energy is an important objective at the systemwide level, but does not consider it the role of individual companies to create their own 24/7 portfolio (Apple 2024a, p11).	Co-founders of Emissions First Partnership, advocating for accounting based on the metric of avoided or reduced emissions as an alternative to matching electricity consumption with renewable electricity generation.		Google and Microsoft are signatories of the 24/7 Carbon-free Energy Compact, which supports a shift to more granular (hourly and local) approach to renewable electricity accounting.	

LEADING THE CHARGE: MICROSOFT AND GOOGLE'S 24/7 RENEWABLE ENERGY STRATEGIES

Microsoft and Google raised the bar in corporate renewable energy strategies by committing to 24/7 carbon-free energy (CFE). Unlike traditional renewable procurement models that rely on annual offsets, 24/7 matching ensures that every hour of electricity consumption is covered by clean energy from the same grid. This approach significantly reduces reliance on fossil fuels and decarbonises the local energy systems that companies use.

Crucially, achieving high rates of hourly matched renewable electricity requires companies to address all aspects of the electricity system transition and requires cooperation with other stakeholders. Both companies are advancing their goals through long-term power purchase agreements (PPAs), investments in storage solutions, investments in smart grid distribution, and advanced forecasting to optimise energy demand loads.

While 24/7 CFE represents a step change in corporate climate leadership, widespread adoption remains challenging. Hourly matching is not yet the default emissions accounting standard, and some utilities and grid operators do not currently provide the necessary data. This creates barriers for smaller companies looking to implement similar strategies. However, access to hourly carbon-free energy data is expanding across regions, and corporate demand can accelerate this shift. Other major companies can play a crucial role by setting similar commitments, pushing for more granular energy tracking, and advocating for policies that make hourly electricity matching standard practice.

There is still room for improvement with Google and Microsoft's strategies: "carbon-free energy" includes not only renewable technologies but also bioenergy, nuclear, and potentially fossil fuel generation with carbon capture and storage (CCS). These technologies come with significant environmental costs. While it is up to national jurisdictions to determine the technology mix for their decarbonisation pathways, major corporates can demonstrate climate leadership by focusing on renewable energy technologies.

Note: *The information in this figure represents the authors' interpretation of companies' renewable electricity strategies, based on publicly available information. See company case studies in section 4.2 for further details.*

Other key transitions for the tech sector remain neglected, with limited visibility or guidance

The decarbonisation of the tech sector also requires greater focus on other key transitions, including third-party operated data centres, supply chain electricity, extending device lifespans and increasing the use of recycled components in hardware manufacturing *(see key transition framework in Figure 4.1)*.

Our findings indicate that these key transitions are not sufficiently addressed by companies, or that there is no standardised framework or guidance against which companies are developing their strategies *(see Figure 4.5)*.

- **Third-party operated data centres:** None of the tech companies assessed report on the extent to which they use third-party operated data centres, nor on the emissions footprint from them, although this may be a major emission source for many tech companies and this could represent a significant loophole for companies' net zero strategies *(see Box 4.2)*.
- **Supply chain electricity:** We estimate that at least a third of most tech companies' emissions footprint derives from the use of energy in the supply chain for hardware manufacturing (NewClimate Institute, 2025). However, most companies refer to only vague measures to support their suppliers in procuring renewable electricity. Apple is the only tech company in this analysis with a specific target for renewable electricity in the supply chain, which it is increasingly trying to fulfil through high quality renewable electricity procurement constructs such as PPAs.. On this transition, major tech companies could look to major fashion companies, who are now more commonly setting such supply chain targets, although with significant caveats.
- **Lifespan of sold and used hardware:** Prolonging the lifespan of sold electronic devices and data centre hardware can contribute to reducing tech companies' emissions footprint by lowering the volume of production. All five companies describe measures to increase device lifespans and repairability, but none of them commit to specific targets. There are no clear guidance or benchmarks in the scientific literature for how companies should address this transition. Regulators in the European Union (EU) are moving ahead of companies and voluntary standard setters on this issue: since 2024, the *Right to Repair* regulation has required device manufacturers to offer repair services within a reasonable price and timeframe for customers in the EU (European Parliament, 2024).
- **Share of recycled components in hardware:** We were unable to identify the exact share of tech companies' emissions stemming from the mining of critical minerals, such as manganese and cobalt, and other raw materials. However, the mining industry is a significant contributor to global GHG emissions and has negative impacts on biodiversity, environment and local communities (IEA, 2021). All five tech companies assessed acknowledge the relevance of using recycled materials, with Apple, Google and Microsoft setting a series of targets. However, these targets cover different materials and use differing definitions. We could not identify clear guidance in the scientific literature for how companies should address this transition, nor any benchmarks against which targets on recycled components can be set and evaluated.

The neglect of these key transitions underscores the need for target-setting frameworks, such as the SBTi Corporate Net Zero Standard and the ISO Net Zero standard, to focus more specifically on key transitions by requiring companies to set transition-specific targets. The GHG Protocol could support this by facilitating more granular climate impact inventories that capture more specific transition-related indicators.

Box 4.2: Relevance of third-party operated data centres

In most cases, it is not clear from the companies' publications whether third-party operated data centres account for a significant part of their business and their emissions footprint. It could be part of their scope 3 emissions footprint, but this is unknown without more granularity or specificity in companies' emission inventories. Research across the entire tech sector suggests that half of tech companies' data centre capacity comes through third-party contracts (Synergy Research Group, 2022), although this may not be representative of the major tech companies.

The lack of clarity on this emission source could represent a major potential accounting loophole for tech sector companies, since companies that contract data services could find themselves subject to far less scrutiny for the climate impact of their cloud businesses than those that operate data centres themselves.

Media streaming company Netflix, for example, uses market-based accounting to account for the data services that they contract from Amazon Web Services (AWS). AWS reported to Netflix in 2023 that their data services were powered by 99% renewable electricity (Netflix, 2024). If Netflix would report location-based emissions for third party data centres, or if Netflix would operate its own data centres instead of contracting data services from AWS, we believe that this would likely appear as one of Netflix's most significant emission sources.

Similarly, other companies, including the five major tech companies assessed in this report, could potentially reduce scrutiny on their own climate impact by shifting from own-operated data centres to contracting data services from other (potentially sister) companies. This is reminiscent of how some electric utilities have reduced scrutiny on their own climate impacts and rebranded themselves as green utilities by shifting fully or partially from self-generation to retail, shifting significant emission sources from scope 1 to scope 3 (NewClimate Institute, 2024c). The SBTi recommends electric utilities to set targets for the emissions intensity of electricity covering both scope 1 and scope 3 generation (SBTi, 2020b). A similar approach may be necessary for data centres, as companies may flexibly shift data processing capacities between scopes 2 and 3. Tech companies should remain accountable for the climate impact of their cloud businesses, regardless of how they operate or procure their data services.

Figure 4.5: Tech companies' strategies for other key transitions (see *section 4-2* for further details in company case studies)

KEY TRANSITION	APPLE	AMAZON	GOOGLE	META	MICROSOFT
OWN OPERATED DATA CENTRES RENEWABLE ELECTRICITY PROCUREMENT (*see Figure 4.4* for further details)	Moderate Target for 100% renewable electricity with annual matching, mostly through PPAs.	Poor 100% carbon-free energy with annual matching, including non-renewable technologies and standalone RECs.	Reasonable 100% carbon-free electricity with 24/7 matching, mostly through PPAs but including non-renewable technologies.	Poor 100% carbon-free energy with annual matching, including non-renewable technologies and standalone RECs.	Reasonable 100% carbon-free electricity with 24/7 matching, mostly through PPAs but including non-renewable technologies.
3RD-PARTY OPERATED DATA CENTRES RENEWABLE ELECTRICITY PROCUREMENT	Moderate Apple's own renewable electricity target applies also to co-location facilities	Unclear We could not identify references to third-party operated data centres for these companies. The relevance of this emission source for these companies is unclear *(see Box 4-2)*.			
SUPPLY CHAIN RENEWABLE ELECTRICITY PROCUREMENT	Reasonable Target for 100% clean electricity throughout the value chain by 2030, complemented by supplier support measures.	Poor Amazon describes measures to encourage suppliers to use renewable energy, but we identify no targets.	Poor Google's plan to invest in 5 GW of carbon free energy for suppliers by 2030 indicates action, but the significance is unclear as the target metric is not contextualised.	Poor No target identified, but Meta has supplier engagement programmes that focuses on renewable electricity.	Poor No targets identified, but Microsoft recognises the need to support suppliers in decarbonising electricity consumption. Co-developed a portal that suppliers can use for RE procurement.
INCREASE LIFESPAN OF SOLD AND USED HARDWARE	Unclear All of these companies disclose some measures to increase lifespan of hardware or products, but benchmarks are not available to evaluate the integrity of these efforts.				
INCREASE SHARE OF RECYCLED MATERIALS IN HARDWARE	Unclear All of these companies disclose some measures for recycling materials, and some of them set targets, but benchmarks are not available to evaluate the integrity of these efforts.				

→ *See Annex 4C for further details on our integrity assessments for companies' key transitions.*

Platform-based business models sneak under the radar

More guidance and requirements are needed on how platform-based business models and service providers should take responsibility for their climate impacts.

Many of the major tech companies operate platform-based business models, but the potential climate impacts of these models are not always reflected in current GHG emissions accounting or target-setting standards. For example, **Amazon** operates an online marketplace but only accounts for the value chain emissions associated with Amazon-branded products. It is unclear whether emissions from their marketplace sales should be considered as part of their product footprint or treated as a service provision. Similarly, search engine providers like **Google** and **Microsoft** derive revenue from advertisements, which is also a service provision. None of these companies currently account for the climate impact of this service provisions, although they are a significant part of their business models.

Efforts are underway to create methodologies and guidelines for service providers such as consultancy and marketing services (University of Oxford, 2024), but this has not yet been reflected in current GHG emission accounting or target-setting standards. There remains a lack of guidance or requirements for platform-based business models to take responsibility for the climate impact of their businesses. This issue may increase in relevance, as we observe a trend of large companies moving toward platform-based business models.

Tech companies are kick-starting the market for durable carbon dioxide removal but nature-based CDR remains a key focus of corporate neutralisation strategies.

Big tech, and Microsoft in particular, are kick-starting the market for durable carbon dioxide removal (CDR), but investments remain a fraction of annual revenues. Microsoft was responsible for 64% of all contracted biochar and durable CDR methods in 2024, while Google is also emerging as a key buyer (CDR.fyi, 2025). Most of these CO_2 removals are not yet delivered (CDR.fyi, 2024).

However, CDR that is vulnerable to reversal is getting more traction. Google, Microsoft and Meta, alongside McKinsey and Salesforce, are part of the Symbiosis Coalition, an advance market commitment to invest in up to 20 million tonnes of nature-based carbon removals by 2030 (CDR.fyi, 2025). Amazon has signed prepurchase agreements for direct air capture and carbon storage (DACCS), but its neutralisation strategy focuses mostly on nature-based CDR (Amazon, 2024, p. 22). Apple focuses solely on low-durable CDR, including afforestation and soil carbon sequestration (Apple, 2024b).

Most of the tech companies assessed in this report are investing in CDR to bring emissions to net zero in the next five to six years, but removals are not a credible substitute for emission reductions. The companies' investments in CDR could distract from the poor or unclear integrity of their emission reduction targets *(see target integrity assessments in Annex 4B)*. Using CDR to claim net zero, while actual emissions are not decreasing rapidly is not a reflection of climate leadership.

Recommendations

Climate strategy for the tech sector needs a rethink, with a focus on transparent indicators of progress for the sector's key transitions.

Recommendations for companies

- **Rethink GHG and renewable electricity targets:** Companies should set both location-based emissions targets and 24/7 renewable electricity procurement targets. Such target setting ensures most clarity about the company's climate impact and incentivises companies to both curb energy consumption as well as to procure renewable electricity. Matching renewable electricity on a 24/7 basis demonstrates climate leadership by addressing the most complex challenges of the energy transition and requiring collaboration with other system stakeholders.
- **Transparency on energy and growth challenges:** Companies have the responsibility to communicate transparently about what the growth of AI and data centre energy demand means for their climate impact. Companies have an important role to play in raising awareness on this issue and collaborating for solutions, even if they face challenges to curb the growth of electricity demand directly in the current situation.
- **Third-party operated data centres:** Companies should report clearly on the location-based emissions from third-party operated data centres that they contract data services from to avoid giving a misleading impression about the climate impact of cloud-based services.
- **Renewable electricity in the supply chain:** Tech companies can demonstrate climate leadership by setting targets for renewable electricity in their supply chain, alongside location-based scope 3 emission reduction targets. Those targets are most transparent and effective if they consider the entire electricity consumption of companies' suppliers, rather than artificially allocating renewable energy to the company's share of their suppliers' output.
- **Hardware lifespan and recycling:** Companies should advocate for clearer guidance and regulation on good practice for increasing the lifespan of hardware and for the use of recycled components, recognising that their efforts to set targets and implement measures on these objectives are not rooted in any standardised consensus or guidance for what these transitions should look like.
- **Climate impact of platforms:** Tech companies can demonstrate climate leadership and prepare for potential future standards and regulations on the climate impact of service provision. This should include being more transparent about the climate impact of their platform-based business models (such as the advertising space that they sell to potentially polluting companies) and considering measures to address them.

Urgent priorities for ISO, GHG Protocol and SBTi standard development processes

- **Renewable electricity targets and claims:** The GHG Protocol revision should ensure the relevance and integrity of companies' emission reduction targets, by requiring hourly and local matching for market-based accounting of electricity-related emissions. In addition to requiring hourly matching, standard setters such as RE100 and SBTi should standardise terminologies and methodologies for renewable electricity procurement claims and targets to ensure comparability and integrity.
- **Spotlight on key transitions:** The neglect of these key transitions in the sector underscores the need for target-setting frameworks, such as the SBTi Corporate Net Zero Standard and the ISO Net Zero standard, to focus more specifically on key transitions by requiring companies to set transition-specific targets. The GHG Protocol could support this by facilitating more granular climate impact inventories that capture more specific transition-related indicators. In particular, **energy consumption for hardware manufacturing in the supply chain and for operating 3rd-party operated data centres** should be clearly identified as major emission sources and focus areas. This could be achieved through dedicated categories in the GHG Protocol Scope 3 framework and transition-specific targets within the SBTi and ISO standards.

Broader issues that require further guidance for more structural change

- **Responsibility for growth:** The mainstream emergence of AI and stark increase in tech companies' emissions underscore the need for a further debate and guidance on how companies should take responsibility for the climate impact of their growing processing power. The continued installation of more renewable energy generation to match the growth of the sector is not a realistic scenario (IEA, 2025), and would not be a sustainable solution on its own, as opposed to more measures to curb electricity demand. The SBTi's sector-specific guidance for the ICT sector published in 2020 did not extensively cover this issue (SBTi, 2020a) and was no longer listed under the available sector guidance on the SBTi's website as of March 2025. This consideration should be central to the development of any new sector-specific guidance created by standard setters.
- **Guidance, benchmarks, and regulations related to device lifespans and recycling:** There is a need for more literature, guidance, benchmarks and the development of regulations related to production business models, particularly in terms of hardware longevity and circularity measures. By neglecting this issue, voluntary climate standards and mobilisation initiatives are missing the opportunity to guide emerging regulations on this issue.

4.2 Company analyses

The following pages set out our detailed analyses of **Amazon**, **Apple**, **Google**, **Meta** and **Microsoft**.

→ *See the assessment methodology for the Corporate Climate Responsibility Monitor. Guidance and assessment criteria for good practice corporate emission reduction and net-zero targets: Version 5.0 (NewClimate Institute, 2025).*

Disclaimer: *Our evaluation of the transparency and integrity of companies' climate strategies represents the authors' views and interpretations of publicly available information that is self-reported by the companies assessed. Due to the fragmentation, inconsistency and ambiguity of some of the information provided by the assessed companies, as well as the fact that the authors did not seek to validate the public self-reported information provided by those companies, the authors cannot guarantee the factual accuracy of all information presented in this report. Therefore, neither the authors nor NewClimate Institute makes representations or warranties as to the accuracy or reliability of any information in this report. The authors and NewClimate Institute expressly assume no liability for information used or published by third parties with reference to this report.*

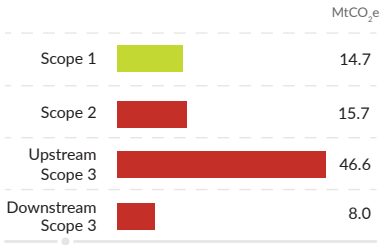
Amazon

Amazon's net-zero carbon by 2040 pledge omits large portions of its business and remains unsubstantiated without any explicit emission reduction target and with a significant role envisaged for carbon credits. Amazon is proactively implementing a variety of decarbonisation technologies, but has yet to commit to specific targets for all key transitions. Looking forward, its renewable electricity procurement strategy may be significantly undermined by the rapid growth of data centres along with Amazon's proposals for looser GHG accounting rules.

TRANSPARENCY	INTEGRITY
Poor	Poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Market-based reporting only for scope 2 and scope 3 emissions. Scope 3 excludes non-Amazon branded products.



MAJOR EMISSION SOURCES

- Energy from data centers
- Upstream hardware production
- Transport and logistics (own operated)

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net-zero carbon emissions by 2040*

			TRANSPARENCY	INTEGRITY
Short term	N/A	*No short-term GHG target.*	◌	◌
Medium term	?	*Net-zero carbon emissions by 2040, but no specific emission reduction commitment.*	◌	◌
Longer term	N/A	*No long term target.*	◌	◌

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Energy from data centers	Renewable energy in own operated data centres	*100% carbon-free energy claim is undermined by annual matching, use of nuclear and existing renewables.*	◐	◔
	Renewable energy in 3rd-party operated data centres	*We could not identify measures related to third-party operated data centres.*	◌	◌
Upstream hardware production	Renewable energy in the supply chain	*Amazon describes measures to encourage suppliers to use renewable energy, but sets no targets.*	◔	◔
	Increase lifespan of products	*Amazon describes measures to increase AWS server longevity, but we identify no targets. No benchmarking possible due to lack of available benchmarks.*	◔	?
	Increase share of recycled materials	*Amazon describes recycling measures for AWS, but we identify no targets. No benchmarking possible due to lack of available benchmarks.*	◔	?
Transport and logistics (own operated)	Electrification of vehicle fleet	*Target indicator provides insufficient context; the adequacy of 100,000 EVs by 2030 depends on company growth. We estimate it is equivalent to ~ 20% of deliveries compared to 2023 levels.*	◐	◐

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*Right Now Climate Fund: USD100m for biological CDR. Unclear if this is a climate contribution to action beyond the value chain or related to future neutralisation.*	◔	?
Support for durable carbon dioxide removals	*Amazon supports some DACs projects, although its emission neutralisation startegy is focused mostly on non-durable forstry projects.*	◐	◐

EMISSION TRENDS

↩ *Emissions nearly doubled between 2019 and 2023 and continue to grow.*

TRANSITION PROGRESS

✖

?

? *Considerable investments have been made in RE, but Amazon's RE statistics are undermined by methodological issues.*

? *24,000 EVs by 2023 is likely on track for the 2030 EV target, although the target may not be sufficient.*

? *Progress on other transitions cannot be determined due to lack of data.*

✔

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- + Right direction, off track
- ✖ Well off track
- ↩ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Amazon 2022, Amazon 2024, Amazon 2025, Ernst & Young 2024.*

Amazon

Amazon.com, Inc. is a platform for e-commerce and IT services. Amazon's GHG footprint includes a broad range of emission sources, including data centre operation, logistics and upstream hardware and product manufacturing. The company's net-zero carbon by 2040 pledge omits large portions of its business and remains unsubstantiated without any explicit reduction target for the company's own emissions, and with a significant role envisaged for carbon credits. Amazon is proactively implementing a variety of decarbonisation technologies, especially for transportation and renewable electricity, but has yet to commit to specific targets for all key transitions. Looking forward, its renewable electricity procurement strategy may be significantly undermined by the rapid growth of data centres along with Amazon's proposals for looser GHG accounting rules under the Emissions First Partnership.

Key developments over the past years: We could identify only minor changes to Amazon's sustainability strategy since our previous analysis of the case study in the 2023 *Corporate Climate Responsibility Monitor* (NewClimate Institute, 2023). Despite the lack of major developments in Amazon's strategy, we revised our analysis substantially to reflect our latest insights on Amazon's targets and its progress on key transitions.

Amazon's net-zero carbon 2040 pledge currently remains unsubstantiated and omits large portions of its business. Amazon announced its headline target as a co-founder of The Climate Pledge, an initiative that mobilises businesses to commit to net-zero carbon emissions by 2040 (Amazon, 2022a, p. 10). Amazon previously committed to substantiating this net-zero pledge with more detailed emission reduction targets in 2022 (Amazon, 2021); however, as of April 2025, it has yet to do so. In 2024, the Science Based Targets initiative (SBTi) removed Amazon's commitment to their standard from their dashboard, as this commitment was not substantiated with clearer targets. We could not identify any explicit clarity on the extent to which Amazon plans to achieve its target through delivering actual emission reductions, as opposed to procuring carbon credits (Amazon, 2024). The company's pledge also omits a large amount of its business, since its scope 3 GHG inventory excludes emissions associated with the non-Amazon branded products that it stocks and sells, as well as all of the products sold by third party sellers through its marketplace platform *(see section 4 on the climate impact of platform-based businesses)*.

Amazon's pledge is further weakened by relying on carbon credits from nature-based solutions. Amazon played a major role in the mobilisation of finance for the Lowering Emissions by Accelerating Forest finance (LEAF) Coalition, and since 2019 also through the USD 100 million Right Now Climate Fund (Amazon, 2022a, p. 18). Through that fund, Amazon provides financial support for reforestation and afforestation projects. However, we interpret that these projects generate carbon credits, which Amazon might in turn use to claim the neutralisation of its emissions in order to fulfil its net-zero by 2040 commitment (Amazon, 2024). These initiatives set out a well-considered plan for the provision of long-term support to higher-quality forestry projects, but the impermanence of carbon stored in forests makes these projects fundamentally inappropriate for fulfilling claims to neutralise carbon emissions *(see accompanying Methodology)*. In March 2025, Amazon announced that it would start to offer carbon credits to other companies including suppliers and Climate Pledge signatories (Amazon, 2025). It is unclear whether this service represents a profit generating business opportunity for Amazon, or a means to help other companies in its value chain to claim emission reductions.

Amazon's 100% renewable electricity claim is subject to contentious accounting nuances and may vastly understate the climate impact of its data centres. Most of Amazon's procured electricity is used for the operation of its data centres. Electricity procurement (scope 2 emissions) accounted for 18% of the company's location-based emission footprint in 2023 (Ernst & Young, 2024, p. 3). However, this information can only be obtained through third-party assurance reports as Amazon only publicly discloses scope 2 emissions with the market-based accounting approach. Assurance reports show that Amazon's electricity-related emissions are rising rapidly (Ernst & Young, 2024, p. 3) in line with the sector's expanding data centre capacity to meet AI-driven data processing demands (Beyond Fossil Fuels, 2025).

In this context, 24/7 renewable electricity procurement for data centres is a key transition for major tech companies to be aligned with net-zero pathways. Amazon claims to be the largest corporate procurer of renewable electricity in the world and claims to have used 100% renewable electricity for its own operations in 2023, seven years ahead of its original target for 100% by 2030. Although it is commendable that Amazon has made considerable investments in renewable electricity, this 100% renewable claim is fraught with contentious nuances and may substantially understate the climate impact of Amazon's data centres. Amazon partially accounts for existing renewable capacity on the grid, and unbundled renewable energy certificates towards its 100% claim, which may downplay the challenges of the energy transition. By matching electricity on an annual basis, Amazon still relies extensively on fossil fuels during the hours and months when renewable electricity supply is limited. Companies can best contribute to decarbonising the electricity grid by matching their electricity consumption with renewable electricity generated on the local grid and on an hourly (24/7 matching hereafter) basis. This would provide an important demand signal for additional and novel renewable energy generation and storage technologies required to completely decarbonise regional power systems.

Amazon advocates for looser GHG accounting rules for electricity-related scope 2 emissions through the Emissions First Partnership, which could significantly undermine the potential climate impact of corporate renewable electricity procurement. As the rules for electricity-related emission accounting are currently being revised in the GHG Protocol revision process, the Emissions First Partnership (EFP) co-founded by Amazon and Meta, among others, proposes a loosening of the current rules. The EFP advocates for accounting based on the metric of avoided or reduced emissions as an alternative to matching electricity consumption with renewable electricity generation. We interpret that key aspects of the EFP proposal can fundamentally be considered a simple repackaging of the controversial offsetting model; this would legitimise loopholes and allow major companies to evade responsibility for addressing critical yet challenging emission sources, ultimately distracting from and delaying real climate action (NewClimate Institute, 2024b; *see section B1-1 for further details)*.

Amazon also uses contentious accounting practices for electricity-related scope 3 emissions. In addition to the aforementioned issues with its scope 2 emission accounting, Amazon uses market-based accounting for its downstream scope 3 emissions, although the GHG Protocol's Corporate Standard states that market-based accounting is not to be used towards scope 3 emissions (GHG Protocol, 2024, p. 2). Furthermore, Amazon has applied its own unconventional method for deriving these market-based values for scope 3 emissions: we interpret that Amazon matches estimated device consumption to renewable energy capacities rather than real generation, without the transfer and cancellation of any tracking instrument like RECs (Amazon, 2022b). The investments that Amazon makes in renewable electricity projects to match its device consumption may have a positive climate impact if these lead to additional capacity. However, the claim that this is equivalent to the neutralisation of the company's own emission footprint is inaccurate, since this renewable electricity is not being used to directly power Amazon devices and the renewable electricity is likely to also be claimed by other power consumers. Over time this may allow Amazon to report misleading trends for the reduction of its downstream emissions. These investments and projects could be more transparently reported as a contribution to climate change mitigation beyond the value chain, separately from Amazon's own inventory and emission reduction targets.

Amazon continues to proactively test a range of measures to decarbonise other key emission sources but does not yet commit to specific targets for all key transitions.

- Renewable electricity procurement in the supply chain is also a key transition for tech companies, since electricity-related emissions for the upstream manufacturing of electronic hardware often account for more than a third of tech companies' emission footprints (NewClimate Institute, 2025). Amazon only vaguely describes measures for working with suppliers on renewable electricity but we could not identify progress indicators or sets targets for this transition.
- Amazon's approach for addressing transport emissions is more proactive, including its commitment to roll out 100,000 electric vehicles (EVs) for deliveries by 2030. The company reported being on track for this target in 2023 with 24,000 electric delivery vehicles already on the road. However, the 2030 target is not expressed in the most transparent terms, since the significance of 100,000 vehicles depends on the growth of the business and the overall number of delivery vehicles in 2030. An EV target expressed as a share of deliveries, or a share of the total vehicle stock, would be a more meaningful commitment. Amazon has also made investments to test battery- and hydrogen-based trucking technologies for longer distance freight, which could significantly reduce transport related emissions from scope 1 and scope 3.
- The company also sets out details on measures to reduce emissions from buildings, packaging and waste, and describes efforts to procure low carbon cement and steel for new construction projects, although this is not clearly defined (Amazon, 2024, pp. 15–20).

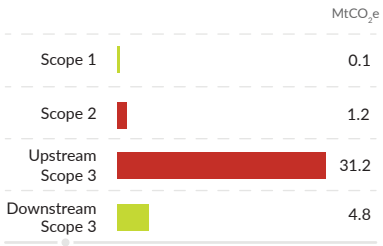
Apple

Apple commits to using 100% renewable electricity for direct manufacturers' production of Apple products before 2030. Through its Clean Energy Programme, the company offers support to direct suppliers. Although RECs still account for the majority of RE in the supply chain, the share of PPAs has increased substantially in recent years. Apple's marketing of certain products as "carbon neutral" is highly contentious and gives an inaccurate depiction of these products' climate impact.

TRANSPARENCY	INTEGRITY
Moderate	Moderate

1 TRACKING AND DISCLOSURE OF EMISSIONS

Apple reports only market-based scope 3 emissions. Location-based emissions are about three times as high.



MAJOR EMISSION SOURCES

- Energy from data centers
- Upstream hardware production

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Carbon neutral across entire value chain by 2030*

			TRANSPARENCY	INTEGRITY
Short term	75%	*A 75% reduction is in line with sectoral benchmarks, but could be (partially) achieved with RECs.*	◐	◐
Medium term	N/A	*No target identified.*	○	○
Longer term	90%	*A 90% emission reduction is aligned with sectoral benchmarks.*	◔	◔

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Renewable energy in own operated data centres	*100% renewable electricity in own operations, matched on an annual basis.*	◐	◐
Renewable energy in 3rd-party operated data centres	*100% renewable electricity in colocation facilities, matched on an annual basis.*	◐	◐
Renewable energy in the supply chain	*100% clean electricity in the entire supply chain, including for manufacturing and product use. The target is in line with sectoral benchmarks.*	◔	◔
Increase lifespan of products	*No target identified, but Apple lists some measures aimed at increasing product lifespan. No benchmarking possible due to lack of available benchmarks.*	◐	?
Increase share of recycled materials	*Apple commits to 100% recycled metals in select components by 2025. No benchmarking possible due to lack of available benchmarks.*	◔	?

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*Apple claims carbon neutrality for its operations and for specific products through carbon credits from forestry projects, equivalent to less than 2% of its value chain emissions.*	◔	◔
Support for durable carbon dioxide removals	*No support for durable CDR identified. Apple is transparent about its reasons to focus on support for non-durable CDR.*	◔	○

EMISSION TRENDS

? *Location-based scope 2 emissions have increased by 40% between 2019 and 2024. Total (location-based) GHG emissions are about the same level in 2022-2024 as in 2015. We did not identify location-based emissions for scope 3 in the period 2016-2021. Market-based emissions show a steep decrease between 2015 and 2024.*

TRANSITION PROGRESS

\+ \+ \+ ? ? *Over 90% of Apple's own electricity consumption is matched on an annual basis with high quality procurement constructs, but it is not clear what this means in hourly-matched terms. Share of PPAs in the supply chain and suppliers' renewable electricity consumption are increasing. Based on LB emissions for manufacturing in 2015, 2023 and 2024, we assume there are no substantial changes to manufacturers' total electricity consumption, which suggests that Apple is going in the right direction.*

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- \+ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Apple 2024a, 2024b, 2024c, 2024d, 2025.*

Apple

Apple Inc. (Apple) is a US-based multinational corporation that specialises in consumer electronics, software development, and digital services. About 80% of Apple's emissions stem from energy used in manufacturing and transporting its products and about 15% from product use. The company committed to emission reductions of 75% by 2030 across the value chain, but the company's extensive use of market-based accounting makes the real meaning of this target unclear. Apple's Supplier Clean Energy Program includes a range of measures that support suppliers in increasing their use of renewable electricity, such as support for signing power purchase agreements. The company's marketing of certain products as "carbon neutral" is highly contentious and gives an inaccurate depiction of these products' climate impact.

Key developments over the past year: Since our last assessment, published in February 2023, Apple has made good progress on renewable electricity development in the supply chain. However, we also identified that Apple is using market-based accounting for scope 3 emissions and the company started to market some products as "carbon neutral".

Apple supports its suppliers in procuring renewable energy and seems to moving in the right direction for this transition. Apple commits to transitioning its entire product value chain to using 100% clean energy by 2030 – including manufacturing and product use (Apple, 2025, p. 10). A key pillar under this target is the Clean Energy Program (CEP), which Apple started a decade ago and which combines several promising measures for supplier engagement such as mandatory reporting requirements, capacity building, direct investment and the establishment of funds to co-invest with suppliers and pool their resources for renewable electricity investments (Apple, 2025, pp. 25–27). Supply chain renewable electricity consumption increased from 11 million MWh in 2020 to 31 million MWh in 2024 (Apple, 2025, p. 86). While we could not identify statistics on the share of renewable electricity consumption in the supply chain, it seems likely that this also increased in recent years: Location-based emissions from manufacturing processes slightly reduced between 2022 and 2024, which suggests that suppliers' overall electricity consumption did not, or at least not substantially, increase (Apple, 2023, 2024b, 2025).

Apple provides a breakdown of the role of various renewable electricity procurement mechanisms in the supply chain. Although standalone renewable electricity certificates (RECs) remain the primary mechanism through which suppliers purchase renewable electricity, the share of Power Purchase Agreements (PPAs) increased significantly from 25% in 2023 to 36% in 2024 (Apple, 2024b, 2025). Apple notes that it views RECs as an interim solution until longer-term procurement mechanisms, such as PPAs, become more widely available (Apple, 2025, p. 26). This is a good approach, as standalone RECs have historically had a limited impact on renewable energy development (Hulshof *et al.*, 2019; Miller, 2020). We consider RECs to be only effective as a tracking instrument for other renewable electricity procurement constructs, not as a renewable electricity procurement option in their own right (NewClimate Institute, 2024b).

Apple does not transparently disclose its scope 2 and 3 emissions. Apple uses market-based accounting to report on scope 2 and 3 (Apple, 2025, p. 82); the location-based data appears only in an official assurance statement that is attached as an Annex to Apple's 2025 Environmental Progress Report (Apple, 2025, pp. 104–106). This is misaligned with the GHG Protocol guidelines, which does not currently facilitate market-based accounting for scope 3 emissions (GHG Protocol, 2024, p. 2). Apple's location-based emissions are about three times as high as the company's reported market-based emissions. It would be more transparent for Apple to report both location-based and market-based emissions.

Despite promising efforts to increase renewables in the supply chain, Apple's emission reduction claims are not entirely substantiated by real emission reductions. Apple committed to reach carbon neutrality by 2030, including a 75% reduction across the value chain (Apple, 2025, p. 5). The company reports that it had already achieved a 60% reduction by 2024, to a large extent driven by RECs in the supply chain (Apple, 2025, p. 5). Claiming emissions reductions due to RECs is not credible and may divert attention away from the fact that Apple's suppliers continue to rely on carbon-intensive electricity grids. Apple's reliance on RECs for the supply chain raises some uncertainty about the real meaning of the 75% reduction commitment, which would otherwise be aligned with sectoral benchmarks.

This highlights the limitations of current accounting and target-setting approaches. Despite efforts to transition the supply chain to renewable electricity, Apple cannot report significant progress on reducing GHG emissions, as long as electricity grids in key supplier regions are still carbon intensive. The ongoing GHG Protocol revision process will consider if, and under what conditions, companies could be allowed to report on scope 3 emissions using market-based accounting. This can only be a reasonable approach if market-based accounting is significantly tightened, in particular by requiring meaningful procurement constructs and excluding the use of standalone RECs. Tightening the market-based accounting rules would be required to incentivise meaningful supply chain renewable energy strategies like Apple's Supplier Clean Energy Program, and to avoid introducing potential loopholes and unsubstantiated claims in scope 3. In addition, moving from GHG emission reduction targets to transition targets could help companies focus on key transitions and allow better recognition of corporate climate leadership (NewClimate Institute, 2025).

Apple's claim to use 100% renewable electricity for its own operations since 2018 is transparently substantiated with relatively high-quality procurement constructs. Apple transparently discloses a substantial amount of data on its own energy consumption (Apple, 2025, pp. 86, 98–102). Renewable energy procurement constructs are explained for each major corporate location and data centre individually. Apple reports that 89% of its overall renewable electricity consumption is sourced from "Apple-created" projects (Apple, 2025, p. 24). This includes Apple's own on-site generation, PPAs and utility green tariff programmes initiated together with Apple. These programmes involve long-term contracts for the delivery of renewable energy from a newly installed project managed by the utility on Apple's behalf. Apple's own renewable energy-sourcing standards stipulate that these are only new and local projects. In locations where new renewable projects depend upon preferential rates or long-term contracts, the company's focus on these procurement constructs likely has a positive impact on decarbonising the local grid and – to some extent – Apple's own electricity consumption. However, where such constructs are not available, Apple reports that it uses standalone RECs to match only a small portion (4%) of its annual electricity consumption (Apple, 2025, p. 24).

Apple could further improve its renewable electricity procurement through a new target for 24/7-matched renewable electricity. Annual matching of renewable electricity entails significant limitations, since it does not require companies to address the core challenges of electricity sector decarbonisation, such as intermittency and seasonal capacity limitations. Apple recognises that 24/7 clean energy is an important societal objective but does not consider it efficient for individual companies to create their own 24/7 portfolio (Apple, 2024a, p. 12). Rather, Apple believes it should bring online "as much renewable energy as possible while paying attention to the hourly emission effects of our load and our generation" (Apple, 2024a, p. 12). However, setting a 24/7 target for the future could give Apple a strong incentive to work together with regulators and electric utilities to realise the transition to hourly matching of renewable energy. Some of Apple's major competitors are moving towards 24/7 commitments, although these are potentially undermined by the reliance on nuclear and existing renewables on the grid.

Apple markets several products as "carbon neutral", which inaccurately depicts the climate impact of these products. Apple claims that its Mac mini and Apple Watches are "carbon neutral" due to a combination of sourcing renewable electricity for manufacturing, matching expected consumer product use electricity with electricity from low-carbon sources, recycling materials, rail and ocean transportation, and carbon offset credits (Apple, 2024d, 2024c). Claiming that emissions from electricity for manufacturing and product use is nearly zero is inaccurate, as discussed above. Stating that materials and transportation have a near-zero climate impact also seems like a bold exaggeration of the emission reductions that Apple achieves by recycling materials and shipping half of its Mac mini's and Apple Watches by non-air modes, such as rail, from final assembly sites to their next destination (Apple, 2024d, p. 1,17, 2024c, p. 1,15). Apple purchases carbon offset credits from various afforestation and reforestation projects in Latin America (Apple, 2024c, p. 14, 2024d, p. 16), but such projects are fundamentally unsuitable for any GHG neutralisation due to their limited permanence (NewClimate Institute, 2024a). Rather than using creative accounting methods to call some products carbon neutral, it would be more constructive for Apple to be transparent about the actual GHG footprint and acknowledge the significant challenges in eliminating these in the short term, even if the company has put in.

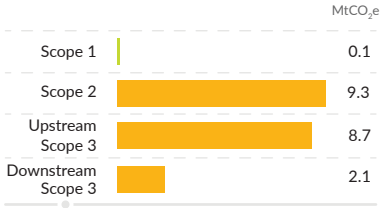
Google

Google has pledged to achieve net-zero emissions by 2030, but this target relies heavily on offsetting, and its reliance on market based accounting creates uncertanties. Google is promoting hourly renewable energy matching, which can support grid decarbonisation. The company communicates strong additionality principles for clean energy procurement, but its reliance on nuclear could potentially distract from the need to continue investing in renewable capacity. Google reports various measures to support suppliers with renewable electricity but has not set its own targets for this key transition.

TRANSPARENCY	INTEGRITY
Moderate	Moderate

1 TRACKING AND DISCLOSURE OF EMISSIONS

Market-based scope 2 accounting is used for aggregated emissions, although Google also reports hourly matched carbon free energy. Scope 3 categories are grouped together in a way that do not facilitate a clear distinction between upstream and downstream emissions. Emissions from third-party operated datacentres are not transparently disclosed.



MAJOR EMISSION SOURCES

- Energy from data centers
- Upstream hardware production

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net zero emissions by 2030*

			TRANSPARENCY	INTEGRITY
Short term	?	*Significance of the 50% market-based emission reduction target for 2030 is unclear due to uncertainty in future market-based accounting methodologies and the rapid expansion of data center energy.*		?
Medium term	N/A	*No medium-term GHG targets identified.*		
Longer term	N/A	*No long-term GHG targets identified.*		

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Renewable energy in own operated data centres	*Target to operate on 24/7 carbon free energy by 2030 is industry-leading, but may rely on nuclear and CCS.*		
Renewable energy in 3rd-party operated data centres	*We could not identify measures related to third-party operated data centres.*		
Renewable energy in the supply chain	*Google's plan to invest in 5 GW of carbon free energy for suppliers by 2030 indicates action, but the significance is unclear as the target metric is not contextualised.*		
Increase lifespan of products	*Google reports measures to improve product longevity. No benchmarking possible due to lack of available benchmarks.*		?
Increase share of recycled materials	*Google sets several targets for use of recycled materials. No benchmarking possible due to lack of available benchmarks.*		?

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*Google's cancellation of carbon credits is no longer used to claim that emissions are offset, but the scale of this support is not aligned with good practice for climate contributions.*		
Support for durable carbon dioxide removals	*Google is chanelleing USD 200 million into durable carbon removal technologies through an initiative called Frontier, with the intention to claim the neutralisation of residual emissions.*		

EMISSION TRENDS

Increasing absolute emissions trend, which will likely increase further due to data centre expansion and increased use of AI, outpacing RE growth. Emissions intensity per revenue also increased slightly between 2021 and 2023.

TRANSITION PROGRESS

Google reports 64% carbon free energy for data centres in 2023, although the potential role of nuclear in this statistic is unclear.

Progress on other transitions is unclear due to lack of contextualised data or lack of available benchmarks.

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- \+ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Google 2021, 2022, 2024a, 2024b, 2024c.*

Google

Google LLC (Google) is a provider of diverse information technology services and products. Its major emission sources stem from electricity consumption to power its data centres, as well as the manufacturing of hardware devices. Google has pledged to achieve net-zero emissions by 2030, but this target relies heavily on offsetting. The significance of the company's 50% emission reduction commitment is also unclear due to the uncertainties around new methodologies for market-based emissions accounting. Google is promoting hourly renewable energy matching, which can support grid decarbonisation. The company communicates strong additionality principles for clean energy procurement, but its reliance on nuclear could potentially distract from the need to continue investing in renewable capacity. Google reports various measures to support suppliers with renewable electricity but has not set its own targets for this key transition.

Key developments over the past years: Since 2023, Google no longer claims its operations are carbon neutral (Google, 2024b, p. 40). This is a positive improvement since our last analysis in February 2023 (NewClimate Institute, 2023). Despite the lack of major developments in Google's strategy, we revised our analysis substantially to reflect our latest insights on the company's targets and its progress on key transitions.

Google's commitment to 24/7 carbon-free energy (CFE) matching can help drive grid decarbonisation, although the inclusion of nuclear and carbon capture and storage (CCS) might distract from scaling renewable capacity. Google claims to have operated on 100% renewable energy matching on a global and annual basis for its own operations since 2017 (Google, 2024b, p. 33). The tech company has built up a portfolio of high-quality procurement constructs, mainly long-term PPAs within the same grids as electricity consumption, which account for three quarters of Google's renewable procurement (Google, 2024b, p. 76). Recognising the limitations of annual and global matching, Google aims to achieve 24/7 CFE for all operations by 2030, including its third-party data centres (Google, 2024b, p. 35). Hourly matching is more effective than annual matching in lowering system-wide emissions, as it addresses seasonality and intermittency challenges (NewClimate Institute, 2024d; Riepin and Brown, 2024; Xu *et al.*, 2024). The tech company reported a 64% hourly global CFE average for 2023 (Google, 2024b, p. 6). However, there are large regional disparities: while Google reports 100% CFE in Quebec, the share remains lower than 20% across the majority of its operations in Asia (Google, 2024b, p. 77). Existing nuclear and renewable energy on the grid account for a substantial share of the hourly matched CFE in several regions (Google, 2024b, p. 77). Google demonstrates good practice by collaborating with policymakers, utilities, and industry associations to promote 24/7 matching, aiming to change current structures that favour annual matching (Google, 2021, 2022).

Data centre expansion and higher artificial intelligence (AI) usage have rapidly increased Google's electricity demand and absolute GHG emissions. This coincides with a rebound in Google's economic emissions intensity in 2022–2023, after a decline between 2019 and 2021. Although Google has implemented measures like AI model optimisation and infrastructure efficiency (Google, 2024b, p. 13), these are insufficient to curb energy demand. Although Google's renewable electricity strategy represents good practice, the procurement of renewable electricity through market-based instruments is not equivalent to the direct reduction of emissions, and continued growth in electricity demand may present national governments with new challenges and delays for the energy transition. Between 2019 and 2023, the company's location-based scope 2 emissions nearly doubled from 5.12 to 9.25 $MtCO_2e$ (Google, 2024b, p. 75) due to soaring electricity consumption. Google claims that AI could mitigate 5–10% of global emissions by 2030. However, this claim is not underpinned by clear evidence or scientific research. The tech company cites a blog post written by Boston Consulting Group (Degot *et al.*, 2021), who arrived at these numbers through their "experience with clients" (Joshi, 2023). The company reports that it explores the use of AI for measures such as more fuel-efficient routing, contrail mapping and grid optimisation, among others (Google, 2024b, p. 11). But it is inconclusive whether benefits of its AI-based products outweigh its growing environmental footprint.

Google's renewable electricity strategy for its supply chain is less developed than its renewable energy strategy for its own operations. We estimate that emissions from hardware manufacturing and chip production account for nearly one third of Google's GHG footprint. The tech company has not committed to a renewable electricity target for its supply chain, although its new Renewable Energy Addendum calls for its largest hardware suppliers to reach 100% renewable electricity shares for their Google-related outputs by 2029 (Google, 2024b, p. 5). The significance of this initiative is unclear since we could not identify what proportion of the hardware supply chain this covers, nor whether it is a requirement or a recommendation for suppliers. . Google aims to enable 5 GW of new CFE through investments in key manufacturing regions by 2030 (Google, 2024b, p. 39). The significance of this commitment is unclear without further information on the location of the new CFE capacity and the share of suppliers' energy demand it would cover Google also refers to several measures to address its scope 3 emissions. For example, it engaged some of its suppliers to collect and disclose emissions data and developed decarbonisation roadmaps with its largest hardware suppliers (Google, 2024b, p. 38). In addition, Google asks these major suppliers to commit to 100% renewable energy matching by 2029. However, we could not identify how Google plans to support these suppliers in reaching this target or what happens if suppliers fall short of it. Given the significance of supply chain electricity consumption for Google's footprint and its experience in renewable electricity procurement around the world, the lack of concrete targets for the supply chain remains a gap in Google's climate strategy.

Google reports several measures and targets to promote the use of recycled materials, device repairability and e-waste reduction. Google supports product longevity and e-waste reduction through continuous software updates, the "Right to Repair" initiative, and trade-in and recycling programmes (Google, 2024a, 2024b, pp. 54–55). It publishes Product Environmental Reports outlining recycled content, energy efficiency, and emissions (Google, 2024c). Google reported that 29% of its server inventory came from refurbished hardware in 2023; we cannot identify benchmarks from the scientific literature to evaluate this progress on the use of refurbished equipment. Google commits to using 50% recycled or renewable plastic in consumer hardware products and achieving plastic-free packaging by 2025. In 2023, recycled plastic accounted for over a third of plastic used in its products, and at least a fifth of materials in newer products were recycled. Google has also developed fully recycled aluminium enclosures for newer Pixel models (Google, 2024b, p. 7,39). Setting quantifiable goals for device lifespan, return rates, and overall recycled materials would strengthen its circular economy commitments.

Google's pledge to achieve net zero by 2030 is potentially misleading, as it is not substantiated by deep emission reductions. The company aims for a 50% reduction across all scopes by 2030 compared to 2019 levels, including the use of market-based accounting instruments (Google, 2024b, p. 7,74). There is general consensus that corporate net-zero targets should be accompanied by a commitment to reduce full value-chain emissions by at least 90% below 2019 levels (ISO, 2022, pp. 16–17; SBTi, 2024), and Google's commitment falls far short of this requirement. The meaning and continued relevance of Google's 50% emission reduction commitment is also called into question by key developments since the target was set. Firstly, the rise of AI and the associated rapidly increasing energy demand call into question whether Google and its competitors will still be able to reduce emissions this decade, although Google has publicly acknowledged this challenge and confirmed that it continues to stand by its communicated goals . Secondly, the uncertain outcome of the current revision of the GHG Protocol methodologies for market-based emissions accounting make the significance of market-based emission targets unclear; the meaning of the target will be very different depending on whether market-based accounting should be done with annual or hourly matching. Due to its proactive approach to shift to hourly energy matching, Google may be better placed than other companies to confirm meaningful GHG emission reduction targets after the GHG Protocol revision process. The company could further demonstrate leadership by already reporting its emissions and GHG targets based on hourly matching; currently the company uses hourly matching to account for renewable energy shares but annual matching for GHG emissions accounting.

Google acknowledges the role of high-quality carbon dioxide removal (CDR) in addressing residual emissions and is investing in both biological and technological CDR options to be able to offset unabated emissions by 2030. The company is channelling USD 200 million into durable carbon removal technologies, such as enhanced rock weathering, biomass carbon removal and storage (BiCRS), and direct air capture (DAC) through *Frontier*, a coalition supporting carbon removal via advance market commitments (Google, 2024b, p. 31,40). This finance is helpful in testing and scaling novel CDR technologies with high degree of permanence (lasting thousands of years), but this cannot replace the need for deep emission reductions.

Google's contributions to climate action beyond the value chain are not sufficient to take responsibility for its ongoing emissions. Google continues to cancel voluntary carbon credits from projects like the Oneida-Herkimer landfill methane destruction. In 2024, the company announced that it would no longer use these carbon credits to offset emissions and make carbon neutrality claims (Alphabet, 2024, pp. 134–135). This improves transparency, since the carbon neutrality claim had the potential to be highly misleading about Google's climate impact (NewClimate Institute, 2023). However, the scale of Google's support for climate contributions is far from aligned with good-practice responsibility *(see section 4 of the Methodology)*.

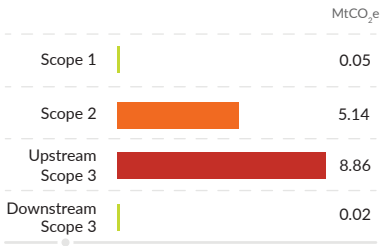
Meta

Meta's emissions have more than doubled since 2019, and we interpret that the 2031 GHG target is also equivalent to an increase in emissions from 2019 levels. Meta's current renewable electricity procurement strategy, which focuses on adding renewables to the local grid, is potentially undermined by annual matching, and the company's support for the Emissions First Partnership. We did not identify a commitment for other key transitions.

TRANSPARENCY	INTEGRITY
Poor	Poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Detailed emissions disclosure in data annex, but market-based accounting accounting obsucres the real emissions from data centres and the upstream value chain.



2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net-zero emissions across value chain by 2030.*

			TRANSPARENCY	INTEGRITY
Short term	?	*Target of net-zero emissions across the value chain, but no emission reduction commitment.*	○	○
Medium term	+12% +92%	*Targets to reduce s1&2 by 42% by 2031 (2021 baseline) and limit s3 emissions to 2021 levels in 2031. We interpret that this will lead to an overall increase in emissions compared to 2019 levels, the extent of the increase is unclear depending on uncertanties related to market-based accounting.*	◔	○
Longer term	N/A	*No target identified.*	○	○

EMISSION TRENDS

↩ *Reported emissions have plateaued since 2022, but still show a signficant increase since 2019 levels and numbers may be obscured with market-based accounting. No signs of a downward emissions trend.*

MAJOR EMISSION SOURCES

- Energy from data centers
- Upstream hardware production

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Renewable energy in own operated data centres	*Target to switch to 100% RE, but no 24/7 commtiment. Current RE procurement constructs are reasonable. Meta advocates for weaker accounting rules under the Emissions First Partnership and invests in nuclear energy.*	◑	◔
Renewable energy in 3rd-party operated data centres	*No reference to third-party operated data centers identified.*	○	○
Renewable energy in the supply chain	*No target identified, but Meta has supplier engagement programmes that, among other things, focus on increasing the share of renewable electricity.*	◑	◔
Increase lifespan of products	*No target identified, but Meta describes some policies to increase the lifespan of products. No benchmarking possible due to lack of available benchmarks.*	○	?
Increase share of recycled materials	*No target identified, but Meta describes some plans to increase the share of recycled materials in its products. No benchmarking possible due to lack of available benchmarks.*	○	?

TRANSITION PROGRESS

+

?

? *Most of Meta's own electricity consumption is matched on an annual basis with high quality procurement constructs, but it is not clear what this means in real (hourly matched) terms.*

? *Insufficient data on other transitions to evaluate progress.*

?

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions identified. Claims to be net zero across operations since 2020 through the purchase of credits from non-durable CDR.*	◔	◔
Support for durable carbon dioxide removals	*Meta supports the development of durable CDR projects through Frontier, but plans to claim the neutralisation of its residual emissions through a mix of both durable and non-durable CDR projects.*	◑	◑

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- \+ Right direction, off track
- ✖ Well off track
- ↩ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Meta 2023, 2024.*

Meta

Meta Platforms, Inc. (Meta), is a US-based tech company, mainly known for its social media platforms, including Facebook, Instagram and WhatsApp. Its main emission sources are related to electricity demand of data centres, where one third of emissions arise from own data centres and another third from data centres owned by third parties. The company's emissions have more than doubled since 2019, but its current emission reduction targets fail to address this emissions trend as they would result in an *increase* in emissions compared to 2019. Although Meta commits to continuing procuring renewable electricity for its own data centres through using an annual matching method, we did not identify a commitment for renewable electricity demand of third-party data centres or other key transitions. Meta's current renewable electricity procurement strategy, which focuses on adding renewables to the local grid, is potentially undermined by its support for the Emissions First Partnership.

Meta's emissions more than doubled since 2019, and its 2031 targets seem insufficient to place the company back on a 1.5°C-aligned trajectory. Meta reports that its location-based emissions have more than doubled since 2019 (Meta, 2024, p. 78). The company has committed to reducing scope 1 and 2 emissions by 42% below 2021 levels, and to capping its scope 3 emissions at 2021 levels by 2031 (Meta, 2024, p. 17). While the 2031 emission reduction and peak-emission targets imply a reduction of 37% compared to its latest reported emissions of 2023, we consider it likely that Meta plans to continue to use market-based measures to achieve these targets, most importantly RECs for electricity used in own and leased data centres. If that is the case, Meta's actual emissions could continue to rapidly increase. Even if the 2031 targets exclude the use of any market-based measures, they would allow Meta to *increase* emissions by 12% compared to 2019. This falls way short of benchmarks for the tech sector, which show that emissions should decrease by at least 40% in that period (NewClimate Institute, 2024a). There is urgent need for a U-turn in Meta's emissions trends: to align with 1.5°C benchmarks for the sector, Meta would need to commit to far greater reductions beyond its 2023 baseline, independent from market-based accounting.

Meta's net-zero target for 2030 is not substantiated with an emissions reduction target; its insufficient targets for 2031 signal a high degree of dependency on offsetting with carbon dioxide removals (CDR). We did not identify any emission reduction commitments prior to 2031, suggesting that Meta does not intend to pursue deep emissions reductions as part of its net-zero strategy. The company's target to maintain scope 3 emissions at 2021 levels and its scope 1 and 2 emission reduction target translate to aggregated emissions of up to 9 $MtCO_2e$ by 2030, which would need to be offset to claim "net zero". Indeed, Meta plans to source CDR offset credits, mostly from forestry projects (Meta, 2024, p. 37). However, CDR is a scarce resource and should only be used to neutralise residual emissions that cannot be mitigated (NewClimate Institute, 2024c). Companies should prioritise and implement deep emission reductions before turning to CDR. Any CDR used to neutralise ongoing fossil fuel emissions should remain stored for millennia (Allen *et al.*, 2024; Brunner, Hausfather and Knutti, 2024). This means that CDR from forestry projects is unlikely to qualify for a net-zero claim.

Meta commits to continue meeting its electricity demand for data centres with renewables on an annual basis: commitments to 24/7 renewable electricity procurement and other key transitions are lacking. While Meta acknowledges the importance of multiple key transitions, its commitments remain limited to renewable electricity for its own data centres (Meta, 2024, p. 17). The company claims to already match 100% of its electricity demand with renewable electricity and intends to continue this practice (Meta, 2024, p. 26). However, Meta currently matches electricity demand with renewables on an annual basis and does not commit to do this on a 24/7 basis in the future.

Furthermore, the company is one of the champions for the Emissions First Partnership (EFP). The EFP advocates for accounting based on the metric of avoided or reduced emissions as an alternative to matching electricity consumption with renewable electricity generation. Key aspects of the EFP proposal can be considered a simple repackaging of the controversial offsetting model; this would legitimise loopholes and let major companies off the hook for tackling challenging yet key emission sources, distracting from and delaying real climate action (NewClimate Institute, 2024b; *see section B1-1 for further details*). Currently, a large share of Meta's electricity procurement strategy relies on so-called "project-specific contracts with electricity suppliers", based on data from its CDP disclosure (Meta, 2023, pp. 57–114). Although we identified only limited details about these projects, the provided information suggests that they lead to additional capacity on the grid in the same region as electricity demand. Taking a different direction, as advocated for by the EFP, would undermine the efficacy of current practices.

Meta does not present a strategy to decarbonise third-party data centres, although emissions from this source are significant. Meta does not transparently report location-based emissions in scope 3, but instead prominently discloses market-based scope 3 emissions, even though the GHG Protocol guidelines do not allow market-based accounting for scope 3. In 2023, the discrepancy between location-based and market-based scope 3 emissions amounted to approximately 1.5 $MtCO_2e$ (Meta, 2024, p. 78). This share of emissions likely arises from electricity consumption in third-party owned data centres, as Meta's emissions data suggest that roughly half of its emissions related to data centre use is from third-party owned data centres (Meta, 2024, pp. 21, 80). Although the share of emissions is significant, Meta does not present a strategy as to how to reduce the emissions. Without a clear decarbonisation strategy for as well as reporting on third-party data centres, a significant portion of Meta's emissions remains unaddressed, further undermining the effectiveness of its climate commitments.

Beyond its own operations, Meta highlights supplier engagement programmes aimed at increasing renewable energy use in its supply chain but we did not identify any related targets (Meta, 2024, pp. 17, 30, 43). The company requires its suppliers to set emission reduction targets and describes that it helps suppliers with their target achievement. One of the practices Meta describes is a programme that helps suppliers with renewable electricity procurement. While the company's supplier engagement strategies, which mainly focus on capacity-building, are commendable, they would be more meaningful with strong, quantitative targets for Meta's upstream scope 3 emissions. Furthermore, the level of detail on the supplier programmes does not allow for a thorough understanding of the effectiveness.

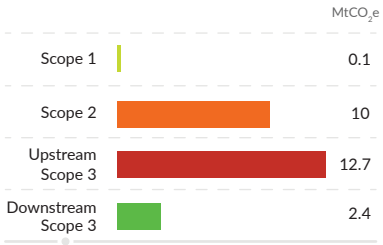
Microsoft

Microsoft's electricity demand and location-based emissions have rapidly increased between 2019 and 2024. Microsoft's 24/7 commitment to renewable energy is good practice, but the rapid growth of electricity consumption calls into question the meaning of its GHG target for 2030. Microsoft's 2030 carbon-negative target substantially depends on CDR. While it is positive that Microsoft drives the market for durable CDR technologies, this cannot replace deep emission reductions.

	TRANSPARENCY	INTEGRITY
	Moderate	Poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Detailed emissions disclosure in data annex. Market-based accounting used for aggregated scope 2 and 3 emissions; no more disclosure of location-based scope 3.



MAJOR EMISSION SOURCES

- Energy from data centers
- Upstream hardware production

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Carbon negative by 2030*

			TRANSPARENCY	INTEGRITY
Short term	?	*Carbon negative target for 2030 that covers value chain emissions. The significance of the emission reduction target is unclear due to uncertainty in future market-based accounting methodologies and the rapid expansion of data center energy.*	◐	?
Medium term	N/A	*No targets identified.*	○	○
Longer term	?	*Target to remove an amount equivalent to operational emissions since 1975. Unclear emission reduction commitment.*	○	○

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Renewable energy in own operated data centres	*Target to operate on 24/7 carbon free energy by 2030 is industry-leading, but may rely on bioenergy, nuclear and CCS.*	◐	◕
Renewable energy in 3rd-party operated data centres	*No reference to third party data centers identified.*	○	○
Renewable energy in the supply chain	*No target identified, but Microsoft requires some suppliers to transition to renewable electricity, and co-developed a portal that suppliers can use for RE procurement.*	◔	◔
Increase lifespan of products	*No target identified, but measures in place to increase reparability of products. No benchmarking possible due to lack of available benchmarks.*	◔	?
Increase share of recycled materials	*Several targets with regards to recycled materials. No benchmarking possible due to lack of available benchmarks.*	◐	?

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*Microsoft purchases carbon credits corresponding to a small portion of current emissions.*	◐	◔
Support for durable carbon dioxide removals	*Microsoft is by far the largest purchaser of biochar and durable CDR, while also investing in non-durable CDR. Microsoft plans to use the CDR to claim carbon negative emissions by 2030.*	◕	◕

EMISSION TRENDS

↩ *Rapid increase in absolute emissions and emissions intensity in recent years. No signs of a downward trend in emissions.*

TRANSITION PROGRESS

\+

?

?

?

?

Microsoft is accelerating the procurement of renewable electricity, but is also expanding the share of nuclear energy in its electricity procurement strategy. 78% annual PPAs entails commendable action, but uncertainty remains around what '78% direct renewable electricity' with annual matching means in real (hourly) terms.

For other indicators, data is insufficient to evaluate progress.

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- \+ Right direction, off track
- ✖ Well off track
- ↩ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Microsoft 2024a, 2024b, 2024c, 2025a, 2025b.*

Microsoft

Microsoft Corporation provides cloud services and is the world's largest software maker, known for products such as Office and Outlook. The company's main emissions stem from electricity consumption in data centres and the purchase of server equipment. Due to the growth of commercial cloud use and employment of artificial intelligence, Microsoft's electricity demand and location-based emissions have rapidly increased between 2019 and 2024. Microsoft's commitment to 24/7 carbon-free energy is good practice, but the company's rapid growth in electricity consumption calls into question both Microsoft's target for carbon-free energy, as well its emissions reduction target for 2030. Microsoft's 2030 carbon-negative target substantially depends on CDR. While it is positive that Microsoft drives the market for durable CDR technologies, this cannot replace deep emission reductions.

Key developments over the past years: We identified only minor changes to Microsoft's sustainability strategy since our previous analysis of the case study in the 2023 *Corporate Climate Responsibility Monitor* (NewClimate Institute, 2023). Despite the lack of major developments in Microsoft's strategy, we have revised our analysis substantially to reflect our latest insights on the company's targets and its progress on key transitions.

Microsoft's electricity demand has nearly tripled since 2020, and the company is expanding its nuclear energy procurement to keep up with this growth. Mainly related to the employment of artificial intelligence (AI) and a growth in commercial cloud use, Microsoft reports that its electricity consumption nearly tripled between FY 2020 and FY 2024 (Microsoft 2025b, p6). Its location-based scope 2 emissions more than doubled during this period (Microsoft 2025b, p3). Its energy intensity (electricity consumption over revenue) increased rapidly, too: by 63% between FY 2020 and FY 2024 (Microsoft, 2025b, pp. 5–6). Microsoft has a target to meet its electricity demand with carbon-free sources on an hourly basis by 2030 (Microsoft, 2024a, p. 11), which includes not only renewable sources but also nuclear and biomass (Microsoft, 2024a, p. 13). The company considerably expanded its renewable electricity procurement in 2024, contracting an additional 19 GW of renewable electricity. But the company also expanded its procurement of electricity from nuclear, signing its first large-scale nuclear PPA to restart an 835 MW nuclear facility in Pennsylvania (Microsoft, 2025a, p. 20).

Microsoft's targets fall short of the deep decarbonisation implied by its carbon-negative target and what is needed from the tech sector to contribute to global net zero (NewClimate Institute, 2024a). The company aims to be "carbon negative" by 2030 but has an accompanying target to reduce scope 3 emissions to only "more than half" compared to 2020 levels (Microsoft, 2024a, p. 11). The company also makes significant investments in carbon dioxide removal (CDR) (Microsoft, 2024a, p. 19). Although Microsoft is making a commendable effort to drive the market for CDR, it is important to note that CDR is a public good necessary for achieving global net-zero emissions, rather than an unlimited means to offset the emissions of individual companies. Relying heavily on CDR credits does not excuse individual companies from making real, deep emission reductions themselves. In 2024, Microsoft contracted nearly 22 $MtCO_2e$ of CDR credits, an equivalent of roughly 87% of its reported location-based emissions footprint in 2024 (Microsoft, 2025a, p. 21, 2025b, p.3). Microsoft's CDR credits are to be retired in the next 15 years. The associated projects are a mix of low- and long-durability CDR. For CDR to neutralise emissions related to fossil fuels, it should be durable for millennia (Allen *et al*., 2024; Brunner, Hausfather and Knutti, 2024). In addition to the substantial reliance on CDR, Microsoft may also claim a large share of its market-based emission reduction target through market-based instruments.

Microsoft currently lacks any targets for further emission reductions beyond 2030. By 2050, Microsoft aims to remove an amount of carbon equivalent to all its historical scope 1 and 2 emissions, mainly related to electricity consumed since its foundation in 1975 (Microsoft, 2024a, p. 11). However, this additional offsetting pledge does not commit Microsoft to any substantial further emission reductions. While taking responsibility for historical emissions is good practice, it should not come at the expense of addressing future emissions through robust and transparent deep decarbonisation plans.

Microsoft has a supplier engagement programme in place to enhance renewable electricity consumption in its supply chain, but we did not identify concrete commitments. Most of Microsoft's scope 3 emissions are related to upstream electricity use for hardware production and electricity use in third-party data centres. Microsoft plans to reduce its carbon footprint by engaging suppliers to reduce their operational emissions and support them in procuring renewable electricity (Microsoft, 2024a, p. 16). For this, Microsoft co-developed a portal can help suppliers with procuring carbon-free electricity, tailored to their geography and electricity demand. Microsoft's Supplier Code of Conduct requires select large-scale suppliers to transition to renewable electricity (Microsoft 2025a), but it is unclear what proportion of suppliers this applies to, and we interpret that low quality procurement constructs including standalone RECs are eligible. We could not identify a commitment from Microsoft to achieve a certain proportion of renewable energy in the supply chain.

5 Fashion sector

5.1 Summary

This section presents a selection of key insights from the detailed analysis of the climate strategies of five major fashion companies: adidas, H&M Group, Inditex, lululemon, and Shein *(see Section 5.2 for detailed company case studies)*. For the analysis, we focus on companies' GHG emission reduction targets and the key transitions necessary for achieving deep emission reductions in the fashion sector.

We evaluate fashion companies' transition targets based on the sector-specific transition framework set out in *Figure 5.1*. Since the majority of the fashion sector's emissions footprint derives from energy used in garment production within the supply chain, we identify **electrifying manufacturing processes** and **sourcing renewable energy across the supply chain** as key transitions for the sector. Given the rate of overproduction and waste associated with current fashion business models, climate leadership in the sector also requires more significant shifts in their business models – specifically, **reducing overproduction** and **scaling the development and use of innovative, lower-GHG fibres for textile production** (NewClimate Institute, 2025).

We find that some fashion companies' climate strategies show promising signs of improvement. However, limited transparency on implementation plans, reliance on false solutions and a lack of commitment to move beyond fast fashion undermine their credibility.

- Although some fashion companies have significantly improved their GHG emission reduction targets over the past years, the credibility of these targets depends on measures to implement key transitions.
- Targets to procure renewable electricity within supply chains are emerging, but they are often not substantiated by credible plans to electrify production processes. Companies talk about coal phase-out but still rely on fossil gas and biomass – options that do not substantially reduce emissions and risk locking in carbon-intensive technologies.
- Transparency on supply chain energy consumption remains limited, making it challenging to assess progress across the sector. H&M Group stands out as a positive example of transparency with its disclosure of supply chain energy balances.
- Efforts to move beyond fast fashion business models are lacking and fragmented. Some companies have started to publish more information regarding circularity and sustainable fibres. However, they still fall short of making clear commitments to reduce overproduction and embrace circularity.

Despite progress, approaches to addressing key transitions in fashion supply chains remain mostly shallow and beset with false solutions. This underscores the need for more prescriptive guidance on key transitions.

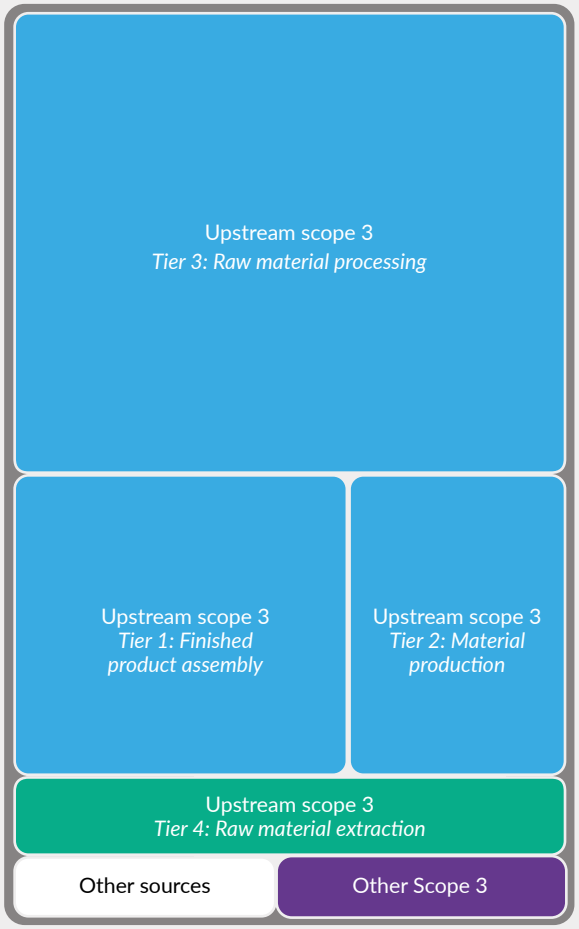
- Companies should complement GHG reduction targets with specific goals for key transitions, which can guide decarbonisation efforts across the supply chain. Beyond coal phase-out commitments, **electrification** and **renewable energy in the supply chain** must become clear priorities. Companies also need to fundamentally rethink their business models to align with long-term sustainability and decarbonisation goals, moving away from the high-volume fast fashion paradigm.
- Standard setters such as ISO, GHG Protocol and SBTi should require transition alignment targets to guide companies' strategies on these key transitions and to more accurately evaluate the integrity of companies' commitments.
- Regulatory interventions are needed for a systemic shift to sustainable fashion business models that prioritise value over volume, recognising that there may be limits to what can be achieved through the unilateral ambition of leading companies guided by voluntary initiatives.

Fashion climate strategies show improvement but lack clear direction and depth.

Figure 5.1: Key transition framework for a fashion company (NewClimate Institute, 2025)

GHG EMISSIONS FOOTPRINT

Indicative distribution of emission sources for average fashion company



5 KEY TRANSITIONS

Most relevant transitions to address major emission sources

1	**Supply chain electrification** *(Scope 3: Tier 1-3 production processes)*	Electrification of heat generation processes is necessary to decarbonise the manufacturing process. Most thermal energy processes occur in tier 2, specifically in textile mills, and a bit in tier 1. Where relevant, corporates should commit to electrifying all energy processes that can be electrified and to phasing out on-site fossil fuel power-generators.
2	**Supply chain renewable energy** *(Scope 3: Tier 1-3 production processes)*	Switching to 100% renewable electricity by 2030 using high-quality procurement constructs could reduce industry emissions by over 25% (Ley *et al.* 2021; Sadowski, Perkins, and McGarvey 2021; Perkins and Sadowski 2024; Sadowski 2023). For manufacturing processes that cannot be electrified, on-site coal boilers should be replaced with renewable heat processes.
3	**Reduce overproduction** and curb growth in virgin product volumes* *(All emission sources)*	The fashion industry produces between 100 and 150 billion items of clothing each year, while at the same time 92 million metric tons of textile are wasted (GFA and BCG 2017). One out of every five garments ends up in a landfill, without ever being sold or used (Berg *et al.* 2020). According to some estimates, reducing the quantity of pre-consumer unsold clothing by 10% through more efficient supply chains and more accurate demand forecast tools could reduce industry-wide emissions by 9% by 2030 (Berg *et al.* 2020).
4	**Use lower-GHG fibres*** *(Scope 3: Tier 4 material extraction)*	Emissions from raw materials are currently some of the hardest to eliminate from the fashion industry value chain, as there are no zero-GHG alternatives. However, these emissions can be reduced by increasing the use of lower-GHG alternatives (Textile Exchange 2023b). Research is ongoing to identify and commercialise the most sustainable solutions for textile fibres.
5	**Low emission logistics** *(Other scope 3)*	Transport accounts for a significant portion of some companies' emissions footprints, depending on their business model and their product distribution logistics. Companies can minimise transport emissions through regional distribution centres and ocean-based shipping.

** **Benchmarks related to overproduction and fibres:** We were unable to identify clear indicators or benchmarks for the transitions. More guidance is needed on what targets and measures are most effective for these transitions, and what potential caveats could be.*

→ *See Evolution of corporate climate targets (NewClimate Institute, 2025) for further details on this sector transition framework and potential alignment target indicators.*

Figure 5.2: Summary of CCRM 2025 ratings for fashion companies (NewClimate Institute, 2025)

Integrity : 5-point rating scale:
High | Reasonable | Moderate | Poor | Very poor
Integrity refers to the quality and credibility of the approach.
? *Integrity assessment is unclear.*

→ *See Annex 5B and Annex 5C for further details on our integrity assessments for companies' targets and key transitions.*

Some fashion companies have significantly improved their GHG emission targets over the past years, but the credibility of such targets across the sector is mixed.

As shown in *Figure 5.3*, some fashion companies appear to have made considerable improvements to their GHG emission reduction targets in recent years. Notably, adidas and Inditex significantly strengthened their near- and longer-term GHG commitments in 2024, revising earlier targets that we previously assessed as insufficient (NewClimate Institute, 2023, 2024b). These changes follow the example of H&M Group, which had already set deep decarbonisation targets for 2030 and 2040 in 2022. All three of these companies' GHG emission reduction targets now appear to be aligned with sectoral benchmarks for 1.5°C-compatible emission pathways.

Other companies' targets remain more ambiguous and lack meaningful near- and long-term ambition. Shein has committed to reducing emissions by 25% by 2030 from a 2023 baseline – a target that would still allow its emissions to more than double compared to 2021 levels. lululemon expresses its 2030 GHG target in terms of emissions intensity per unit of profit. This profit-based emissions intensity expression makes its 60% reduction commitment difficult to interpret, as fluctuations in profitability can obscure real emissions trends. For instance, while lululemon claims a 31% reduction in scope 3 emissions intensity, its absolute scope 3 emissions have increased 22% since 2021 (lululemon, 2024a, p. 35). For this reason, lululemon's target may still allow for absolute increases in GHG emissions.

Despite substantial differences in target ambition and credibility, all five companies' 2030 GHG targets are validated as 1.5°C-compatible by the Science Based Targets initiative. This lack of differentiation may undermine the leadership of companies like H&M Group, adidas and Inditex committing to absolute emission reduction targets that are aligned with sectoral benchmarks *(see Annex 5A)*.

Trends in reported emissions reductions over the past five years also present a mixed picture. adidas and H&M Group appear to be broadly on track to reach their 2030 emission reduction targets, showing reductions in both absolute emissions and emissions intensity. However, data from Inditex and lululemon suggests less meaningful progress, while Shein has seen significant increases in absolute emissions during this period.

Beyond the significant differences in the integrity of these companies' targets and their progress, the credibility of fashion companies' GHG reduction targets cannot be meaningfully assessed without evaluating companies' underlying strategies for key transitions. Ultimately, the integrity of these targets hinges on whether they reflect genuine, systemic transitions – or merely serve to mask high-emissions business models through creative accounting and low-integrity instruments.

Figure 5.3: GHG emission reduction targets of fashion companies

	adidas	H&M Group	Inditex	lululemon	Shein
Overall integrity of GHG targets	**Reasonable** Targets are aligned with sectoral benchmarks but missing a medium-term trajectory	**High** Targets are aligned with sectoral benchmarks but missing a medium-term trajectory	**High** Targets are aligned with sectoral benchmarks but missing a medium-term trajectory	**Poor** Targets are aligned with sectoral benchmarks but missing a medium-term trajectory	**Poor** Near-term target is critically misaligned with sectoral benchmarks and net-zero commitment falls slightly short of sectoral benchmarks.
Near-term targets	2030 target to reduce scope 1 and 2 emissions by 70%, and scope 3 emissions by 42% below 2022 levels.	2030 target to reduce scope 1, 2, and 3 by 56% below 2019 levels.	2030 target to reduce scope 1 and 2 emissions by 95% and scope 3 emissions by 51% below 2018 levels.	2030 target to reduce profit-based emissions intensity of scope 3 emissions by 60%. This target has limited meaning due to the volatility of profit fluctuations and would allow emissions to increase.	2030 target to reduce scope 1 and by 42% and scope 3 by 25% below 2023 levels. These targets translate to a reduction of 25% across the value chain, which is not aligned with sectoral benchmarks and would allow Shein to more than double its emissions compared to 2021.
Medium-term targets	No target identified	2040 target to reduce scope 1, 2 and 3 emissions by 90% below 2019 levels.	2040 target to reduce scope 1 and 2 emissions by 95%, and scope 3 emissions by 90% below 2018 levels.	No target identified.	No target identified.
Long-term targets	2050 net-zero target is substantiated with a commitment to reduce emissions by 90%.			2050 net-zero target is substantiated with a commitment to reduce emissions by 90%.	2050 net-zero emission pledge is substantiated with a commitment to reduce emissions by 90% below 2023 levels, which translates to a reduction of 79% below 2021 levels.
Changes from previous assessments in 2023 and 2024	adidas has improved its targets, which we previously rated as **poor integrity** in 2024	H&M Group has not recently updated its targets, which we rated as **reasonable integrity** in 2023 and **high integrity** in 2024	Inditex has twice revised its targets, which we rated as **very poor integrity** in 2023 and **reasonable integrity** in 2024	Lululemon and Shein have not been assessed in previous editions of this report.	
What are actual emission trends in recent years?	Absolute emissions and emissions intensity have decreased in recent years. These companies seem roughly on track to meet their 2030 targets.		Absolute emissions have only slightly decreased since 2019 and have not changed between 2023 and 2024. Historical data is incomplete.	Reported emission intensity reductions are driven by increasing revenues. Absolute emissions have increased since 2021.	Shein's emissions have significantly increased in recent years.

Integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Integrity refers to the quality and credibility of the approach.

? *Integrity assessment is unclear.*

Targets to procure renewable electricity within supply chains are emerging, but they are often not substantiated by credible plans to electrify production processes.

Some companies are replacing coal with fossil gas and biomass – options that do not substantially reduce emissions and risk locking in carbon-intensive technologies.

To be credible, fashion companies' GHG reduction targets must be supported by concrete strategies to implement key transition measures – particularly the **electrification of manufacturing processes** and the **procurement of renewable energy** in supply chains.

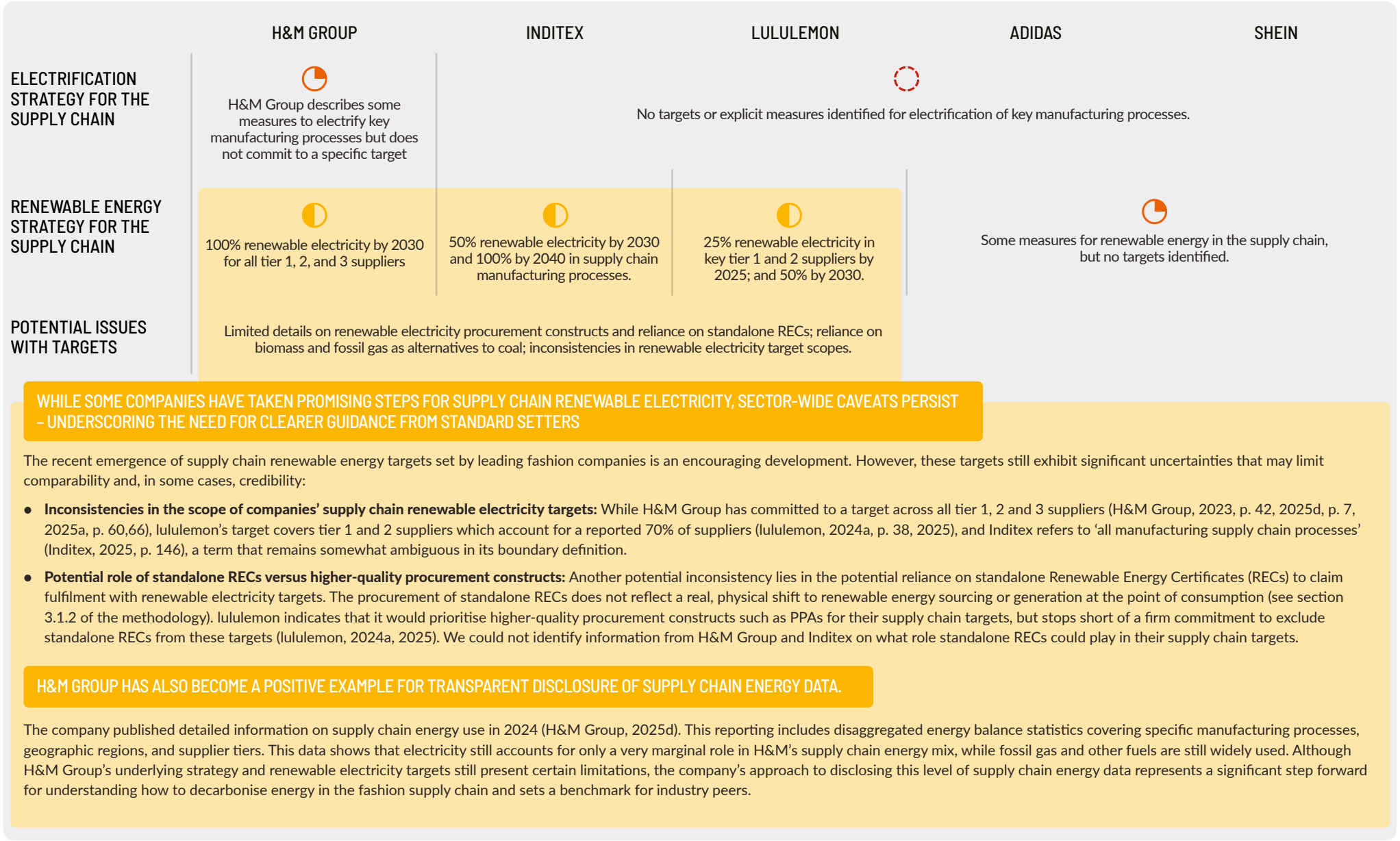
Energy use in garment manufacturing is the primary source of emissions for fashion companies, accounting for approximately 85% of their total emissions footprint (Berg *et al.*, 2020; Sadowski *et al.*, 2021). This is largely driven by the use of fossil fuels to generate electricity and heat in the processing of raw materials, fabric production and garment assembly.

In a positive shift, we find that more companies are coming forward with plans to procure renewable electricity in their supply chains. Despite the importance of this emission source, our previous analysis (NewClimate Institute, 2024c) highlighted that no major fashion company had set specific targets for supply chain electricity, except for H&M Group, which was the first to set a target in 2022. Since then, lululemon and Inditex have also set specific supply chain targets *(see Figure 5.4)*. These developments are positive – albeit overdue – and should raise awareness of the need for other companies to follow suit. However, the current targets are often undermined by unclear scope definitions and the questionable quality of the renewable electricity procurement instruments on which they are based *(see Figure 5.4 for further details)*. These caveats must be addressed before these strategies can be meaningfully replicated.

Despite a growing number of commitments to procure renewable electricity in fashion supply chains, these targets are rarely integrated into broader electrification plans for production processes across the supply chain. Electrification is a foundational step for deep decarbonisation of supply chains as it enables the replacement of fossil fuel-based and inefficient heat and steam systems – including not only coal boilers but also fossil gas and biomass – with renewable electricity. However, corporate discourse often narrowly focuses on replacing coal without explicitly addressing the need to transition away from fuel combustion to electrified production. For example, coal accounted for just 3% of H&M Group's known supply chain energy in 2024, while other fuels including fossil gas accounted for at least 59%, and only 11% of energy came from electricity (H&M Group, 2025d, p. 4). This has enabled misleading narratives to emerge, in which fossil gas and biomass are either overlooked or promoted as viable alternatives to coal. These fuels, however, are not aligned with 1.5°C-compatible emission pathways for the sector *(see Box 5.1)*.

Transparent disclosure of supply chain energy balances and strategies is key but remains generally lacking across fashion companies. H&M Group stands out as a positive example of transparency. At present, assessing real progress on decarbonising fashion supply chains is extremely challenging due to the limited availability of meaningful data. Public disclosures rarely include basic information such as the number and location of factories, the prevalence and types of boilers in use, or where coal combustion remains part of the energy mix. Even less is disclosed on the nature and quality of renewable energy instruments being used – for example, whether companies rely on standalone Renewable Energy Certificates (RECs) or support suppliers in investing in local, additional renewable generation. Without this foundational transparency, it remains impossible to assess the integrity of corporate claims or to distinguish genuine transformation from superficial reporting. Yet such disclosure on supply chain energy remains largely absent across the fashion sector. Notably, H&M Group has become a positive exception after publishing detailed information on supply chain energy use in 2024 *(see Figure 5.4)*. However, the limitations and challenges outlined in this document regarding electrification rates are not transparently communicated alongside the progress that the company reports on renewable electricity shares.

Figure 5.4: Fashion companies' strategies for supply chain electrification and renewable energy



WHILE SOME COMPANIES HAVE TAKEN PROMISING STEPS FOR SUPPLY CHAIN RENEWABLE ELECTRICITY, SECTOR-WIDE CAVEATS PERSIST – UNDERSCORING THE NEED FOR CLEARER GUIDANCE FROM STANDARD SETTERS

The recent emergence of supply chain renewable energy targets set by leading fashion companies is an encouraging development. However, these targets still exhibit significant uncertainties that may limit comparability and, in some cases, credibility:

- **Inconsistencies in the scope of companies' supply chain renewable electricity targets:** While H&M Group has committed to a target across all tier 1, 2 and 3 suppliers (H&M Group, 2023, p. 42, 2025d, p. 7, 2025a, p. 60,66), lululemon's target covers tier 1 and 2 suppliers which account for a reported 70% of suppliers (lululemon, 2024a, p. 38, 2025), and Inditex refers to 'all manufacturing supply chain processes' (Inditex, 2025, p. 146), a term that remains somewhat ambiguous in its boundary definition.
- **Potential role of standalone RECs versus higher-quality procurement constructs:** Another potential inconsistency lies in the potential reliance on standalone Renewable Energy Certificates (RECs) to claim fulfilment with renewable electricity targets. The procurement of standalone RECs does not reflect a real, physical shift to renewable energy sourcing or generation at the point of consumption (see section 3.1.2 of the methodology). lululemon indicates that it would prioritise higher-quality procurement constructs such as PPAs for their supply chain targets, but stops short of a firm commitment to exclude standalone RECs from these targets (lululemon, 2024a, 2025). We could not identify information from H&M Group and Inditex on what role standalone RECs could play in their supply chain targets.

H&M GROUP HAS ALSO BECOME A POSITIVE EXAMPLE FOR TRANSPARENT DISCLOSURE OF SUPPLY CHAIN ENERGY DATA.

The company published detailed information on supply chain energy use in 2024 (H&M Group, 2025d). This reporting includes disaggregated energy balance statistics covering specific manufacturing processes, geographic regions, and supplier tiers. This data shows that electricity still accounts for only a very marginal role in H&M's supply chain energy mix, while fossil gas and other fuels are still widely used. Although H&M Group's underlying strategy and renewable electricity targets still present certain limitations, the company's approach to disclosing this level of supply chain energy data represents a significant step forward for understanding how to decarbonise energy in the fashion supply chain and sets a benchmark for industry peers.

Integrity : 5-point rating scale:
High | Reasonable | Moderate | Poor | Very poor
Integrity refers to the quality and credibility of the approach.

BOX 5.1 – Moving beyond coal phase-out: electrification as the core strategy for decarbonising fashion supply chains

As fashion companies commit to phasing out coal from their supply chains, what replaces coal is just as critical as eliminating it.

In many cases, companies and their suppliers are turning to fossil gas or biomass as interim energy sources:

- **adidas** commits to phasing out coal-fired boilers at all direct supplier facilities by 2025, reporting that over 48 boilers had been converted to use other fuels, including biomass and fossil gas, by the end of 2023 (adidas, 2024). adidas highlights electrification as a long-term solution but does not yet provide clear targets for transitioning suppliers to electric thermal systems (adidas, 2024, p. 184).
- **H&M Group** includes 'sustainably sourced' biomass among permitted alternatives in its supplier guidance on thermal energy, though it emphasises a long-term preference for electrification where feasible (H&M Group, 2024b, p. 18). H&M Group has also published several case studies where it has supported supply chain partners in shifting from coal to biomass. However, fossil gas is the main issue in H&M Group's supply chain, accounting for the majority of supply chain energy in 2023, while coal and biomass both accounted for only 3% of supply chain energy. (H&M Group, 2025d).
- **Inditex** has implemented pilot projects involving biomass boilers in selected wet processing facilities to explore alternatives to coal for thermal energy generation (Inditex, 2025). The company also encourages the use of biomass in specific contexts through its Best Available Techniques (BATs) tool, which provides suppliers with guidance on adopting lower-impact technologies, including biomass combustion systems for heat-intensive processes such as dyeing and finishing (Inditex, 2024b).
- **lululemon** encourages suppliers to transition to 'lower-carbon fuels' as part of its energy transition support program, although details on what this includes remain limited and ambiguous (lululemon, 2024a).
- **Shein** has not disclosed specific information on fuel-switching strategies in its supply chain. Independent assessments indicate continued reliance on coal (Zhang, 2023).

Sustainable biomass is neither a realistic solution nor a transitional step for the fashion industry

While biomass is often framed as a 'renewable' fuel, its use in the fashion sector raises serious sustainability concerns. Bioenergy is not an emissions-free energy source, and companies that use bioenergy need to apply emission factors when reporting on their energy emissions. Emissions may occur, for example, when land with a high carbon stock is cleared to produce bioenergy crops, when converting biomass into fuels or electricity and when transporting bioenergy crops to where they are consumed *(see methodology section 3.1.3 for further details)*.

These fuels also carry their own environmental and social risks, particularly where biomass is not sustainably managed. For example, investigations have shown that in key production hubs like Cambodia, garment factories frequently fuel their boilers with illegally harvested wood from protected forests, undermining environmental safeguards and contributing to biodiversity loss (Flynn and Ball, 2023). One study estimates that over 200,000 tons of forest wood are burned annually by Cambodia's garment industry alone, equating to the destruction of up to 1,400 hectares of forest per year (Parsons *et al.*, 2021). This not only results in direct carbon emissions from combustion, but also contributes to deforestation-related emissions, making biomass far from carbon-neutral in practice.

Although companies frequently point towards commitments to use only *sustainable* biomass, experts within the industry and local civil society organisations are also voicing caution that this cannot be a solution at scale. A former head of H&M's supply chain decarbonisation and coal removal programme recently indicated that biomass cannot serve as a long-term solution at scale, noting the limited potential supply of agricultural residues in many garment-producing regions and the heavy reliance on wood chips and palm kernel shells, which are 'decimating the remaining natural forests' (Ford, 2025). Civil society organisations have called out biomass as a 'false solution' for the fashion industry (Zhang, 2023).

Biomass may only be a reasonable option for emission sources with very limited technical potential for electrification. Some sectors that are difficult to electrify and have limited alternatives to decarbonise might rely on bioenergy to some extent, for instance aviation, maritime shipping and heavy industry (Calvin *et al.*, 2020; Clarke *et al.*, 2022). However, increasing demand for bioenergy in industries where the mitigation potential of existing technologies remains limited will lead to competition for limited biomass resources *(see e.g. Pavlenko and Kharina, 2018; ETC, 2021)*, which is likely to further exacerbate sustainability issues. It is estimated that sustainable biomass supply will amount to just 40 to 60 EJ per year by 2050, whereas potential demand could amount to over 65 EJ per year in just four sectors (i.e. wood materials, pulp and paper, plastic feedstocks and aviation) and higher if including other sectors that are also currently planning to rely on biomass in their decarbonisation trajectories (ETC, 2021).

Switching fuel from coal to fossil gas or biomass, while sometimes framed as a transitional step, risks locking in alternative carbon-intensive infrastructure and delaying the systemic transformation required for long-term decarbonisation (*see methodology section 3.1.3)*.

Electrification is a viable alternative for thermal energy processes

A growing consensus now points to electrification – powered by high-quality renewable energy – as the only scalable and sustainable pathway for decarbonising fashion's thermal energy needs.

Some companies cite technical constraints and a lack of viable alternatives for thermal energy processes. However, a growing body of evidence indicates that many thermal processes in textile production – such as dyeing and drying – can be redesigned or replaced through electrified, low-temperature technologies, including but not limited to the following (Hasanbeigi and Zuberi, 2022; Lara *et al.*, 2022; Hasanbeigi *et al.*, 2024, 2025):

- **Waterless dyeing technologies:** Conventional dyeing is highly water- and energy-intensive, often requiring large volumes of hot water heated by combustion boilers. However, supercritical CO_2 dyeing eliminates water use entirely by dissolving dyes into CO_2 under high pressure, enabling them to penetrate synthetic fibres. This method significantly reduces energy requirements and removes the need for drying. Digital dyeing technologies, such as inkjet printing on fabric, also reduce water use and allow for precise application of dyes with minimal waste. In February 2025, H&M Group announced that it would start to pilot supercritical CO_2 dyeing in the garment production line with its partner factories Arvind Ltd in India and Chorka Textiles in Bangladesh (Greenext, 2025). Inditex has signed offtake agreements with technology developer and manufacturer Dyecoo for supercritical CO_2 dyeing installations (Wilson, 2022). Reports indicate that adidas may also start to introduce Dyecoo installations in their supply chain after contracting a life cycle assessment into the technology at a Vietnamese factory in 2023 (Carr, 2023).
- **Infrared and radiofrequency dryers:** Fabric drying typically requires sustained heat, which is often provided through steam generated by fuel combustion. Infrared dryers use radiation to heat the fabric directly, offering faster drying times and more precise control. Radiofrequency dryers penetrate the material and heat it volumetrically, improving efficiency, particularly for thicker fabrics. These systems are more energy-efficient than traditional dryers and can be powered entirely by electricity from renewable sources. We could not identify any public information linking the fashion companies we have analysed to the use of infrared and radiofrequency dryers.
- **Ultrasonic washing:** Traditional washing uses large amounts of hot water and detergents. Ultrasonic washing uses high-frequency sound waves to agitate water and remove dirt and chemicals from textiles, significantly reducing water and thermal energy consumption (Hasanbeigi and Zuberi, 2022). Multiple manufacturers including Sonotronic, Weber Ultrasonics and Geratex Machinery have developed ultrasonic washing modules that can be integrated directly into existing production lines (Textile Network, 2020; Sonotronic, 2025), although we could not identify any public information linking the fashion companies we have analysed to the use of these technologies.
- **High-efficiency electric boilers:** Where steam is still required for processes such as pressing or sanitising, high-efficiency electric boilers provide a direct replacement for fuel-fired systems. Electric boilers can achieve high thermal efficiency, particularly when integrated with advanced controls and renewable electricity sources. Though upfront costs are higher than traditional systems, they offer substantial long-term savings through efficiency and reduced maintenance. We could not identify any public information linking the companies we have analysed to the use of high-efficiency electric boilers, although H&M Group announced a partnership with Rondo Energy in 2024 to develop thermal batteries to electrify steam production (Wenzel, 2025).
- **Industrial heat pumps:** Heat pumps work by using electricity to transfer heat from lower-temperature sources to higher-temperature sinks. Heat pumps are very efficient, and this high efficiency can lead to significant emission reductions, even when powered by a carbon-intensive electricity grid. In the context of textile wet processing, commercially available heat pumps can already reach the required process temperatures and supply hot water and steam at various levels. While there are some economic and technical barriers to widespread adoption, heat pumps offer greater energy cost savings compared to electric boilers. Industrial-scale heat pumps suitable for textile manufacturing are expected to become more widely available by 2030. H&M Group reports that it is helping suppliers transition to heat pumps in its supply chain but does not provide details (H&M Group, 2024b, pp. 11, 18).

These technologies, while requiring capital investment and process adaptation, offer pathways to nearly eliminate thermal emissions in many parts of textile production. They offer improved energy efficiency, operational savings and long-term climate alignment. Their successful deployment depends on alignment with renewable electricity supply, whether through on-site generation or renewable power purchase agreements.

Effective climate-aligned strategies should prioritise electrification over fuel substitution.

Companies are already taking action to phase out coal. However, simply encouraging suppliers to switch to fossil gas or biomass risks locking them into high-emission pathways and detracts from the structural transition needed.

Instead, companies should provide financial and technical support to help suppliers invest in next-generation technologies and electrified systems, helping to future-proof their supply chains and avoid stranded assets. For example, a group of outdoor sports brands, in collaboration with The Outdoor Industry Association and Global Efficiency Intelligence, launched an open-source tool in January 2025 for textile mills to understand and model scenarios for electrifying their processes and to connect them to technology manufacturers and suppliers (Hasanbeigi and Springer, 2025).

Policy and industry guidance should evolve beyond standalone coal phase-out targets and incentivise supply chain electrification as a key lever for long-term decarbonisation of fashion supply chains. Specifically, the United Nations Fashion Charter, which requires signatories to set coal phase out targets (UNFCCC, 2021), does not offer guidance on electrification of manufacturing processes as a credible alternative to coal.

Efforts to move beyond fast fashion business models are lacking and fragmented.

Some companies have started to publish more information regarding circularity and sustainable fibres. However, companies still fall short of making clear commitments to reduce overproduction and embrace circularity.

Fashion companies' sustainable fibre strategies are more transparent, but it remains unclear how increased use of 'sustainable' or 'preferred' fibres will reduce emissions. All five companies assessed have now set quantified targets to increase the use of 'preferred fibres', and all companies report progress for each of these fibres, marking a notable improvement in transparency compared to previous years. adidas, H&M Group, Inditex and lululemon have introduced more specific commitments and clearer definitions around fibre sourcing, reducing ambiguity around terms such as 'sustainable' or 'preferred' fibres and materials. These four companies have aligned their definition of 'preferred fibres' with Textile Exchange's Preferred Material Matrix (Textile Exchange, 2025). According to Textile Exchange, 'preferred fibres' have lower impacts on a series of environmental criteria compared to reference fibres. Although 'preferred fibres' may reduce emissions, this may not always be the case (Textile Exchange, 2025), making it difficult to assess whether companies are on the right track. The environmental impacts of textile fibres are highly complex, involving factors such as GHG emissions, microplastic pollution, water use efficiency and land use change, amongst others (Jensen *et al.*, 2023). Given these complexities, companies should move beyond sourcing 'preferred fibres' to decarbonise clothing production. Instead, companies should fill the material and fibre innovation gap and push for low-GHG materials while also prioritising circularity and material efficiency measures (Textile Exchange, 2023).

Companies are showing signs of moving towards textile-to-textile recycling, with one company setting a target to source more recycled polyester made from textile waste. While some companies are starting to test and support infrastructure for textile-to-textile recycling, companies are still mostly using PET bottles for recycled polyester. Using PET bottles as feedstock for recycled polyester is not efficient or sustainable because it diverts materials from the drinks and packaging sectors, where they can be recycled more times and with far less processing (Cobbing and Vicaire, 2017; Majumdar *et al.*, 2020). Scaling up demand for PET bottles as an input material could also create improved economic incentives for fossil fuel exploration and extraction, which the chemical subproducts of PET bottles mostly derive from (Karali *et al.*, 2024). Promisingly, some companies are taking initial steps toward advancing textile-to-textile recycling, a technology that is still under development but could contribute to reducing the use of virgin materials for clothing production. adidas is the only company that has set a target to increase the share of textile-to-textile recycled polyester (adidas, 2024, p. 233). H&M Group, Inditex, lululemon and Shein all report supporting investments to develop infrastructure for textile-to-textile recycling, along with offtake agreements for new materials from these ventures (Inditex, 2023; H&M Group, 2024c; lululemon, 2024a; Shein, 2025b). Except for lululemon, who has signed a 10-year offtake agreement which could lead to it sourcing approximately 20% of its fibres from textile-to-textile recycling (Samsara Eco, 2025), the significance of these offtake agreements remains limited. Inditex launched its first products made entirely from recycled textile waste in 2024 (Inditex, 2024a). Such efforts may be particularly constructive, because textile-to-textile recycling – while still in its early stages – is currently not feasible at scale and may require significant infrastructural shifts. Commitments to technology and infrastructure development, rather than simply shifting fibre types, represent an effort to constructively contribute to the considerable challenges of decarbonising the fashion sector supply chain.

Despite companies communicating more detailed strategies on circularity and sustainable fibre use, the fast fashion business model remains a critical barrier to meaningful change. Increasing recycling rates alone will not drastically reduce overproduction and virgin material inputs. The rapid production cycles, low price points and vast volumes associated with fast fashion are fundamentally misaligned with the transition to a low-carbon economy (Coscieme *et al.*, 2022). While some companies are taking promising steps toward circularity, such as launching resale platforms and introducing clothing take-back programs, these efforts remain marginal within their broader business strategies. For example, H&M Group has demonstrated high transparency by reporting the percentage of revenue generated from its resale platforms, offering a glimpse into the company's commitment to circularity. However, resale accounted for just 0.6% of its total revenue in 2023 (H&M Group, 2024b), indicating that these platforms do not yet represent a major component of the company's business model. The measures implemented by H&M Group and other companies do not sufficiently address the need to massively reduce the input of virgin materials to reach decarbonisation milestones for the sector. For instance, Shein reports some measures for improved circularity, but its ultra-fast fashion business model, which incentivises high production volumes and low price points (Dzhengiz *et al.*, 2024), is incompatible with reducing virgin material use. This misalignment risks undermining the credibility and impact of circularity claims. Ultimately, the effectiveness of these initiatives depends on whether they drive a shift in the company's business model away from the fast fashion paradigm. No matter how much innovation or capital is invested in downstream solutions like clothing recycling or resale platforms, there will be no substantial progress on reducing emissions unless industry and policymakers address the upstream root cause: excessive production.

Box 5.2: Regulatory interventions are needed to address overproduction and waste

The deep decarbonisation of the fashion industry requires companies to go beyond incremental technology improvements. It demands a more systemic transformation involving all actors across the value chain. Regulators have a crucial role to play, given the limitations of addressing overproduction and waste solely through the unilateral ambition of leading companies guided by voluntary initiatives. For example, the following regulatory interventions could support the transition away from fast fashion business models:

- **Implement robust Extended Producer Responsibility (EPR) schemes:** EPR schemes require producers to take financial and operational responsibility for the full lifecycle of their products, including end-of-life management (OECD, 2024). This can be done through either financial contributions (e.g. covering public collection and treatment costs) or operational measures (e.g. setting up collection systems themselves). Producers typically fulfil these obligations by paying ongoing fees based on product characteristics (e.g. recyclability, durability, or recycled content), which fund waste management and circularity initiatives. Following a provisional agreement in early 2025, EPR for textiles will become mandatory across all EU member states, including for companies outside the EU that place textiles on the EU market, as part of the Commission's 2030 Vision for Textiles (Segal, 2025).

  However, EPR should be viewed as a starting point rather than a silver bullet. While a step in the right direction, current schemes remain limited: production volumes continue to rise even in countries with EPR in place, as garments are often discarded for reasons unrelated to durability (e.g. changing fashion trends). The scheme can play a supportive role by internalising some of the environmental costs, but its impact will remain limited unless fees are set at levels high enough to influence business decisions and are paired with stronger upstream measures to address overproduction (Brown and Börkey, 2024).

- **Mandate production volume reporting and reduction targets:** Companies need clearer signals on how much less they should be producing to align with 1.5°C-compatible pathways, which likely requires a fundamental rethink of supply chains and business models. Regulators can drive the shift towards reduced virgin material use by mandating public reporting of annual tonnage placed on the market and by setting sector-wide reduction milestones. Public Eye (2024) suggests that achieving a sustainable fashion system that thrives within planetary boundaries requires a 40% cut in virgin material input by 2030, including a 60% reduction in fossil-based fibres and a 10% reduction in natural virgin materials.

- **Prohibit destruction of unsold and returned inventory:** Policymakers could prohibit the destruction of 'deadstock' of consumer apparel, clothing accessories and footwear, as introduced by the EU's Eco-Design for Sustainable Products Regulation, which is set to take effect in July 2026 (Mörsen, 2023; Macintosh, 2024). Without such regulation, companies can continue to overproduce with little consequence, knowing that excess stock can be destroyed rather than resold at a discount or redistributed to communities in need (EEA, 2024). The ban would help make overproduction less viable as a business strategy. Such measures should be enforced across jurisdictions.

- **Implement demand-reduction policies:** Policymakers could also consider the role of marketing tactics in fuelling overconsumption (Maldini and Grimstad Klepp, 2025). Policies targeting impulse-driven sales, such as restricting advertising of ultra-fast fashion or regulating 'buy-now-pay-later' schemes, could help curb non-essential purchases (Public Eye, 2024). These types of behavioural-change interventions have already been applied in public health contexts (e.g. for tobacco and alcohol) and could be adapted to limit the pace of fast fashion. More broadly, policies aimed at reducing demand could promote the sufficiency principle to shift norms towards mindful purchasing behaviour, for example by supporting fashion rental subscription models that encourage extended and collective use of textiles (Mörsen, 2023). Recently, France adopted a policy bill which would drastically restrict ultra-fast fashion companies' advertising practices while also charging a fee for garments with high environmental impacts (French National Assembly, 2024).

Recommendations

Fashion companies should set clear, robust plans for the sector's key transitions to complement GHG emission reduction targets, especially with regard to electrification and reducing overproduction. Clearer guidance is needed to support them in developing credible transition plans.

Recommendations for companies

- **Prioritise the electrification of production processes in the supply chain:** Companies should provide detailed disclosure on current reliance on coal, fossil gas and biomass in the production processes of their supply chains and outline how they are supporting suppliers in transitioning to electricity-based technologies. Brands should commit to phasing out all fossil fuels, including fossil gas, and they should implement stricter guidelines to limit the use of biomass and invest in helping suppliers electrify.
- **Improve and replicate renewable energy strategies across the supply chain:** Companies should replicate emerging good practices, but more guidance can help to address the significant nuances and caveats that could undermine those strategies.
- **Set targets for and invest in research and innovation in lower-emission fibres:** Companies should continue to experiment and research innovative lower-emission fibres and invest in the infrastructure and systems needed to scale textile-to-textile recycling and lower-emission fibres. In particular, companies should set targets to increase the share of textile-to-textile recycled fibres. Alongside these efforts, companies also need to be transparent on the measures they implement to scale lower-GHG fibres and the limitations of these measures for decarbonising the sector. Such efforts should not be used as a delay tactic to avoid acting on other key transitions today.
- **Shift the fashion business model from volume to value:** Achieving net-zero targets will require more than material substitution and increased use of recycled fibres. Deep decarbonisation will require a structural shift away from fast fashion business models toward circular business models and material efficiency, resulting in lower virgin fibre inputs and reduced waste. Some decarbonisation roadmaps for the fashion sector are calling for a 40% reduction in virgin material use by 2030 (Public Eye, 2024). While some companies are beginning to outline strategies for this, these efforts remain shallow and lack clear commitments.

Urgent priorities for ISO, GHG Protocol and SBTi standard development processes

- **Require transition alignment targets to guide corporate climate action:** Despite progress on GHG targets, the inconsistent approaches to address key transitions in fashion supply chains reveal the urgent need for GHG targets to be supported by specific, measurable transition targets that guide decarbonisation efforts across the supply chain.
- **Clarify the role of biomass in standard-setting frameworks:** While biomass is often seen as a renewable alternative, it is not carbon-free and can cause significant environmental harm. In the fashion sector, where technology shifts toward electrification are viable, biomass should not be the go-to solution. Using biomass in sectors that are easier to decarbonise reduces its availability for other industries, where it may be a critical decarbonisation pathway. Clearer guidelines are essential to ensure that biomass is used effectively in the right applications and not as a false solution in industries like the fashion supply chain.

Broader issues that require further guidance and regulation for more structural change

Guidance and regulation on circularity and lower-emission fibres is critical. The broader ecosystem – including standards bodies, researchers, and policymakers – must play a stronger role in developing benchmarks and guidance that can help steer companies toward the right transitions.

- **Regulatory interventions are needed to address overproduction and waste.** A shift to more sustainable business models in the fashion industry demands a more systemic transformation involving all actors across the value chain. There may be limits to what can be achieved through the unilateral ambition of leading companies guided by voluntary initiatives. Regulators can implement extended producer responsibility schemes and mandate production volume reporting and reduction targets. They can also prohibit destruction of unsold and returned inventory, among other potential regulatory measures.
- **For fibres, there is a need for more specific, climate-focused benchmarks that address the environmental impacts of materials and help identify false solutions.** Current available 'sustainable' or 'preferred' fibres appear to offer limited climate benefits (Textile Exchange, 2025). Establishing such benchmarks may be complicated due to inherent trade-offs with other planetary boundaries, such as water and land use. There also needs to be a better understanding of the impact certain technologies, like textile-to-textile recycling, will have on emissions.
- **For circularity, alternative business models like rental and resale need to be guided by clear 1.5°C-aligned emission pathways and benchmarks.** For instance, companies need guidance on what percentage of revenue they should aim to come from these models by 2030, to be on track with the necessary speed of the transition. Also, more research is needed to understand what impact certain circularity measures such as increased clothing durability or implementation of resale platforms will have on emissions.

5.2 Company analyses

The following pages set out our detailed analyses of **adidas**, **H&M Group**, **Inditex**, **lululemon** and **Shein**.

→ *See the assessment methodology for the Corporate Climate Responsibility Monitor. Guidance and assessment criteria for good practice corporate emission reduction and net-zero targets: Version 5.0 (NewClimate Institute, 2025).*

The Corporate Climate Responsibility Monitor presents the authors' independent analysis and interpretations based on information that is publicly available and self-reported by the companies assessed and third-party analyses. The authors did not independently verify, audit, or validate the accuracy or completeness of the information provided by the companies. Due to the potential for fragmentation, inconsistency, or ambiguity in the companies' disclosures, the authors cannot guarantee the factual accuracy or completeness of the information presented in this report.

Accordingly, neither the authors nor NewClimate Institute make any representations or warranties, express or implied, regarding the accuracy, completeness, or reliability of any information contained herein. The authors and NewClimate Institute expressly disclaim any and all liability for any errors, omissions, or misrepresentations in the information provided by the assessed companies, as well as for any claims, losses, or damages arising directly or indirectly from the use, reference to, or reliance on this report by the companies assessed or any other party.

The inclusion or assessment of any company in this report does not imply any statement regarding its legal compliance, business practices, or performance. This report is intended for informational and research purposes only.

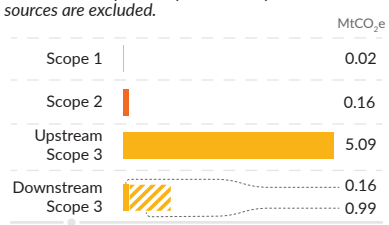
adidas

adidas' 2030 emission reduction target is aligned with 1.5°C-compatible benchmarks for the sector, and its net-zero target for 2050 is substantiated with a clear commitment to reduce emissions across the value chain by at least 90% compared to 2022 levels. The company implements several promising measures for the decarbonisation of its supply chain, including scaling up textile-to-textile recycling and renewable electricity. However, it is encouraging suppliers to switch from coal-fired to biomass and natural gas-fired boilers, which substantially reduces the emission reduction potential for its coal phase-out.

TRANSPARENCY	INTEGRITY
Moderate	Moderate

1 TRACKING AND DISCLOSURE OF EMISSIONS

adidas publicly discloses emissions broken down by scope for the past three years. The company also presents a breakdown by emission source for 2024, but does not explain why certain scope 3 emission sources are excluded.



MAJOR EMISSION SOURCES

- Textile manufacturing (Tiers 1-3)
- Overproduction and waste
- Fibre and material extraction
- Transportation

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net-zero GHG emissions for Scope 1, 2 and 3 by 2050*

			TRANSPARENCY	INTEGRITY
Short term	**42%** below 2022	*Target to reduce scope 1 & 2 emissions by 70%, and scope 3 emissions by 42% by 2030 below 2022. These targets are aligned with sectoral benchmarks and cross-sector benchmarks.*	High	High
Medium term	**N/A**	*No target identified.*	Very poor	Very poor
Longer term	**90%** below 2022	*adidas commits to reducing its emissions by 90% below 2022 levels alongside its net-zero target.*	Reasonable	Reasonable

EMISSION TRENDS

✔ *Absolute emissions and emissions intensity have reduced in recent years, and seem roughly on track towards the company's targets.*

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Electrification of heat and manufacturing processes	*No target identified on electrification of key manufacturing processes, despite coal phase-out commitment.*	Very poor	Very poor
Renewable energy in the supply chain	*adidas is working with suppliers to increase share of RE in supply chain but no targets identified.*	Moderate	Poor
Reduce overproduction and slow growth in virgin product	*adidas addresses the need to transition to circularity but does not implement measures to reduce overproduction.*	Poor	Very poor
Source low-carbon fibres	*adidas has set targets on sourcing 'sustainable' fibres, including an increase of the textile-to-textile recycled polyester share, but target cannot be assessed due to lack of available benchmarks.*	Reasonable	?
Sustainable logistics and transport solutions	*adidas implements some measures to decarbonise freight but does not set targets on the transition.*	Moderate	Poor

TRANSITION PROGRESS

? ✖ ? ? ?

✖ *adidas is increasing the use of RE in its supply chain, moving towards textile-to-textile polyester recycling, and reducing use of air freight. However, measures on key indicators are missing or insufficient data is provided to measure progress for most of these key transitions.*

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions identified.*	Very poor	Very poor
Support for durable carbon dioxide removals	*No current support for durable CDR identified, although adidas plans to neutralise up to 10% of its emissions with 'permanent CDR', in line with SBTi requirements.*	Very poor	Very poor

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- ✚ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Source: *adidas 2024.*

adidas

adidas AG, headquartered in Germany, is one of the world's largest sportswear brands. Above 95% of its emissions stem from the production and processing of raw materials and assembly of clothes and shoes (all scope 3, category 1). adidas implements several promising measures for the decarbonisation of its supply chain, including scaling up textile-to-textile recycling and renewable electricity. However, it is encouraging suppliers to switch from coal-fired to biomass and natural gas-fired boilers, which substantially reduces the emission reduction potential for its coal phase-out. The company's 2030 emission reduction target is aligned with 1.5°C-compatible benchmarks for the sector, and its net-zero target for 2050 is substantiated with a clear commitment to reduce emissions across the value chain by at least 90% compared to 2022 levels.

Key developments over the past year: Since our previous analysis of adidas's climate strategy in April 2024 (NewClimate Institute, 2024b, pp. 104–105), adidas has published new short-term 2030 emission reduction targets and its 2050 net-zero target has been substantiated with a commitment to reduce emissions by at least 90%. adidas's 2024 annual sustainability reporting is now also aligned with the European Union's Corporate Sustainability Reporting Directive (CSRD) requirements. We have also added an analysis on progress made and transition targets.

adidas's 2030 emission reduction targets are aligned with sectoral benchmarks and are aligned with the lower-end of economy-wide targets. adidas commits to reducing its scope 1 and 2 emissions by 70% and scope 3 emissions by 42% by 2030 vs 2022 levels (adidas, 2024, p. 177). The target, which equates to a 42% reduction across all three scopes, is aligned with sectoral benchmarks and aligned with the lower-end of economy-wide decarbonisation benchmarks, if assuming that 2022 emissions are roughly the same as 2019 emissions (IPCC, 2022; Teske, 2022). adidas also commits to reducing the emissions intensity per product by 9% by 2025 compared to 2022 levels (adidas, 2024, p. 177). These new targets appear to represent an increase in adidas's climate ambition, are transparently communicated, and will be reached without purchasing carbon credits (adidas, 2024, p. 195). The Nuremberg-Fürth Regional Court ruled on March 25, 2025 that adidas was guilty of misleading advertising over its previous pledge to become 'climate neutral by 2050' and to reach climate neutrality for its own production sites by 2025 (DUH, 2025). adidas now commits to reaching net-zero emissions in its value-chain by 2050. This target is substantiated with a commitment to reduce emissions by at least 90% by 2050, without relying on carbon offsets (adidas, 2024, p. 182). adidas plans to neutralise the remaining 10% with permanent carbon dioxide removals (CDR) (adidas, 2024, p. 177). It does not specify what it means by 'permanent', although it will align with SBTi guidance on CDR (adidas, 2024, p. 177).

adidas plans to increase renewable energy and efficiency in its supply chain but does not set a target on increasing renewable electricity in tier 1 and 2 suppliers. The company specifies that its suppliers are encouraged to scale the use of renewable electricity 'wherever possible' by 2030 (adidas, 2024, p. 187). By 2030, adidas expects that renewable energy and energy efficiency measures will lead to an 18% emissions reduction compared to 2022, making it the most important component of its decarbonisation roadmap in the short-term (adidas, 2024, p. 183). adidas claims that suppliers participating in its Environmental Program sourced 24% of their electricity from renewable sources, either through on-site electricity generation, PPAs, or 'high-quality' EACs (adidas, 2024, p. 187). 7% of electricity used by key suppliers was sourced from rooftop solar PV systems (adidas, 2024, p. 187). It is not specified what is meant by 'high-quality' EACs, nor is it clear what share is meant by 'key suppliers'. adidas also explains how it is engaging on policies in its supplier countries to drive renewable energy policies (adidas, 2024, p. 187). Although adidas is taking measures to increase renewable electricity among its suppliers, the company could substantially increase the ambition and transparency of such measures. It could do so by committing to increase renewable electricity among tier 1 and 2 suppliers through high-integrity renewable procurement constructs and accompanying such a target with a commitment to electrify key manufacturing processes. adidas should also provide a breakdown of supplier usage by energy source.

adidas plans to replace coal boilers with fossil gas and biomass boilers and does not mention electrification of key manufacturing processes. By 2030, adidas expects that 6% emission reductions will be achieved through replacing coal with biomass and natural gas (adidas, 2024, p. 183).

Although we could no longer find adidas's commitment to phase out coal boilers in its tier 1 and 2 suppliers by 2025, the company states that it is replacing the use of coal boilers at all direct supplier facilities at Tier 1 and Tier 2 levels with what it calls 'low-carbon fuels' such as natural gas or biomass (adidas, 2024, p. 184). However, fossil gas produces GHG emissions from production, transport, and end-use, and methane leaks can be extensive, sometimes eliminating all climate benefits from switching from coal to natural gas (Hasanbeigi and Zuberi, 2022). The use of fossil gas boilers also locks in an emissions-intensive technology that is misaligned with reaching net-zero emissions, while other technologies such as electric boilers are commercially available (Hasanbeigi and Zuberi, 2022).

The company does not specify what type of biomass it will supply or how it will guarantee that the biomass sourced is sustainable and does not lead to deforestation. Due to land scarcity, environmental degradation and the GHG emissions associated with the production and transport of most forms of bioenergy, this should not be considered a sustainable alternative for processes that could be reasonably electrified (*see Methodology section 3.1.3).* Instead, adidas should help its suppliers electrify key manufacturing processes to increase energy efficiency and guarantee the long-term decarbonisation of its supply chain. At the end of 2024, more than half of 'targeted suppliers in the program' have transitioned to biomass or fossil gas boilers (adidas, 2024, p. 187). The transparency of adidas's coal phase-out would be increased if adidas were to communicate how many suppliers in its supply chain have transitioned away from coal-fired boilers.

adidas's new target to source 10% of its polyester for its products made from textile-to-textile recycling by 2030 marks a positive shift in adidas's fibre decarbonisation strategy. By 2030, adidas expects that 10% of its emission reductions will come from material innovation (adidas, 2024, p. 183). The company set out the ambition that 90% of its articles are sustainable by 2025 (adidas, 2024, p. 227). Products are considered sustainable when they contain a pre-defined amount of sustainable materials and 'when they show environmental benefits versus conventional articles due to the materials used, meaning that they are – to a significant degree – made with environmentally preferred materials' (adidas, 2024, p. 232). Definitions are provided for each material, but it remains unclear how using such materials will reduce the emissions from materials and fibres (adidas, 2024, p. 228).

adidas' claim that it is sourcing 99% recycled polyester based on recycled polyester made from plastic bottles as feedstock (adidas, 2024, p. 228). Using such waste sources is a form of downcycling and does not represent a credible measure to lower the fashion industry's climate impact, as it can divert plastic waste from other more appropriate waste recycling streams (Cobbing and Vicaire, 2017; Majumdar *et al.*, 2020). However, adidas has set a target to source 10% of its polyester volume using textile waste (mostly clothing and some other textiles) as a feedstock by 2030, also known as textile-to-textile recycling (adidas, 2024, p. 233). adidas plans for the first products to be made with textile-to-textile recycled polyester to be available in 2026. This is a promising shift in adidas's lower-carbon fibre strategy, as the target shows the company's commitment to stimulating demand for textile-to-textile recycling and could contribute to improving the economics and output quality of existing recycling technologies.

adidas's circularity strategy rests on recycling, and the company does not tackle the issues of clothing overproduction and waste. adidas's circularity strategy remains surface level. adidas is implementing circularity services but these have remained at the pilot project or early implementation phase (adidas, 2024, p. 230). For example, it only provided repair services at two of its stores in 2024 (adidas, 2024, p. 230). adidas also has a 'made to be remade' circularity project where it acknowledges the need to rethink recycling beyond shifting fibre input (adidas, 2024, p. 229). adidas mentions wanting to enhance its 'global guidance on circular services' for its market organisations in 2025 and is engaged in several projects at the EU level for advancing the circularity ecosystem (adidas, 2024, pp. 229–230). However, adidas does not expand on how it will significantly reorient its business model and scale circularity beyond individual projects, or how such projects reduce clothing overproduction (adidas, 2024, p. 230). The company focuses on quality and durability of its products, although it does not provide any information on how many wears an average product can be used for (adidas, 2024, p. 229). The company could set more tangible targets such as increasing material efficiency, increasing the share of revenue from rental, resale and repair business models, and reducing the volume of deadstock and unsold clothing.

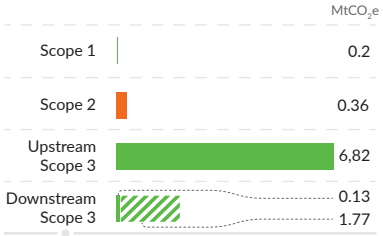
H&M Group

H&M Group's GHG targets are consistent with 1.5°C-compatible pathways for the fashion sector and are partially substantiated by transition measures for renewable energy sourcing, supplier decarbonisation and circularity, positioning the company ahead of its peers. However, the company still lacks a clear startegy and targets to electrify manufacturing processes, and to reduce overproduction and waste.

TRANSPARENCY	INTEGRITY
Reasonable	Moderate

1 TRACKING AND DISCLOSURE OF EMISSIONS

GHG emissions are reported annually, including a detailed scope 3 breakdown, but market-based accounting for scope 2 is used to calculate total emissions.



MAJOR EMISSION SOURCES

- Textile manufacturing (Tiers 1-3)
- Overproduction and waste
- Fibre and material extraction
- Transportation

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net zero by 2040.*

			TRANSPARENCY	INTEGRITY
Short term	**56%** by 2030	*Target to reduce scope 1, 2, and 3 by 56% below 2019 levels. This target is aligned with sectoral benchmarks.*		
Medium term	**90%** by 2040	*Target to reduce scope 1, 2 and 3 emissions by 90% below 2019 levels and neutralise residual emissions with permanent removals. This target is aligned with sectoral benchmarks.*		
Longer term	**N/A**	*No target identified.*	N/A	N/A

EMISSION TRENDS

✔ *Absolute emissions and the emissions intensity have reduced in recent years, and seem roughly on track towards the company's targets.*

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Electrification of heat and manufacturing processes	*"H&M Group describes some measures to electrify key manufacturing processes in its supply chain and discusses challenges, but it does not commit to a specific target.*		
Renewable energy in the supply chain	*H&M Group targets a coal phaseout by 2026 and 100% renewable electricity by 2030 for all tier 1, 2, 3 suppliers, but lacks a fossil gas phaseout target. Unclear reliance on standalone RECs & biomass.*		
Reduce overproduction and slow growth in virgin product	*H&M Group outlines measures to reduce overproduction and waste (resale, repair, rental, reuse, recycling), but no target was identified.*		
Source low-carbon fibres	*H&M Group outlines targets to use 100% recycled or sustainably sourced materials by 2030; however, we could not assess the integrity of these efforts due to the lack of science-based benchmarks.*		?
Sustainable logistics and transport solutions	*While some implemented measures to reduce transport emissions are described, no specific targets have been identified.*		

TRANSITION PROGRESS

? ✔ ? ? ?

H&M is phasing out coal in its supply chain (from 46 sites using coal in 2023 to 27 in 2024, a ~40% reduction) and claiums to have increased renewable electricity use to 36% in 2024 for its garment production supply chain, supported through a collaborative financing effort with other fashion brands. Data on other transitions is unclear, or benchmarking is not possible.

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*H&M Group purchased carbon credits in Brazil through the LEAF Coalition, without making carbon neutrality claims, yet discloses minimal information beyond this.*		?
Support for durable carbon dioxide removals	*Supports durable CDR by signing deal with Climeworks and joined Frontier, supporting various forms of durable CDR to claim net zero in the future.*		

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- ✚ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *H&M Group 2023, 2024a, 2024b, 2024c, 2024d, 2025a, 2025b, 20ß25c, 2025d, 2025e.*

H&M Group

H&M Group is a Sweden-based fast fashion retailer that comprises nine brands, selling clothing alongside non-garment products such as cosmetics, accessories, footwear, and homeware. Around 60% of H&M Group's emissions originate from fabric production, garment manufacturing and raw materials. H&M Group's GHG targets are consistent with 1.5°C-compatible pathways for the fashion sector and are partially substantiated by transition measures for renewable energy sourcing, supplier decarbonisation and circularity, positioning the company ahead of its peers. However, the company still lacks a clear strategy and targets to electrify manufacturing processes, and to reduce overproduction and waste.

Key developments over the past year: We have identified transparency improvements since the previous analysis was published in April 2024 (NewClimate Institute, 2024b, pp. 108–109). In its latest disclosure, for example, the company published detailed data on fuel and electricity use across its supply chain, as well as detailed targets and progress toward sourcing recycled or sustainably sourced materials.

H&M Group's net-zero target for 2040 is substantiated with emissions reduction targets that closely align with 1.5°C-compatible pathways for the apparel sector. The company has set an SBTi-validated target to reduce emissions across its value chain by 56% by 2030 and 90% by 2040 from a 2019 baseline, with the remaining 10% to be neutralised through permanent carbon dioxide removals (H&M Group, 2025a, p. 60). This ambition level is consistent with the global benchmark for a 1.5°C-compatible emission reduction trajectory, provided the targets are backed by real and rapid transition measures. Overall, there has been a downward trend in both absolute emissions and emissions intensity over the past five years (H&M Group, 2025a, pp. 64–65). Based on its recent emissions trend, H&M Group appears nearly on track to meet its 2030 milestone and on a consistent trajectory toward meeting its 2040 target. However, the true ambition level of H&M Group's targets ultimately depends on the measures used to achieve them. We see signals of continued reliance on false solutions, including the use of fossil gas, biomass, and standalone RECs (H&M Group, 2024a, 2025d, p. 4,6,8), raising concerns that this may potentially undermine the integrity of H&M Group's climate commitments and its reported emissions reduction progress.

H&M Group has committed to sourcing 100% renewable electricity across its tier 1, 2, and 3 suppliers by 2030, however electricity represents a small share of its supply chain energy use. H&M also commits to phasing out on-site coal use by 2026 (H&M Group, 2025e, p. 9)**.** Progress towards these targets includes reducing the number of supplier sites using coal from 46 in 2023 to 27 in 2024, banning new suppliers with coal boilers since 2022, and reaching 36% renewable electricity use in garment production in 2024 (H&M Group, 2023, p. 42, 2025d, p. 7, 2025a, p. 60,66). The company provides detailed and transparent data on fuel and electricity use across its supply chain and acknowledges electrification challenges (H&M Group, 2025d). However, the impact of its renewable electricity target is undermined by the lack of commitment to electrify key manufacturing processes, which still rely heavily on fossil gas and, to certain extent, biomass as transitional fuels—neither of which is a sustainable alternative for processes that could be electrified. Most manufacturing processes in the fashion supply chain require relatively low temperatures, presenting a clear opportunity for full electrification (Hasanbeigi et al., 2024). This transition can be accelerated by switching to alternative technologies like waterless or electrified dyeing and dry processing, which use electric boilers and heat pumps (Fashion Revolution, 2024, p. 58). We identify no commitment to electrify these key manufacturing processes.

On a more positive note, H&M Group addresses supplier decarbonisation barriers, such as limited expertise and access to affordable capital, through its Green Fashion Initiative. As of 2024, the initiative has supported 23 projects (solar PV, energy efficiency, coal phase-out, and electrification) by providing technical support and favourable financing, offering financing that was not debt-based, and having ROIs evaluated based on emissions reductions rather than financial gain (Stand.earth, 2024, p. 8; H&M Group, 2025a, pp. 61–62). It also collaborates with other fashion brands through the Future Supplier Initiative, that co-invests in shared supplier decarbonisation efforts (H&M Group, 2025c). Furthermore, H&M advocates for supportive policies in Southeast Asian manufacturing hubs (e.g., Vietnam, Bangladesh, Indonesia), promoting PPAs and improved grid access (H&M Group, 2024b, p. 11, 2025a, p. 62). This can be considered good practice for enabling renewable energy uptake in challenging regulatory environments. Despite these measures, H&M does not provide detailed information on the procurement constructs used to reach its supply chain renewable energy target.

H&M Group's claim of using almost 100% renewable electricity in its own operations is currently largely based on standalone RECs, though the company is beginning to shift its focus to higher quality constructs and is piloting a 24/7 matching approach. In 2024, 20% of H&M Group's renewable electricity was obtained through PPAs with new solar or wind projects, doubled from 2023 (H&M Group, 2025e, p. 11). The reported 96% renewable electricity use still relies heavily on the procurement of standalone RECs, which in some cases are purchased in one country and used in another (H&M Group, 2025b, pp. 147–325, 2025e, p. 11). Standalone RECs that are not bundled with the actual procurement of renewable electricity are unlikely to support additional renewable energy capacity and decarbonisation of the grid in many regions, including in Europe, where most of H&M Group's operations are located (NewClimate Institute, 2024c, p. 50). In 2024, H&M group complemented its existing renewables target by committing that by 2030, at least half of the renewable electricity procured for its own operations should come from PPAs with new renewable electricity generation (H&M Group, 2025a, p. 60). H&M Group also reports that it has started to pilot a 24/7 matching approach, for renewable electricity procurement (H&M Group, 2025d, p. 2). Scaling up such pilot efforts would position H&M Group as an industry leader on this transition: commitments to match renewable electricity on a local and hourly basis are considerably more ambitious and constructive for addressing the significant challenges of decarbonising electricity systems (NewClimate Institute, 2024a).

H&M Group has made visible progress in circularity and material sustainability, yet its climate strategy still lacks a target to reduce overproduction and product waste. The company aims to use 100% recycled or sustainably sourced materials by 2030, working to align with the Textile Exchange definition of 'preferred materials' (H&M Group, 2024d). H&M Group has expanded its resale, repair, and rental services, with resale now available in 38 stores across 26 markets, contributing to 0.6% of group turnover (H&M Group, 2025a, p. 78). While 0.6% remains a small share, it represents a doubling from the previous year, and the disclosure of this figure sets H&M Group apart from many peers in terms of transparency. The company launched second-hand platforms such as Sellpy, COS Resell, H&M Preloved, and ARKET ARCHIVE, and partnered with Looper Textile Co. to improve collection and sorting infrastructure (H&M Group, 2025a, p. 24,32). Beyond operational measures, the company is scaling circular design and investing in material innovations, including lab-grown cotton and textile-to-textile polyester recycling (H&M Group, 2025a, p. 74).

Despite these efforts, H&M Group has not set a target to reduce production volumes. Its long-term goal of 10% annual sales growth raises concerns about the alignment with its circularity mission (H&M Group, 2025a, p. 113), unless driven by higher-value rather than higher-volume sales. Furthermore, while the volume of material use, detailed targets, and progress of sourcing each material are transparently reported (H&M Group, 2025a, pp. 76–78), H&M Group does not disclose the volume of deadstock and provides only limited information on how unsold products are managed or disposed of. Further clarity is also needed on how these initiatives will lead to absolute reductions in production volumes, resource intensity, and emissions footprint. H&M Group's transparency and ongoing investments in shifting towards a circular fashion model stand out as comparatively advanced among its peers; the company demonstrates good practice in reporting the transition underway. However, the absence of clear industry guidance on sustainable fibre pathways and circularity limits progress at the sectoral level.

H&M Group provides climate contributions by purchasing forest carbon credits and supports durable CDR solutions to neutralise its residual emissions. Through the LEAF Coalition, H&M Group provides financial support to REDD+ programs aimed at reducing deforestation in Brazilian Pará state (H&M Group, 2025a, p. 63). However, we could not identify its exact financial contribution beyond being part of the coalition's collective USD 180 million commitment and >4 million credit purchase (LEAF Coalition, 2024). The company states that it does *not* claim carbon neutrality based on the purchase of these carbon credits (H&M Group, 2025a, p. 63, 2025e, p. 11). In addition, H&M Group supports permanent CDR by signing multi-year agreements for 10,000 tCO_2 removal with Climeworks for the removal of 10,000 tCO_2 via DACCS, and by participating in Frontier, an advance market commitment to scale durable CDR (H&M Group, 2025a, p. 63). Again, we could not identify H&M Group-specific financial contributions to Frontier aside from the number of offtake agreements signed. The company correctly acknowledges that tree-planting and regenerative agriculture, while important, should not be used to support net-zero claims due to their non-permanence risks (H&M Group, 2024b, p. 13).

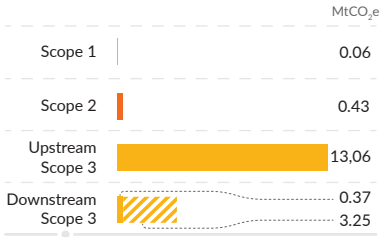
Inditex

In 2023, **Inditex** set new GHG targets which appear to be aligned with 1.5°C benchmarks for the sector, and has also set a target for renewable electricity in the supply chain. But Inditex fails to underpin these targets with other key measures needed to reach net zero by 2040, such as electrifying manufacturing processes and reducing overproduction.

TRANSPARENCY	INTEGRITY
Reasonable	Moderate

1 TRACKING AND DISCLOSURE OF EMISSIONS

Public disclosure of current and historical emissions, but information is scattered and no breakdown for scope 3 emissions by scope. Updated Climate Transition Plan provides different 2022 emissions from previously reported data.



MAJOR EMISSION SOURCES

- Textile manufacturing (Tiers 1-3)
- Overproduction and waste
- Fibre and material extraction
- Transportation
- Procurement of renewable electricity for own operated factories

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net zero emissions by 2040*

			TRANSPARENCY	INTEGRITY
Short term	48-53% by 2030	*Targets to reduce scope 1 and 2 emissions by 95% and scope 3 emissions by 51% below 2018 levels by 2030. These targets are aligned with sectoral benchmarks.*	●	●
Medium term	83-88% by 2040	*Targets to scope 1 and 2 emissions by 95% and scope 3 emissions by 90% below 2018 levels by 2040. These targets are aligned with sectoral benchmarks, but no interim target was identified.*	◕	◕
Longer term	N/A	*No target identified.*	N/A	N/A

EMISSION TRENDS

\+ *Absolute emissions have only slightly decreased since 2019 and have not changed between 2023 and 2024.*

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY	TRANSITION PROGRESS
Electrification of heat and manufacturing processes	*Inditex acknowledges the need for electrification but we identified no targets or measures.*	◔	○	?
Renewable energy in the supply chain	*50% by 2030 and 100% by 2040 renewable electricity in supply chain manufacturing processes. The target is somewhat undermined by accounting caveats.*	◕	◑	?
Reduce overproduction and slow growth in virgin product	*Inditex introduces some circularity measures, but no targets or measures against overproduction identified.*	◔	◔	?
Source low-carbon fibres	*Several targets for lower-impact fibres in the short term. No assessment due to a lack of benchmarks.*	◕	?	?
Sustainable logistics and transport solutions	*Target of 90% of alternative fuels in maritime transport by 2025. No targets for other means of transport and little update on progress.*	◑	◔	?
Renewable energy in own factories	*By 2027, 40% and by 2030, 60% of electricity consumption will come from self consumption and PPAs.*	◑	◑	+

TRANSITION PROGRESS

We could not identify transparent data to assess progress on key transitions, or benchmarks are not available to evaluate progress.

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*Inditex makes modest investments in forest restoration for an unclear combination of both neutralisation claims and beyond value chain mitigation claims.*	◑	◔
Support for durable carbon dioxide removals	*No support for durable CDR identified.*	○	○

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- \+ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Inditex 2024a, 2024b, 2025.*

Inditex

Industria de Diseño Textil S.A. (Inditex) is a Spanish-based multinational fashion retailer better known for its flagship brand Zara. It is the biggest fast fashion group in the world by revenue, with USD 38.6 billion in 2024. Most of its emissions stem from its supply chain, raw material extraction, garment production and transport. In 2023, Inditex set new GHG targets which appear to be aligned with 1.5°C benchmarks for the sector, and has also set a target for renewable electricity in the supply chain. But Inditex fails to underpin these targets with other key measures needed to reach net zero by 2040, such as electrifying manufacturing processes and reducing overproduction.

Key developments over the past year: Since our previous analysis in April 2024, Inditex changed its emission accounting methodology to include more granular data (NewClimate Institute, 2024b). However, it does not disclose updated estimates for years between 2018 and 2023. In terms of its targets, Inditex has made significant improvements to its own emission reduction targets and has set new renewable electricity procurement targets for its own electricity and its supply chain.

Inditex's emission reduction targets remain aligned with benchmarks for the fashion sector to limit global warming to 1.5°C. The company's 2030 target amounts to a 48–53% emissions reduction below 2019 levels, which is likely aligned with global efforts to limit global warming to 1.5°C. Its target for scope 3 emissions excludes emissions from capital goods and transportation and downstream distribution of its products (Inditex, 2025). Inditex states that it still needs to estimate and disclose the latter. In the long term, Inditex's net-zero target for 2040 represents an 83–88% emission reduction by 2040 compared to 2019 levels. This also remains in line with 1.5°C-compatible sector-specific benchmarks. Inditex could add location-based emissions targets for further integrity on top of its market-based emissions targets. Compared to 2023, Inditex now added scope 1 and 2 emissions to its interim target of 20% emission reduction by 2027, making it more ambitious (Inditex, 2025).

Due to the limited disclosure of historical emissions data, it remains unclear whether Inditex is on track to meet its 2030 targets. In 2024, Inditex changed its emissions accounting methodology to include emissions from its e-commerce distribution centres and fuel consumption of its stores (Inditex, 2025, p. 344). While including more granular emissions is a positive development, full transparency around the change in methodology and its implications on historical emissions estimates is critical. Inditex currently only discloses 2024, 2023 and 2018 emissions data using the new accounting methodology. Inditex further decided against disclosing emissions from third-party leased assets, as they are 'immaterial' (Inditex, 2025, p. 346). To further enhance transparency, Inditex could disclose those emissions in the future.

It is unclear whether Inditex's current measures will be sufficient to achieve its GHG reduction targets. Inditex has set seemingly ambitious emission reduction targets for 2027, 2030 and 2040. Reaching them successfully will depend on implementing sector-specific transitions, particularly in its supply chain. These key transitions include electrifying manufacturing processes, switching from fossil to renewable electricity through power purchasing agreements, reducing overproduction, and sourcing sustainable materials. Inditex has a dedicated website outlining detailed options and costs for suppliers to reduce their emissions (Inditex, 2024b). As of 2025, wet-process manufacturers in the supply chain need to lay out transition plans that include annual emission reductions of 4.2% (Inditex, 2025, p. 160) However, detailed measures and estimates of their emission reduction potential are lacking in Inditex's sustainability report to understand how the company could reach its targets.

The lack of targets and measures to electrify manufacturing processes undermines Inditex's transition plan. Moving away from fossil-powered heat and steam and switching to renewable electricity in the supply chain is critical in decarbonising the fashion industry (Berg *et al.*, 2020; Ley *et al.*, 2021; Sadowski *et al.*, 2021). While Inditex acknowledges the need for electrification, we could not identify any quantitative estimates on electricity consumption within the supply chain or any measures to electrify manufacturing processes. While Inditex plans to phase out coal from its supply chain by 2030, it lists bioenergy as one of several solutions among its 'Best available technologies and measures to reduce environmental impacts' (Inditex, 2024c, 2024b, 2025). If it does so for processes that could be electrified, this could significantly undermine the significance of any supply chain renewable electricity targets. An increasing demand for bioenergy risks biodiversity loss, water pollution, land conflicts and rising GHG emissions *(see Methodology)*. Most manufacturing processes in the fashion supply chain require relatively low temperatures, presenting a clear opportunity for full electrification (Hasanbeigi *et al.*, 2024).

Inditex aims for 50% of the electricity used in its manufacturing processes to come from renewable sources in 2030 and 100% by 2040, however, the integrity of the target is unclear due to limited information on its supply chain energy mix. While Inditex's target to increase renewable electricity in its supply chain (Inditex, 2025, p. 146) marks a positive shift in Inditex's climate strategy, the lack of details leaves open the possibility that fulfilment of the target might be claimed through the procurement of standalone RECs. Procuring standalone RECs, as opposed to supporting suppliers to put in place higher quality renewable electricity procurement constructs, would have a limited impact on reducing supply chain emissions. Moreover, this target is not accompanied by a target to electrify manufacturing process and Inditex does not report on the rate of electrification in the supply chain. Therefore, the relevance of this target in the context of the broader supply chain energy balance remains unclear. The company should increase the transparency of its supply chain energy use to enable a better understanding of the integrity of its supply chain renewable electricity target.

Inditex's deep decarbonisation targets would require it to move away from a quantity-focused fast fashion business model. The company stops short of estimating what achieving its climate targets will mean for its business volume and resource use. The amount of raw material used in its products has been increasing at an average annual rate of 5% since 2022 and compared to 2023, emissions from transport and distribution have increased by 10% in 2024 (Inditex, 2025). Given that many sector emissions, such as those from the extraction of raw materials, are hard to reduce, switching to a less resource-intensive production model becomes inevitable if emissions are to be reduced to net zero by 2040.

According to Inditex, switching to lower-impact fibres has cut its emissions considerably. The company claims it has reduced 21% of emissions from raw material extraction between 2018 and 2024 (Inditex, 2025, p. 166). However, the lack of available benchmarks complicates the assessment of such progress. Inditex set several targets and measures to reduce emissions from raw materials sourcing, including switching to organic fibres or fibres from regenerative agriculture (Inditex, 2025, p. 200). The company also invests in start-ups for lab-grown cotton and recycled fibres (Inditex, 2025, p. 13). Inditex pledges that by 2030, 100% of its textile fibres should be lower impact. Currently the share amounts to 73% (Inditex, 2025, p. 200). However, it remains unclear how many emissions the use of those fibres would reduce by 2030.

Inditex plans to move away from fossil-based electricity in its own production locations and other buildings. Inditex needs electricity to operate its own headquarters, offices, distribution centres and nine own factories. Even though the footprint of these facilities accounts for only 4% of Inditex's footprint, Inditex has direct control over these emissions (Inditex, 2025, p. 166). It claims to have procured 100% renewable electricity for those facilities since 2022 (Inditex, 2025, p. 72). However, Inditex procured this renewable electricity primarily through Renewable Energy Certificates (RECs), of which 67% were unbundled (Inditex, 2025). Such standalone RECs do not generally contribute to additional renewable capacity in the grid (NewClimate Institute, 2024c, p. 4). Moreover, it remains unclear when the electricity for those RECs was produced. Instead of relying on RECs, Inditex's new target aims for 40% of its electricity consumption in 2027 to come from its own renewables and (virtual) power purchasing agreements (vPPAs and PPAs) (Inditex, 2025). By 2030, the share will increase to 60%. As of 2025, Inditex has vPPAs in place worth 136 MW capacity for the coming 10–12 years (Inditex, 2025, p. 158). We estimate they could cover up to a third of Inditex's own energy consumption in 2025. This is a positive development, as PPAs are more likely to help increase renewable capacity in a grid.

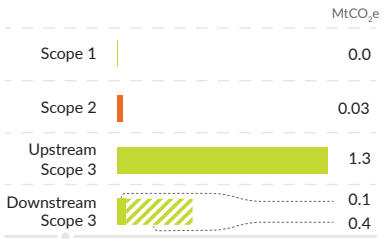
lululemon

lululemon's net-zero target is undermined by a lack of meaningful short- and medium-term GHG emission reduction targets. The company has set a target for renewable electricity in the supply chain but falls short on commitments for other key transitions, such as the electrification of manufacturing processes.

TRANSPARENCY	INTEGRITY
Moderate	Poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Public disclosure of current and historical emissions, but no breakdown for previous years.



MAJOR EMISSION SOURCES

- Textile manufacturing (Tiers 1-3)
- Overproduction and waste
- Fibre and material extraction
- Transportation

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net zero emissions by 2050*

			TRANSPARENCY	INTEGRITY
Short term	Unclear	*Target to reduce profit-based economic emissions intensity of scope 3 emissions by 60% by 2030. This target has limited meaning due to volatility of profit fluctuations, and would allow emissions to increase.*	●	◔
Medium term	N/A	*No target identified.*	○	○
Longer term	90% by 2050	*2050 net-zero target is implicitly substantiated in a footnote with a minimum 90% emission reduction commitment.*	◔	◔

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Electrification of heat and manufacturing processes	*No commitment to electrify key manufacturing processes.*	○	○
Renewable energy in the supply chain	*Commits to 25% RE in key tier 1 and 2 suppliers by 2025 and 50% by 2030. lululemon aims to prioritise the use of high integrity procurement constructs, but will also use standalone RECs towards its target.*	◔	◑
Reduce overproduction and slow growth in virgin product	*lululemon acknowledges the general issue of overproduction, but does not commit to reduce this. The company implements some circularity measures. Integrity evalouation not possible due to lack of available benchmarks.*	◑	◔
Source low-carbon fibres	*Target to source 100% products containing preferred materials by 2030 is transparent and broken down by fibre, but it cannot be evaluated due to lack of benchmarks.*	◔	?
Sustainable logistics and transport solutions	*lululemon presents measures to decarbonise freight, but no clear target or commitment.*	◑	◔

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions beyond the value chain could be identified.*	○	○
Support for durable carbon dioxide removals	*No support for durable CDR identified.*	○	○

EMISSION TRENDS

✖ *Reported reductions in emissions intensity are driven by increasing revenues. Absolute emissions have plateaued and are not decreasing.*

TRANSITION PROGRESS

?

✖ *lululemon is increasing its share of renewable electricity in its supply chain but only reached 14% renewable electricity in 2023, which remains lower than the grid renewable share in several key manufacturing countries. Data on other transitions is unclear. There are no decarbonisation benchmarks to evaluate lululemon's progress for fibres and materials.*

?

?

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- ✚ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: lululemon 2022, 2024a, 2024b, 2025.

lululemon

lululemon athletica (lululemon), headquartered in Canada, is a sportswear and activewear brand. Around 70% of its emissions stem from the extraction of textile fibres and the manufacturing and assembly of clothing and shoes (all scope 3, category 1). lululemon is implementing some key measures to decarbonise its supply chain, including increasing the use of renewables, but does not specify if it will electrify key manufacturing processes. lululemon's net-zero target is undermined by a lack of meaningful short- and medium-term GHG emission reduction targets, which makes it difficult to understand how the company intends to achieve deep emission reductions by 2050. The company's 2030 emissions intensity reduction target allows it to continue increasing its emissions.

Key developments over the past year: Since the previous analysis of lululemon's renewable electricity targets and strategy in 2024 (NewClimate Institute, 2024c, pp. 53–54), lululemon has committed to increasing the share of renewable electricity in its supply chain. It has also updated its scope 3 emissions intensity reduction target from an intensity per revenue to intensity per unit of gross profit target to align with SBTi requirements, which further worsens the poor clarity of that target.

lululemon's 2050 net-zero target is undermined by a lack of meaningful short and medium-term GHG emission reduction targets. We understand that lululemon's net-zero target is accompanied by the commitment to reduce emissions across the value chain by 90%, although this could be made more explicit by being clearly presented alongside its net-zero target (lululemon, 2024a, p. 37). lululemon plans to neutralise the remaining 10% with permanent carbon dioxide removals (CDR) (lululemon, 2024a, p. 37). Although it does not specify what it means by 'permanent', although it will align with SBTi guidance on CDR (lululemon, 2024a, p. 37). This commitment is aligned with global economy-wide benchmarks to keep warming below 1.5 °C (IPCC, 2022).

In the interim, lululemon commits to reduce its scope 1 and 2 absolute emissions by 60% and to reduce part of its value chain emissions intensity, which is measured as emissions per unit of gross profit, by 60% by 2030, both compared to 2018 levels (lululemon, 2024a, pp. 34–35). This target has significant limitations, even though the SBTi validated it as a 'well-below 2°C' target (lululemon, 2024a, p. 37). Evaluating the ambition of lululemon's intensity target is complicated, as the intensity target is relative to the company's profit, which may be highly volatile. lululemon could claim progress in decarbonising its business if it increases profit and keeps emissions flat, or if profit increases more than emissions in a certain year. The intensity target translates to a 44% reduction compared to 2018 if accounting for all lululemon's scope 3 emissions and could allow lululemon to increase emissions against its baseline.

While lululemon's emissions intensity per unit of revenue have decreased slightly since 2020, its absolute emissions have more than doubled since 2019. Although it is a good sign that lululemon is making progress on emissions per unit of revenue, a continued increase in absolute emissions is not aligned with 1.5°C-compatible benchmarks for the sector or cross-sector benchmarks (Teske, 2022, pp. 322, 327). lululemon notes that 'it is difficult to decrease absolute emissions across Scope 3 while executing business growth' (lululemon, 2024a, p. 35). In 2023, however, emissions from almost all scope 3 categories increased despite the company affirming that it decreased production volumes (lululemon, 2024a, p. 35). Only emissions from upstream transportation decreased in 2023, due to reduced air freight usage. The true ambition level of lululemon's targets depends on the measures used to achieve them and to reduce absolute emissions.

lululemon has committed to increasing renewable electricity among core tier 1 and 2 suppliers to 25% by 2025 and 50% by 2030 , although the integrity of the target is unclear due to limited information on its supply chain energy mix (lululemon, 2024a, p. 38, 2025). This renewable electricity target for the supply chain marks a positive shift in lululemon's sustainability strategy, although the target could be made stronger by an additional commitment to electrify key tier 1 and 2 manufacturing processes. lululemon discloses annual progress on its target, reporting that in 2023, 14% of the electricity used by core tier 1 and 2 suppliers was renewable (lululemon, 2024a, p. 38). lululemon specifies that it will prioritise higher integrity renewable energy procurement constructs such as onsite solar and power purchase agreements (PPAs), but does not go as far as to rule out the use of standalone Renewable Energy Certificates (RECs) (lululemon, 2025), which may not have a significant climate impact *(see Methodology section 3.1.2)*. Also, the company does not disclose information on total supply chain energy and electricity demand, so the relevance of this target in the context of the broader supply chain energy balance remains unclear. lululemon presents several measures to help suppliers transition to renewable electricity. These include collaborating with suppliers, contributing to the Fashion Climate Fund, and requiring suppliers to set emission reduction targets and report to CDP (lululemon, 2024a, p. 38). lululemon joined the Asia Clean Energy Coalition to advance renewable electricity policies in the region and is assessing where it can leverage PPAs (lululemon, 2024a, p. 38). However, much of the energy consumption in the clothing manufacturing process typically derives from other energy carriers. We identified no commitment to shift to non-combustible sources of renewable power (e.g. wind, solar, hydro, and geothermal), but only to 'phase out on-site coal boilers, and invest in manufacturing innovation' (lululemon, 2024a, p. 36). lululemon does not report on progress against its coal phase-out commitment, but highlights that it is engaging with suppliers to help them establish roadmaps to phase out existing coal boilers by 2030 (lululemon, 2024a, p. 39).

lululemon is beginning to address some key transition measures, especially fibre sustainability, however more detailed information is needed to understand their likely emission reduction impact. lululemon places a heavy emphasis on sustainable fibre and material procurement for products and packaging, which accounts for around a quarter of its total emissions (lululemon, 2024a, p. 47). lululemon has committed to increasing procured products containing 'preferred' materials and breaks down targets and progress against this target for each fibre, but does not explain how this will reduce emissions (lululemon, 2024a, pp. 43–46). Although lululemon claims it is sourcing more recycled polyester and nylon, it is using plastic bottles and oceanic waste as feedstock for its recycled materials (lululemon, 2024a, pp. 44–45). Using such waste sources is a form of downcycling and is not a credible measure to lower the fashion industry's climate impact, as it can divert plastic waste from other more appropriate waste recycling streams (Cobbing and Vicaire, 2017; Majumdar *et al.*, 2020). lululemon has recently signed a 10-year offtake agreement with a recycling startup to source recycled materials using textiles as feedstock (Samsara Eco, 2025). The agreement could lead to increasing lululemon's share of fibres originating from textile-to-textile recycling to approximately 20% according to the company (Samsara Eco, 2025).

lululemon presents its efforts to make its supply chain more circular but does not explicitly commit to reducing overproduction of clothing. lululemon aims to have 100% of its North American stores offer product take-back programs by 2025 and is rolling out repair programs in most of its stores in Mainland China and Europe (lululemon, 2024a, p. 47). lululemon also reports that 90% of its excess products and damages were resold, donated, recycled or downcycled in 2023 (lululemon, 2024a, p. 49). The company also commits to equip 100% of its products with 'end-of-use solutions' by 2030, meaning it will implement the infrastructure to collect, sort, and recycle products at scale once they are no longer in use (lululemon, 2024a, pp. 43, 72). Although it is encouraging that lululemon is moving towards a circularity approach and looking to extend product use, the company could set more tangible target such as increasing material efficiency, increasing the share of revenue from rental, resale and repair business models, and reducing the volume of deadstock and unsold clothing. Given recent investigations into the limits of in-store clothing take-back programmes (Changing Markets Foundation, 2023), lululemon could also provide more information on what happens to the used clothing it collects. lululemon used to disclose production volumes in its sustainability report (lululemon, 2023, p. 57), but no longer does in its 2023 report.

Due to reduced air freight usage, emissions from transport and logistics decreased between 2022 and 2023, but still account for around 15% of total emissions (lululemon, 2024a, p. 40). The company reports it is replacing air freight with ocean shipping and lower-carbon transportation options such as electric vehicles. lululemon does not report a modal split for transport use. The company also joined the Sustainable Aviation Buyers Alliance (SABA), and the Zero Emission Maritime Buyers Alliance (ZEMBA) to accelerate the development of lower-carbon fuels but does not commit to purchasing such fuels.

lululemon's claim that it procures 100% renewable electricity to power its operations is based on a mixture of high- and low-quality procurement methods and is undermined by the matching method. lululemon reached its target to source 100% renewable electricity to power its owned and operated facilities in 2021 (lululemon, 2024a, p. 40). While lululemon recently expanded its VPPAs to improve its renewable electricity procurement strategy, the company continues to account renewable electricity shared with annual rather than hourly matching. In 2023, lululemon procured PPAs and VPPAs to cover roughly half of its electricity consumption, while electricity from unbundled RECs was used to cover 40% of its electricity consumption (lululemon, 2024b). In its 2021 Impact Report, lululemon stated its intention to transition from standalone RECs to PPAs (lululemon, 2022, p. 42). In 2021, as a start of this transition, the company signed its first VPPA for a wind farm in Texas that came online in May 2022 (lululemon, 2023, p. 53). Given that PPAs are generally more likely to contribute to additional renewable capacity, the shift to VPPAs likely represents an improvement of lululemon's renewable electricity strategy. lululemon indicates in its latest report that it is also exploring a solar array for a site in the United States (lululemon, 2024a, p. 40). However, without further details, it remains uncertain whether the VPPAs that lululemon signs really lead to additional capacity and contribute to grid decarbonisation on the grids where lululemon consumes electricity.

.

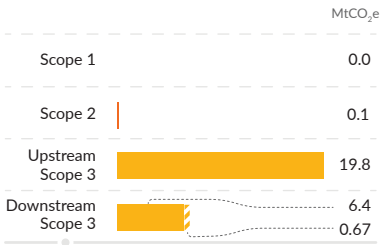
Shein

Shein's 2030 emission reduction target is completely misaligned with global emission reduction benchmarks, allowing its absolute emissions to reach more than double 2021 levels by 2030. Shein's business model for low prices and large production volumes is misaligned with the shift needed to put the fashion sector on a 1.5°C-compatible trajectory. We did not identify meaningful measures aimed reducing Shein's climate impact.

	TRANSPARENCY	INTEGRITY
	Poor	Very poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Shein reports on the main emission sources in scope 3, but we could not identify historical data prior to 2023.



MAJOR EMISSION SOURCES

- Textile manufacturing (Tiers 1-3)
- Overproduction and waste
- Fibre and material extraction
- Transportation

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net zero by 2050*

			TRANSPARENCY	INTEGRITY
Short term	**+128%** by 2030 (from 2021 levels)	*Reduce scope 1 and 2 by 42% and scope 3 by 25% by 2030 below 2023 levels. These targets translate to an overall reduction of 25% between 2023-2030, which is misaligned with sectoral benchmarks and would allow Shein to more than double its emissions compared to 2021.*		
Medium term	**N/A**	*No target identified.*		
Longer term	**79%** by 2050 (from 2021 levels)	*Shein commits to reducing emissions across the value chain by 90% below 2023 levels by 2050, alongside its net-zero target. This translates to a reduction of 79% below 2021 levels. This does not reflect the deep emission reduction levels that 'net zero' implies.*		

EMISSION TRENDS

Shein's emissions have significantly increased in recent years. The company claims to have achieved emission reductions but its emissions disclosure shows otherwise.

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Electrification of heat and manufacturing processes	*No acknowledgement of the need to electrify manufacturing processes, and no targets identified.*		
Renewable energy in the supply chain	*Shein reports some measures to support renewable electricity in the supply chain, but we identified no targets.*		
Reduce overproduction and slow growth in virgin product	*Shein reports that its on-demand business model and online resale platform lead to less overproduction. No targets or measures identified to move away from the ultra fast fashion business model.*		
Source low-carbon fibres	*Target to use 30% recycled polyester by 2030. The mitigation potential of this target remains unclear and its integrity cannot be evaluated due to lack of available benchmarks.*		?
Sustainable logistics and transport solutions	*Shein reports some plans to reduce downstream emissions from transportation, but no targets identified.*		

TRANSITION PROGRESS

?

?

?

Insufficient data is available to assess progress for these key transitions, especially in the context of Shein's ultra-fast fashion business model.

?

?

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions identified.*		
Support for durable carbon dioxide removals	*No support for durable CDR identified.*		

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- ✚ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Shein 2023, 2024, 2025a, 2025b, 2025c, 2025d.*

Shein

Shein, headquartered in Singapore, is an e-retailer specialising in ultra-fast fashion. Over 40% of its reported emissions stem from manufacturing clothes and electronical devices, more than 30% from transportation and distribution, and 20% from consumers' use of Shein products. Shein's 2030 emission reduction target is completely misaligned with global emission reduction benchmarks, allowing its absolute emissions to reach more than double 2021 levels by 2030. Shein's business model for low prices and large production volumes is misaligned with the shift needed to put the fashion sector on a 1.5°C-compatible trajectory. Shein sends a large share of its products directly to end consumers via air cargo, resulting in significantly higher transport emissions than for the average fashion retailer. We did not identify meaningful measures aimed reducing Shein's climate impact.

Shein's emissions more than tripled between 2021 and 2024, and the company's 2030 targets are insufficient to bring the company on a Paris-aligned trajectory. Shein recorded exponential growth over the past six years. The e-retailer does not publish global financial results, but its revenue is estimated to have increased from USD 4 billion in 2019 to USD 38 billion in 2024 (Reid, 2024; Reuters, 2025). With the increase in revenue, Shein also saw a massive increase in GHG emissions across the value chain. Between 2021 and 2024 emissions more than tripled (Shein, 2025a, p. 47). Shein committed to reduce its scope 1 and 2 emissions by 42% and scope 3 emissions by 25% by 2030, compared to 2023 levels (Shein, 2025a, p. 46, 2025c). This scope 3 target does not cover direct use phase emissions, which accounted for a fifth of Shein's GHG footprint in 2024 (Shein, 2025a, p. 46,47). Given the very small share of scope 1 and 2 emissions in Shein's GHG footprint and the exclusion of a substantial emissions source, the targets together translate to a reduction of 22% across the value chain below 2023 levels. Achieving this will be a challenge considering the exponential revenue and emissions increase in recent years. Even if Shein were to achieve this target, the company would fall short of the ambition necessary at the global level. Reducing emissions by 22% from 2023 levels means that Shein more than doubles its emissions between 2021 and 2030, whereas global emissions need to be halved in this period (IPCC, 2022).

Shein's climate strategy is untransparent and lacks detail, which makes it difficult to assess the integrity of disclosed data and proposed measures. Shein discloses detailed emissions data for 2023 and 2024, while data over 2022 and 2021 is less comprehensive (Shein, 2023, p. 48, 2024, p. 31, 2025a, p. 47). We identified no emissions data for earlier years. Raw material extraction and manufacturing of fabrics and final products account for 44% of Shein's emissions, while transportation of parcels to end consumers accounts for 33% and direct use phase emissions for 20% (Shein, 2025a, p. 52). Shein does not provide a breakdown of emission per tier and modes of transportation. Doing so would provide more transparency to independent observers, and allow for a better understanding of key transition measures the company should take to align its business with a Paris-compatible trajectory for the fashion sector. In its sustainability report, Shein provides little and shallow information on its planned emission reduction measures, which gives the impression that the e-retailer is not committed to credible climate action.

Switching to renewable energy in the supply chain, alongside electrifying production processes, are key transition measures for fashion retailers, but Shein does not present targets or a clear transition plan for either of these. The e-retailer mentions its engagement with suppliers including providing cash incentives for suppliers to encourage adoption of on-site solar capacity (Shein, 2025a, p. 50). Shein reports that suppliers consumed 53,383 MWh solar energy from on-site installations in 2024 but without providing more contextual information. Given that Shein consumed close to 250,000 MWh in its own operations (Shein, 2025a) and total electricity consumption in the supply chain must vastly exceed this, we presume that an insignificant share of suppliers' electricity use stems from on-site solar PV. Due to the lack of detail on pursued measures, we were unable to assess their potential impact for emission reductions in the supply chain.

Shein's business model is fundamentally misaligned with the necessary transitions that need to happen in the fashion sector. The company's measures aimed at reducing overproduction and shifting to a more sustainable business model are unlikely to have a significant impact. Shein's business model is built on the constant release of new items at very low prices. We identified no commitment move away from the *ultra-fast fashion* business model. Shein refers to several measures aimed at reducing waste and improving circularity. For instance, Shein operates on an 'on-demand' model: the company initially produces 100–200 pieces of a particular item and scales up production based on consumer interest (Shein, 2025a, p. 64). To Shein, this minimises waste and helps to reduce the company's environmental footprint. Shein piloted take-back programmes in the US, UK and Germany and has plans for a permanent take-back programme in Europe (Shein, 2024, p. 45, 2025a, p. 95). The company also set up a consumer-to-consumer resale platform. While these initiatives might prolong the lifetime of some Shein products, they can only have a limited impact alongside an ultra-fast fashion business model focused on low prices and huge production volumes.

Shein is developing a new polyester recycling process, which will use a range of polyester feedstocks, including textile waste and PET bottles (Shein, 2025d). Polyester, which is made out of petroleum, accounts for over 80% of Shein's fibre portfolio (Shein, 2025a, p. 55). Shein is committed to using 30% of 'recycled' polyester by 2030, up from 6% in 2023 and 7% in 2024 (Shein, 2024, p. 36, 2025a, p. 55). Textile-to-textile recycling accounted for 12% of all 'recycled' polyester used in Shein-branded products in 2024 (Shein, 2025a, p. 55,70). It is, however, not clear what share of the 2030 target will come from textile-to-textile recycling and what share from recycling PET bottles. Most 'recycled polyester' in the fashion sector comes from PET bottles from the beverage industry (Cobbing and Vicaire, 2017; Majumdar *et al.*, 2020). 'Downcycled' polyester would therefore be a more appropriate term, and it is not a credible measure to lower the fashion industry's climate impact. However, recycling post-consumer textiles could have a positive impact on Shein's GHG emissions footprint.

Emissions from transport and logistics account for a third of Shein's reported emissions. The vast majority of Shein's production takes place in China, while the US, the UK and Germany are the main consumer markets (Reid, 2024). Whereas some fast fashion companies ship most of their products to regional distribution centres by ocean, Shein sends individual parcels directly to consumers by air cargo. The company is estimated to ship around 5,000 tonnes per day, which is equivalent to approximately fifty full cargo aircraft (McLymore *et al.*, 2024). Shein has contracted suppliers in Türkiye and Brazil, in addition to suppliers in China, to bring manufacturing processes closer to consumers (Shein, 2024, p. 32, 2025a, p. 4), but the emissions reductions from this measure remain unclear. Although Shein reports it is optimising its global logistics network to promote greater use of land, sea and multimodal routes (Shein, 2025a, p. 51), we did not identify a clear commitment to shift from aviation to maritime, rail and land.

6 Automotive manufacturers

6.1 Sector highlights

This section presents a selection of key insights from the detailed analysis of the climate strategies of five major automobile companies: **Ford**, **General Motors**, **Stellantis**, **Toyota** and **Volkswagen** *(see Section 6.2 for detailed company case studies)*. For this analysis, we focus on companies' GHG emission reduction targets and the key transitions necessary for achieving deep emission reductions in the automotive sector.

We evaluate automotive manufacturers' transition targets based on the sector-specific transition framework set out in *Figure 6.1*. Since the majority of this sector's emissions footprint derives from the use of sold vehicles (so-called downstream scope 3 category 11 emissions), we identify **the phase-out of internal combustion engine (ICE) light-duty vehicles (LDVs)** and **heavy-duty vehicles (HDVs)** as key transitions for the sector (NewClimate Institute, 2025b). The **procurement of near-zero emissions steel and near-zero emissions aluminium** are also important measures to reduce upstream emissions. As internal combustion engines (ICEs) are phased out, **the efficiency of battery electric vehicles (BEVs)** and **low-carbon production of batteries** will become key measures to address new emissions sources.

We find that the companies assessed – the five largest incumbent manufacturers of light-duty vehicles – are making inadequate progress in accelerating the long-overdue transition to electric mobility.

- The 2030 emission reduction targets of the companies assessed remain critically insufficient. With one notable exception in Stellantis, we find little to no progress in improving the ambition of these targets despite the urgent need for decarbonisation in the passenger transport sector.
- Beyond 2030, four out of five automakers' longer-term carbon neutrality and net-zero pledges lack integrity due to the absence of concrete emission reduction commitments substantiating these pledges and an overall lack of specificity.
- On their key sectoral transition, four out of five automotive companies have only made insufficient commitments to phase out internal combustion engines. Existing commitments remain vague and fall short of aligning with 1.5°C-compatible pathways, despite the urgent need to transition their business models towards electric vehicles.
- Progress in increasing the shares of battery electric vehicle sales over the past five years has been mixed among the five manufacturers, casting doubt on their ability to meet their 2030 sales targets – let alone achieve sales shares in line with a 1.5°C-compatible pathway.
- Apart from some commitments to purchase near-zero steel and aluminium, other key transitions – such as reducing emissions from battery production and improving electric vehicle efficiency – remain mostly neglected by companies and standard setters.

Companies, standards setters and regulators alike need to urgently improve their approach to setting credible climate strategies for automakers, putting a spotlight on key sector transitions and creating incentives for promising action.

- Automakers should set transition-specific alignment targets for the phase-out of internal combustion engines and other key transitions such as the procurement of near-zero steel and aluminium. These targets are metrics that directly reflect a company's progress on critical decarbonisation milestones within its sector and can meaningfully guide its climate strategy alongside substantiated emission reduction targets for 2030 and beyond.
- Major standard setters like the Science Based Targets initiative (SBTi), crucial in guiding corporate climate strategies, have a critical opportunity to further develop their accounting and target setting approaches to guide automakers more effectively along the sector's key transitions. For example, the SBTi's latest draft standard for the automobile sector – released for public consultation in June 2025 – already builds around geographically differentiated sales targets for low-emission vehicles. The draft could go beyond introducing this single transition-specific alignment target by piloting similar targets for other key transitions. This could enhance the integrity of automakers' target setting and address existing issues with current target validations.
- With a long history of scattered and inconclusive regulations across jurisdictions, regulators need to double down on reliable, science-informed and comprehensive regulation to incentivise the largest incumbent manufacturers to effectively transition their business models, foster innovation of incumbents and new entrants alike, and guide a holistic shift towards low-emission mobility. For this purpose, they can lean on emerging good practice from automakers and standard setters alike, for example on science-aligned phase-out commitments for internal combustion engines.

Box 6.1 – Terminology and abbreviations in the Corporate Climate Responsibility Monitor 2025 automotive manufacturers sector deep dive

Our analysis of automobile manufacturers' climate strategies uses various sector-specific terms and abbreviations listed below. For consistency with our previous analysis, we continue to use the term **zero-emission vehicles (ZEV)** to refer to vehicles that are capable 'to operate without emitting tailpipe emissions of any air pollutant (or precursor pollutant) or greenhouse gas emissions from the onboard source of power' (SBTi, 2025a, p. 50), such as battery-electric vehicles (BEV) and fuel cell electric vehicles (FCEV).

Most recently, the Science Based Targets initiative's draft standard for the automotive sector, which was launched for public consultation in June 2025, proposed moving away from using the term ZEV as used in its previous guidance. Instead it favours the term **low-emission vehicles (LEVs)** which are defined as vehicles that meet 'a minimum life-cycle emission intensity (in g CO_2e/km) reduction of 65% with respect to an Internal Combustion Engine Vehicle (ICEV) of the same type using gasoline, diesel or natural gas fuels of fossil origin' (SBTi, 2025a, p. 49).

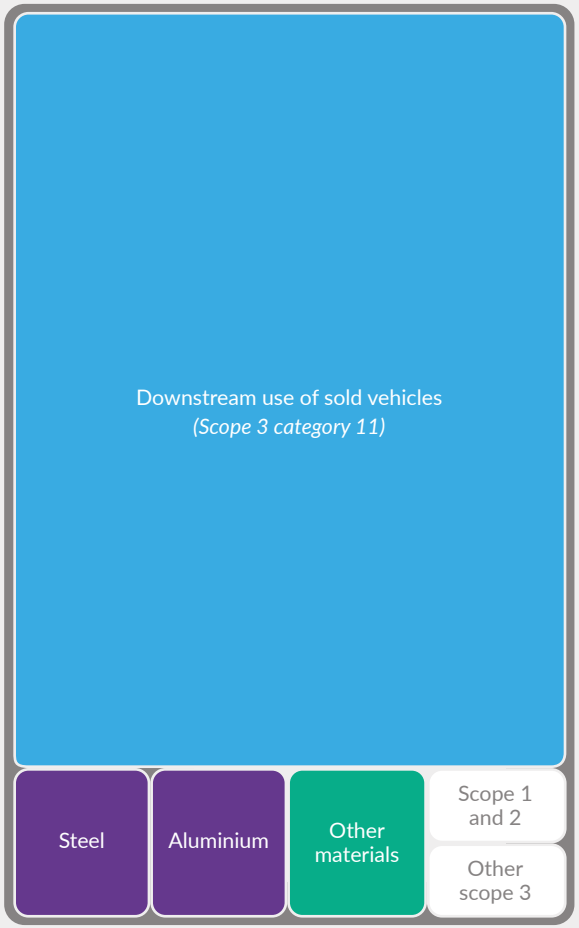
Our decision to continue using the term ZEV at this stage is no statement on the validity and suitability of the LEV terminology and our use of terminology may evolve following the public consultation.

BEV	Battery Electric Vehicle
EV	Electric Vehicle
FCEV	Fuel Cell Electric Vehicle
HDV	Heavy-Duty Vehicle
ICE	Internal Combustion Engine
LDV	Light-Duty Vehicle
LEV	Low-Emission Vehicle
ZEV	Zero-Emission Vehicle

Figure 6.1: **Key transition framework for an automotive company** (NewClimate Institute, 2025b)

GHG EMISSIONS FOOTPRINT

Indicative distribution of emission sources for average vehicle manufacturer



5 KEY TRANSITIONS

Most relevant transitions to address major emission sources

1. **Phase-out of internal combustion engine light-duty vehicles** *(Scope 3: Category 11)*
2. **Phase-out of internal combustion engine heavy-duty vehicles** *(Scope 3: Category 11)*

The use of sold vehicles (downstream scope 3 category 11 emissions) usually accounts for around 80–90% of the emission footprint of a conventional vehicle manufacturer. The phase-out of internal combustion engines (ICEs) while simultaneously transitioning to electric and low-emission vehicles is the most important decarbonisation lever. Electric vehicles powered by decarbonised electricity have a large potential to reduce land-based transport greenhouse gas emissions on a life cycle basis (IPCC 2022).

3. **Efficiency of electric vehicles** *(Scope 3: Category 11)*

Downstream electricity consumption will become a major emissions source as electric vehicles are phased in. Efficiency targets can influence the size and types of electric vehicles being produced (Agora Verkehrswende, 2019).

4. **Procurement of near-zero emission steel** *(Scope 3: Category 1)*
5. **Procurement of near-zero emission aluminium** *(Scope 3: Category 1)*

The sourcing of low-carbon steel, aluminium and other upstream materials is highly relevant for the decarbonisation of an automotive manufacturer's value chain as the production of these materials is currently an emissions-intensive process (W. Liu, Hao, and Kong 2023; WEF 2020, 15).

6. **Low-carbon batteries** *(Scope 3: Category 1)*

The manufacture of electric-vehicle batteries can account for up to 60% of the embedded greenhouse-gas emissions in electric vehicle production (Linder *et al.* 2023, 2). Reducing emissions during the battery manufacturing stage is essential to fully harness the emissions mitigation potential of electric vehicles (Shukla *et al.* 2022, 98).

→ *See Evolution of corporate climate targets (NewClimate Institute, 2025) for further details on this sector transition framework and potential alignment target indicators.*

Figure 6.2: Summary of CCRM 2025 ratings for automotive manufacturers

	FORD	GM	STELLANTIS	TOYOTA	VOLKSWAGEN
OVERALL CLIMATE STRATEGY INTEGRITY	Poor	Poor	Moderate	Very poor	Poor
Tracking and disclosure of emissions	◐	◐	◐	◐	◐
GHG emission reduction targets	○	○	◐	○	◔
Key transition targets	◐	◐	◐	○	◔
Phase-out of internal combustion engine light-duty vehicles	◔	◐	◐	○	◔
Phase-out of internal combustion engine heavy-duty vehicles	N/A	N/A	N/A	○	◐
Efficiency of electric vehicles	○	○	○	○	○
Procurement of near-zero emission steel	◐	◐	○	○	◔
Procurement of near-zero emission aluminium	◐	◐	○	○	○
Low-carbon batteries	○	○	○	○	◔
Climate contributions and durable CDR	○	○	◔	○	○

Integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Integrity refers to the quality and credibility of the approach.

? *Integrity assessment is unclear.*

→ *See Annex 6B and Annex 6C for further details on our integrity assessments for companies' targets and key transitions.*

Automotive companies' greenhouse gas emission reduction targets lack ambition and specificity, with few notable exceptions.

Halfway into the critical decade for action, automakers' near-term emission reduction targets for 2030 remain critically insufficient, with only marginal progress made to improve them.

The companies assessed – the five largest incumbent manufacturers of light-duty vehicles – lack the ambition needed to align with a 1.5°C pathway by 2030. Four out of the five manufacturers either have no meaningful 2030 emissions targets (**GM**, **Ford**) or have set targets that fall short of the ambition required (**Volkswagen**, **Toyota**) as outlined in *Table 6.1*. This conclusion is aligned with the findings of other assessments, such as the Transition Pathway Initiative *(see Annex 6A)*.

Among the companies assessed, only **Stellantis** has committed to an absolute emissions reduction of 30% for all emissions by 2030 compared to 2021 levels (Stellantis, 2024, p. 178). While this target, announced in 2024, is not fully aligned with 1.5°C-compatible pathways, it marks a step towards substantiating previously announced scope-specific and intensity targets for 2030. Stellantis – alongside other manufacturers in the field like BMW (BMW, 2025, p. 121, not assessed in-depth in this analysis) – demonstrates that it is possible for automakers to set more transparent and ambitious *absolute* reduction targets for 2030.

All companies assessed show limited progress in reducing emissions over the last five years, with Stellantis as the only notable exception, claiming to have reduced around 20% of its emissions compared to 2021 levels and thus likely to be on track to meet its 2030 target (Stellantis, 2025, p. 43). Given the urgent global decarbonisation needs of the passenger transport sector and the widespread availability of mature technologies, such as EVs eliminating tailpipe emissions, continued emissions growth within the sector is especially concerning.

Automakers' long-term pledges for carbon neutrality and net zero remain critically insufficient due to the absence of specific emission reduction commitments.

All major automobile manufacturers have announced longer-term carbon neutrality or net-zero pledges, **Volkswagen** (net zero by 2050), **Ford** and **Toyota** (carbon neutral by 2050), **GM** (carbon neutral by 2040) and **Stellantis** (net carbon neutrality by 2038). However, none of the companies provide long term *absolute* emission reduction commitments to substantiate these targets *(see Table 6.1)*. A lack of specific emission reduction targets undermines carbon neutrality or net zero pledges as companies may heavily rely on offsetting to meet these longer-term pledges instead of implementing deep emission reductions. This requirement for target credibility is laid out in recent guidance and voluntary standards (ISO, 2022; UN HLEG, 2022; SBTi, 2024c; Net Zero Tracker, 2025). Companies in other sectors have already begun to better substantiate their net-zero pledges in line with this guidance *(see Chapter 1.1 in NewClimate Institute, 2024)*.

Notably, **Volkswagen** indicated for the first time in 2025 that it intends to rely on less than 10% offsetting to reach its carbon neutrality target (Volkswagen, 2025, p. 297), six years after the pledge's initial announcement in 2019. While this improves the transparency on its meaning, the emissions reductions required to meet this target remain unquantifiable, as Volkswagen has yet to disclose the base year for its target. Similarly, **GM** and **Ford** have not set quantifiable emissions reduction goals alongside their carbon neutrality pledges despite their commitments to phase out ICE vehicles. If fully implemented, this move would contribute significantly to achieving their climate goals *(see further explanations on this key transition below)*.

As with its 2030 target, **Stellantis** stands out among the five companies by supporting its 2038 carbon net neutrality target with a target to reduce emission intensity across the entire value chain by at least 90%, compared to 2021 levels (Stellantis, 2025, p. 47). Although this is an intensity target, not an absolute emissions reduction target, we rate this target as having 'reasonable' integrity, as it would address a large share of Stellantis emissions and thereby align with 1.5°C-compatible decarbonisation benchmarks. This target serves as an example for other automakers on how to set ambitious medium- and long-term emissions targets. However, Stellantis could further strengthen it by publishing a strategy to support durable carbon dioxide removal (CDR) and by committing to a global phase-out of ICE vehicles – complementing its existing regional pledges for the European Union and the United States.

Table 6.1: GHG emission reduction targets of automotive manufacturers

	Ford	General Motors	Stellantis	Toyota	Volkswagen
Overall integrity of GHG targets	**Very poor** Insufficient targets for all time frames.	**Very poor** Insufficient targets for all time frames.	**Moderate** Targets partially aligned with 1.5°C	**Very poor** Insufficient targets for all time frames.	**Poor** Insufficient targets for all time frames.
Near-term targets	2023 target to reduce scope 1 by 18% below 2017. No scope 3 target.	Regional scope 2 target 100% renewable electricity for US sites by the end of 2025.	30% absolute reduction by 2030 (below 2021) for all scopes. Falls slightly short of 1.5°C	2030 target to reduce intensity of LDVs by 33.3% and HDVs by 11.6% below 2019. Not aligned with 1.5°C.	2030 target to reduce LDV emissions intensity by 30% below 2018. No target for upstream scope 3 emissions.
Medium-term targets	2035 target to reduce scope 3 category 11 by 50% below 2019. Not aligned with 1.5°C	2040 carbon neutrality target is not substantiated with emission reduction targets. 2035 target to reduce scope 3 category 11 by 51% per vehicle km vs 2018. Not aligned with 1.5°C	>90% intensity reduction across all scopes by 2038 (below 2021). Aligned with 1.5°C.	2035 target to reduce LDV emissions intensity targets by 50% vs 2019. Not aligned with 1.5°C.	2040 target to reduce scope 1 and 2 emissions by 90% below 2018 and reach carbon neutrality. Not aligned with 1.5°C.
Long-term targets	2050 carbon neutrality pledge. Not substantiated with emission reduction.	No target identified.	No target identified.	2050 carbon neutrality pledge. Not substantiated with emission reduction.	Unclear 2050 carbon neutrality pledge. Supported with a commitment to keep offsetting <10%.
Changes from previous assessments in 2023 and 2024	*Not previously assessed.*		= Rated moderate in 2024	= Rated very poor in 2024	↗ Rated very poor in 2024
What are actual emission trends in recent years?	12% emission increase between 2021 and 2023. Not aligned with 1.5°C.	21% emission increase between 2021 to 2023. Not aligned with 1.5°C.	21% emission reduction between 2021 and 2024. Not yet 1.5°C aligned.	33% emission increase between 2021 and 2023. Not aligned with 1.5°C.	Total emissions change unclear due to missing HDV data. LDV emissions between 2021 and 2024 have fluctuated, without clear downward trend. Not aligned with 1.5°C.

Integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Integrity refers to the quality and credibility of the approach.

? *Integrity assessment is unclear.*

Progress:
- ✔ Right direction, on track
- + Right direction, off track
- ✖ Well off track
- Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

Opaque use-phase emissions accounting creates uncertainty on the assumptions underpinning vehicles' use-phase emissions and underscores the case for transition-specific targets.

Emissions from the use of light-duty vehicles, classified under scope 3 category 11, represent by far the largest share of value chain emissions *(see Figure 6.1)*, accounting for up to 90% for some manufacturers. Yet, the lack of consistent reporting on how these emissions are calculated decreases our ability to compare their assumptions.

For example, while **Toyota** cites SBTi guidance and the IEA Mobility Model as the basis for its scope 3 emissions calculations, it does not publicly disclose key input data, such as annual driving distance or average well-to-wheel (WtW) emissions intensity across its vehicle portfolio (Toyota, 2024, p. 50). **Volkswagen** discloses that is assumes a lifetime mileage of 200,000km for LDVs in its scope 3 calculation (Volkswagen, 2025, p. 275). However, it does not specify the emissions factors used for fuel and electricity, limiting the ability to independently evaluate its emissions estimates. **GM** mentions that it uses 'the well-to-wheel method (from fuel production to vehicle driving) for calculating vehicle intensity, consistent with SBTi's requirements' but to our understanding does not provide further information on what this means in practice (General Motors, 2023b, p. 29). **Ford** discloses that it assumes 241,000 km for LDVs and 298,000 km for HDVs (Ford, 2024b, p. 60). **Stellantis** presents additional information, disclosing differentiated regional mileage assumptions (Stellantis, 2024, p. 210).

The lack of transparency on how companies calculate scope 3 emissions decreases comparability and increases the risk of underreporting (Bonaccorsi, Ferraro and Massuama, 2022; Bonaccorsi, Ferraro and Scott, 2024). Limitations of emissions accounting undermine the credibility of companies' GHG emission reduction targets and highlight the need to adopt clear, transition-specific alignment targets for key sectoral transitions, supported by transparent data and consistent assumptions.

Commitments and progress to transition toward electric mobility fall critically short of the sector's decarbonisation needs

The automotive companies assessed have made only insufficient commitments to phasing out internal combustion engines. Most commitments remain vague and fail to align with 1.5°C-compatible pathways, putting critical near-term emission reductions in the passenger transport sector at risk.

The transition from internal combustion engines to battery electric vehicles is the key transition for incumbent automakers to meaningfully reduce emissions from the use of vehicles *(see Figure 6.1)*. While all automotive manufacturers assessed in this study acknowledge the need for the transition, the transparency, scope and timeline of their commitments vary significantly *(see Figure 6.3)*.

None of the companies assessed currently sets 1.5°C-aligned transition targets for a full phase-out of internal combustion engines. **Stellantis**, headquartered in the Netherlands, remains the only one to commit to a *regional* 1.5°C-aligned target for the European Union by 2030 (Stellantis, 2025, p. 43), a key market that represented around half of its annual sales in 2024. The company has not extended comparable 1.5°C-compatible commitments to the US or globally. The world's two largest automobile manufacturers, **Toyota** and **Volkswagen**, have not committed to any regional or global ICE phase-out targets. However, Volkswagen communicates intended sales shares for BEVs in Europe (70% by 2030), the US and China (both 50% by 2030) (Volkswagen, 2025, p. 239), signalling an intention to transition despite the absence of a full phase-out commitment. In contrast, Toyota lacks any specific commitments beyond meeting legislative requirements (Toyota Europe, 2021, 2023), such as the European Union's 2035 ICE phase-out target.

The two US-headquartered carmakers, **GM** and **Ford**, are the only manufacturers among the assessed to have committed to a global ICE phase-out by 2035 and 2040, respectively. These commitments were made as part of the Accelerating to Zero Coalition in 2021, alongside 12 other manufacturers (A2Z Coalition, 2025, as of May 2025). However, these commitments received little attention in their latest sustainability or annual reports, raising uncertainty about their status and meaning. Ford had already delayed its initial commitment made in 2021 – from achieving 100% ZEV sales globally by 2035 to a revised target of 2040 (Accelerating to Zero Coalition, 2021b; Ford, 2024b, p. 52).

Progress in increasing the shares of battery electric vehicle sales over the past five years has been mixed among the five manufacturers, casting doubt on their ability to meet their 2030 sales targets – let alone achieve sales shares in line with a 1.5°C-compatible pathway.

Among the five manufacturers, **GM**, **Stellantis** and **Volkswagen** have reached annual ZEV sales shares ranging between 6–10% globally or in key markets *(see Figure 6.3)*. Despite this progress to date, uncertainties remain on how these companies will be able to scale their sales of BEVs over the next five years to meet their 2030 commitments – let alone align with 1.5°C-compatible pathways. Nevertheless, it is encouraging that some manufacturers like Stellantis (in December 2024; Stellantis, 2025, p. 43) or Volkswagen (in April 2025; Volkswagen, 2025, p. 239) have recently reconfirmed their 2030 sales targets despite recent geopolitical developments and their impact on global supply chains and trade for the automotive sector as a whole. In contrast, **Ford** and **Toyota** both continue to lag behind, with Toyota recording less than <1% of BEVs in global sales in 2023 (Toyota, 2024, p. 51).

Figure 6.3: Plans to transition away from internal combustion engines (ICEs) in light-duty vehicles' sales

	FORD	GM	STELLANTIS	TOYOTA	VOLKSWAGEN
LIGHT-DUTY VEHICLES' SHARE OF REPORTED EMISSIONS FOOTPRINT *[scope 3 category 11]*	**~86%** (2023)	**~69%** (2023)	**~87%** (2024)	**~66%** (2023)	**~36%** (2024)
EXISTING TRANSITION TARGETS	**EU:** 100% BEV passenger car sales by 2035 (previously by 2030 under A2Z in 2021) **Global:** 100% BEV passenger car sales by 2040 (previously 2035 under A2Z in 2021)	**EU:** 50% BEV passenger car sales in US by 2030, 100% by 2035 **Global:** 100% BEV passenger car sales by 2035	**EU:** 100% BEV passenger car sales by 2030 **Global:** 50% BEV passenger car sales by 2030, 100% by 2038	**EU:** 100% BEV passenger car sales by 2035 No ICE phase-out targets for LDVs in other key markets like the US or Japan.	No global ICE phase-out target. Ambition for electric LDV sales to reach 70% in Europe by 2030 and at least 50% in China and the US.
TRANSITION TARGETS' INTEGRITY	Poor	Moderate	Moderate	Very poor	Poor
PROGRESS ACHIEVED GLOBALLY AND REGIONALLY *[self-reported]*	✖ Well off track. 2023 ZEV sales remain at 3% and not increasing compared to 2022.	+ Right direction, but off track. 2023 ZEV sales at 10% up from 9% in 2022.	+ Right direction, but off track. 2024 ZEV sales at 6%. BEV sales at 11% in Europe and LEV sales at 11% in the US.	⮌ Critically off track. 2023 LDV BEV sales <1% of total global sales.	+ Right direction, but off track. 2024 BEV sales at 8% globally and not increasing compared to 2023.

LEADING THE CHARGE: STELLANTIS AND GM

Stellantis sets a *regional* 1.5°C-aligned target for 100% BEV sales in the European Union by 2030
Stellantis is the only company assessed that sets a regional target to sell only battery electric passenger cars in the European Union by 2030 (Stellantis, 2025, p. 43). This target, covering a market that accounts for roughly half of its annual sales, fully aligns with 1.5°C-compatible pathways and milestones identified in the literature (CAT, 2020, p. 27; UNFCCC, 2021, pp. 10–11; Teske *et al.*, 2022, p. 4; Boehm *et al.*, 2023, pp. 77–78; IEA, 2023b, pp. 88, 93). For the US, its other key market representing around a quarter of its annual sales, Stellantis commits to sell 50% BEV passenger cars and light-duty trucks by 2030 while reaching 100% only by 2038 (Stellantis, 2025, p. 43). This commitment falls short of region-specific milestones calling for 95-100% BEV sales by 2030. We could not identify updated information on how Stellantis has been progressing on its aspirational targets for Brazil, India, and China, as outlined in its 2022 strategic blueprint (Stellantis, 2022).

General Motors previously announced an ambitious global commitment for 100% BEV sales by 2035 in 2021, but provides limited updates
In 2021, GM pledged to achieve 100% battery electric vehicle sales globally by 2035 (Accelerating to Zero Coalition, 2021a). This pledge, if implemented, represents a significant effort to stay below the Paris Agreement's 1.5°C temperature limit (CAT, 2020, p. 27; UNFCCC, 2021, pp. 10–11; Teske *et al.*, 2022, p. 4; Boehm *et al.*, 2023, pp. 77–78; IEA, 2023b, pp. 88, 93), However, GM's latest sustainability report of 2023 makes no reference to this global EV sales target (General Motors, 2023a, p. 43). GM has made progress in electrification, with ZEV sales rising to 10% in 2023, up from 9% in 2022 (General Motors, 2023b, p. 28). However, the pace of electrification must accelerate significantly to meet its 2035 target and align with a 1.5°C pathway.

Integrity : 5-point rating scale:
High | Reasonable | Moderate | Poor | Very poor
Integrity refers to the quality and credibility of the approach.
? *Integrity assessment is unclear.*

Progress:
✔ Right direction, on track
+ Right direction, off track
✖ Well off track
⮌ Wrong direction, critically off track
? No progress identified or insufficient data
? No benchmarking possible.

BEV – Battery electric vehicle; EV –Electric vehicle, ICE – Internal combustion engine, LDV – Light-duty vehicle (e.g., passenger cars, small vans), LEV – Low-emission vehicle; ZEV – Zero-emission vehicle

BOX 6.2 – Transition towards ZEVs for heavy-duty vehicle manufacturers

	TOYOTA	VOLKSWAGEN
HEAVY DUTY VEHICLES' SHARE OF REPORTED EMISSIONS FOOTPRINT *[scope 3 category 11]*	**~7%** (2023)	**~43%** (2023)
EXISTING TRANSITION TARGETS	No ICE phase-out target for HDVs globally or in key markets	No global target identified. **EU27+3, US, and Canada** ~50% ZEV by 2030 aligned with regional 1.5°C benchmarks.
TRANSITION TARGET INTEGRITY	◌ Very poor	◐ Moderate
PROGRESS ACHIEVED GLOBALLY *[self-reported]*	? No progress data for HDV electrification identified.	↩ Critically off track. In 2024 battery electric HDV sales made up only 0.5% of total Traton sales (excl. MAN TGE) decreasing from 0.6% in the year prior.

Integrity : 5-point rating scale:

● High ◕ Reasonable ◐ Moderate ◔ Poor ◌ Very poor

Integrity refers to the quality and credibility of the approach.

? *Integrity assessment is unclear.*

Progress:
- ✔ Right direction, on track
- \+ Right direction, off track
- ✖ Well off track
- ↩ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

Two out of the five companies assessed, **Toyota** and **Volkswagen**, produce heavy-duty vehicles (HDVs) alongside light-duty vehicles. Compared to our previous analysis (NewClimate Institute, 2024), **Volkswagen** has improved the transparency around its HDV-related emissions disclosing its scope 3 use-phase emissions for HDVs for the first time for the year 2024 (Volkswagen, 2025, p. 292), coinciding with reporting under the Corporate Sustainability Reporting Directive (CSRD). **Toyota** includes its subsidiary Hino in its emissions reporting *(Toyota, 2024, see footnote 4 of Table D)*.

Both companies show gaps in their HDV electrification strategies. **Toyota** has yet to communicate any targets for phasing out ICEs in its HDV segment, further weakening the credibility and comprehensiveness of its overall climate strategy across all vehicle types. **Volkswagen** HDV subsidiary Traton, aims for 50% of all new HDV sales to be ZEV by 2030 in the EU27+3, the US, and Canada (Traton, 2024, p. 117). This commitment would align with the 1.5°C-compatible milestones for downstream scope 3 emissions of HDV manufacturers (UNFCCC, 2021, pp. 10–11; Mission Possible Partnership, 2022, p. 40; Boehm *et al.*, 2023, pp. 77–78; IEA, 2023b, pp. 88, 93). Accordingly, global 1.5°C-compatible shares for heavy-duty trucks should reach 30–37% of BEVs and fuel cell electric vehicles (FCEVs) by 2030. However, the lack of clarity on how Traton's target is being implemented across its multiple brands raises concerns about its robustness *(see Volkswagen analysis below)*.

Regarding progress on increasing the sales share of ZEVs, **Toyota** presents no data for assessment, while **Traton**'s progress remains negligible at 0.5% of total sales in 2024. This lack of progress underscores the urgent need for concrete action on HDV electrification to align with a 1.5°C trajectory.

Apart from initial steps on purchasing near-zero steel and aluminium, companies and standards setters mostly neglect other key transitions

Apart from phasing out ICEs, achieving full decarbonisation of the automotive manufacturing sector requires progress across multiple key transitions such as the **procurement of near-zero emissions steel and aluminium, low-carbon batteries** and **improving BEV efficiency** *(see key transition framework in Figure 6.1)*.

Our findings indicate that automotive companies are not sufficiently addressing these transitions *(see Table 6.2)*. Furthermore, there is currently no widely adopted framework or guidance against which companies are developing robust strategies in these areas.

While some automotive manufacturers have begun targeting the procurement of near-zero steel and aluminium, there is a lack of clear and transparent planning across the companies assessed.

Of the five manufacturers, only **GM** and **Ford** have set specific targets to procure 10% near-zero steel and aluminium by 2030 as part of their participation in the First Mover Coalition (First Movers Coalition, 2025b), alongside three other automobile manufacturers for steel (Mahindra, Scania, Volvo Group) and two for aluminium (Volvo Cars, Volvo Group). These commitments are likely in line with the International Energy Agency's Net Zero pathway for decarbonisation of the steel and aluminium sectors. Accordingly, the sectors should reach at least 8% near-zero steel by 2030 and 7% near-zero aluminium to be aligned with 1.5°C (IEA, 2023b, p. 95). These commitments signal a commendable intention to address the industry's second-largest source of emissions, if they are implemented.

Alongside their 2030 commitments, both **Ford** and **GM** have entered non-binding Memorandums of Understanding (MoU) with steel makers to purchase near-zero steel (Ford, 2022, 2024b; General Motors, 2023a). **Volkswagen** has entered similar MoUs despite not publicly committing to any specific procurement target for near-zero steel by 2030 or thereafter (Volkswagen, 2023b, 2024a, 2024b). While these forward-looking purchase agreements set leading examples for other companies, our analysis of the latest sustainability reports reveals a lack of transparency regarding progress updates or any further implementation steps. To date, we could not identify any MoUs related to near-zero aluminium, raising concerns about whether this critical transition is being meaningfully pursued. **Ford** announced a partnership with Rio Tinto to procure low carbon aluminium; however, neither company has disclosed the current status of this partnership (Rio Tinto, 2022).

Low-carbon battery procurement and in-house production remain largely overlooked in manufacturers' decarbonisation strategies to date.

None of the assessed manufacturers communicates specific targets or comprehensive measures to reduce the carbon footprint of batteries – whether produced in-house or procured from suppliers. Only **Volkswagen** communicates some early actions to address these emissions. The company directly targets emissions from battery production through its subsidiary PowerCo and plans to set binding CO_2 targets for battery suppliers (Volkswagen, 2025, pp. 281–282). While these measures set an important precedent, the lack of detailed information hinders an independent assessment of their ambition and implementation status.

Given that battery manufacturing can account for up to 60% of emissions from EV production (Linder *et al.*, 2023, p. 2), there is an urgent need to proactively and systematically lower the CO_2 footprint of batteries alongside the accelerated rollout of EVs towards 2030 and beyond. Regulations in selected jurisdictions like the European Union address the climate impact of battery production by mandating the need for transparency and sustainability standards (European Union, 2023). This underlines the importance for automakers to take this transition seriously and actively reduce battery-related emissions. Greater transparency on the current climate impact of battery production is essential.

The efficiency of electric vehicles sold is a key transition absent from manufacturer strategies.

None of the assessed manufacturers have communicated specific targets or plans to increase BEV efficiency. Such targets, for example, can guide companies' innovation to optimise the technical efficiency of electric vehicles and measures to influence consumer preferences through marketing strategies and incentives on the benefits of smaller, efficient and cheaper vehicles *(see Chapter 5.3 in NewClimate Institute, 2025b)*. For these reasons, climate strategies should include specific targets and increasing transparency around the energy consumption, size and weight of EV models for stakeholders to understand and compare efficiency performance across manufacturers.

Definitions of key transitions and related terminologies remain inconsistent across standards and climate strategies, potentially increasing the risk of misleading claims or loopholes.

We observe a lack of consistent terminology across the key transitions examined in this report, increasing the risk that companies' statements are often ambiguous and potentially misleading. For example, steel procurement is at times described as either 'lower-emissions', 'green' or 'near-zero', often without clear definitions and terms used interchangeably, leaving room for different interpretations. Similarly, it is not clear whether corporate climate strategies use terms like 'electric vehicles', 'battery-electric vehicles' and 'low-emissions vehicles' consistently with the same definition *(see Box 6.1 for definitions in this report)*. This ambiguity undermines the comparability of transitions across different companies and might obscure the credibility of company claims. To support integrity and ensure alignment of transitions with science-based benchmarks, standard setters should introduce clearer definitions *(see Recommendations below)*.

Box 6.3 – The Science Based Targets initiative's (SBTi) automotive sector net-zero standard consultation draft released for public consultation in June 2025

In June 2025, the SBTi released its Draft Automotive Sector Net-Zero Standard for public consultation (SBTi, 2025a), which is set to replace the former Land Transport Guidance of 2024 (SBTi, 2024b). Four of the five automobile companies in our analysis still have validated 2030 targets under the initial first methodology of 2018, although SBTi paused its use in 2022 due to its 1.5°C-incompatibility (SBTi, 2022). This points to the urgency for an updated standard. The new draft sector standard aligns with SBTi's Draft Corporate Net-Zero Standard v2.0 release for public consultation in March 2025 and introduces sector-specific pathways, criteria and calculation rules for automakers and auto parts manufacturers (SBTi, 2025a, p. 6).

Summary of the Draft Automotive Standard for automobile manufacturers

The new draft sector standard requires automakers to set three distinct types of targets:

- An **aggregated emission intensity target** covering emissions from all direct and relevant indirect emissions. This includes scope 1, 2, scope 3 category 1 (emissions from purchased goods and services), category 11 (well-to-wheel emissions) and category 12 (emissions from end-of-life treatment of sold products). Benchmarks are regionally differentiated and based on IEA scenarios (SBTi, 2025a, pp. 18, 28).
- A target to **increase the sales share of low-emission vehicles**. The newly introduced pathways mandate a 100% LEV phase-in by 2030 for advanced economies, by 2040 for China, and by 2040 globally (SBTi, 2025a, pp. 74–76). The choice of regional benchmark depends on the location of sales. The SBTi previously recommended a phase-out of new ICE cars and vans by 2035 in leading markets and by 2040 globally (SBTi, 2024b, pp. 10, 16).
- An intensity target to **reduce emissions from purchased goods and services** (scope 3 category 1). Car manufacturers will have to reduce the emission intensity of their purchased steel, aluminium and other purchased materials in line with the pace of the IEA Net Zero Scenario (SBTi, 2025a, p. 83).

The draft standard also uses new terminology: it promotes a transition to low-emission vehicles, defined as having a life-cycle emission intensity at least 65% lower than internal combustion engine vehicles (SBTi, 2025a, pp. 18, 28). The former Land Transport Guidance of 2024 instead previously used zero-emission vehicles (SBTi, 2024b), defined as those with no tailpipe emissions, such as electric vehicles.

The opportunity to pilot sector-specific alignment targets

In line with our recommendations in the CCRM24 (NewClimate Institute, 2024, p. 29), the new draft standard aims to incentivise decarbonisation along the *entire* value chain and puts particular emphasis on emissions from purchased steel and aluminium. Even if the new draft standard does not mention the phase-out of ICE explicitly, its regionally differentiated 100% LEV target requirements align with the latest scientific research (CAT, 2020, p. 27; UNFCCC, 2021, pp. 10–11; Teske *et al.*, 2022, p. 4; Boehm *et al.*, 2023, pp. 77–78; IEA, 2023b, pp. 88, 93). Such a target incentivises companies to accelerate the phase-in of electric vehicles and provides clarity on what constitutes ambitious, 1.5°C-compatible climate action in the sector *(see Chapter 5 in NewClimate Institute, 2025b).*

In this context, we propose that the SBTi **pilots the use of transition-specific alignment targets more comprehensively** as part of its standard revision, not just for the phase-in of LDVs, but also for other key transitions. Instead of the currently proposed intensity target to reduce emissions from purchased goods and services, for example, the SBTi could introduce specific alignment targets for procuring near-zero emissions steel, aluminium and batteries and for improving vehicles' energy efficiency. These targets could complement an overarching emissions reduction target.

In its scope 3 discussion paper, ahead of its Corporate Net Zero Standard revision (SBTi, 2024a), the SBTi had already introduced the concept of transition-specific alignment targets. The technological readiness and pioneering work by initiatives such as the First Movers Coalition on 2030 procurement targets for near-zero steel and aluminium (FMC, 2022b, 2022a) make the automotive sector a particularly well-suited space to introduce more such targets. An alternative to the SBTi's current proposal for automotive companies could thus consist of complementing the newly introduced aggregate emissions intensity target with specific alignment targets for the aforementioned key transitions.

Table 6.2: Integrity of automotive manufacturers' strategies for key transitions *(see section 6.2 for further details in company case studies)*

KEY TRANSITION	FORD	GENERAL MOTORS	STELLANTIS	TOYOTA	VOLKSWAGEN
PHASE-IN OF ZEV LDVS	Poor **EU:** 100% BEV by 2035 (previously by 2030 under A2Z in 2021); **Global:** 100% BEV by 2040 (previously 2035 under A2Z in 2021)	Moderate **US:** 50% BEV by 2030, 100% by 2035; **Global:** 100% BEV by 2035	Moderate **EU:** 100% EVs by 2030; 1.5°C aligned. **US:** 50% by 2020, 100% by 2038; not 1.5°C-aligned.	Very poor No targets in US and Japan. EU targets fall short of 1.5°C	Poor No global target identified. 70% BEV in EU by 2030, 50% in China and US. Targets fall short of 1.5°C
PHASE-IN OF ZEV HDVS	N/A	N/A	N/A	Very poor No target or measures identified.	Moderate No global target identified. EU27+3, US, and Canada ~50% ZEV by 2030 aligned with regional 1.5°C benchmarks.
EFFICIENCY OF BEVS	Very poor No target or measures identified. Partial recognition of its necessity.	Very poor No targets or measures identified.	Very poor No target or measures identified.	Very poor No target or measures identified.	Very poor No target or measures identified.
PROCUREMENT OF NEAR-ZERO STEEL	Moderate 10% by 2030, with non-binding MoUs signed.	Moderate 10% in US, Canada and Mexico by 2030, with non-binding MoUs signed.	Very poor No target or measures identified.	Very poor No target or measures identified.	Poor No group-level target identified, but non-binding MoUs signed. Subsidiary SCANIA targets 10% of low-carbon steel globally by 2030.
PROCUREMENT OF NEAR-ZERO ALUMINIUM	Moderate 10% by 2030.	Moderate 10% in US, Canada and Mexico by 2030.	Very poor No target or measures identified.	Very poor No target or measures identified.	Very poor No target identified. No measures, besides small-scale pilots.
LOW-CARBON BATTERY PROCUREMENT AND PRODUCTION	Very poor No target or measures identified. Partial recognition of its necessity.	Very poor No target or measures identified. Partial recognition of its necessity.	Very poor No target or measures identified	Very poor No target or measures identified. Small measures (battery recycling) mentioned.	Poor No target identified. Some measures to reduce emissions of its battery subsidiary PowerCo and binding supplier targets.

→ *See Annex 6B for further details on our integrity assessments for companies' key transitions.*

Recommendations

Automotive companies should strengthen their commitment to the sector's key transitions – especially the phase-out of internal combustion engines (ICEs) – and improve transparency on key indicators of transition progress. Voluntary standards and regulators play a key role in supporting the transition.

Recommendations for companies

- **Set credible phase-out dates for internal combustion engines:** Companies should set regionally differentiated and transparent phase-out dates for internal combustion engines, including interim targets, for both light-duty vehicles and, if applicable, heavy-duty vehicles. Such targets provide the greatest clarity about a company's climate impact and incentivise companies to accelerate their transition away from internal combustion engines. Companies should also transparently communicate any updates or adjustments to these targets and report annually on progress, such as sales shares of electric vehicles by region and globally.
- **Substantiate emission reduction targets:** Companies should set absolute emission reduction targets for 2030 across the *entire* value chain and substantiate any other scope-specific (intensity) reduction targets companies might have. Automobile manufacturers like **Stellantis** and **BMW** demonstrated early leadership by setting such targets for the first time in 2025 (Stellantis, 2024, p. 178; BMW, 2025, p. 121). Beyond 2030, companies should rethink longer-term net-zero and carbon neutrality targets by setting specific emission reduction targets alongside them and aligning them with 1.5°C-compatible emission pathways for the transport sector, in line with the latest standards and guidelines *(see ISO, 2022; UN HLEG, 2022)*.
- **Plan for procuring near-zero steel and aluminium:** Companies should set credible and transparent targets for procuring near-zero steel and aluminium by 2030 and beyond. In the absence of specific requirements under voluntary standards to date, companies can join initiatives like the First Mover Coalition or SteelZero to guide their commitments. As of June 2025, **Ford**, **GM** and **Volvo Group** have joined the First Mover Coalition's steel commitment (First Movers Coalition, 2025b) while **Volvo Cars** is a signatory of the SteelZero initiative (Climate Group, 2025). Companies should also enter into longer-term near-zero steel offtake and pre-purchase agreements with steel makers or join buyer clubs like the Sustainable Steel Buyers Platform (RMI, 2024). Such agreements send long-term demand signals to steel makers, especially when accompanied by transparent reporting on procurement volumes, intended timelines and overall progress towards achieving their procurement targets.
- **Tackle the emissions footprint of batteries:** Companies should set specific targets and measures to reduce the emission footprint of batteries used in electric vehicles (EVs), representing up to 40–60% of total carbon emissions associated with manufacturing electric vehicles (Linder *et al.*, 2023). These targets and measures are equally important for batteries purchased from external suppliers and those produced in-house.
- **Adopt a holistic transition approach:** Companies, especially incumbent manufacturers, should adopt a holistic transition approach that includes improving the efficiency of their battery electric vehicles and advancing innovative solutions for inclusive and sustainable mobility.

Urgent priorities for ISO, GHG Protocol and SBTi standard development processes

- **Spotlight key transitions:** The limited progress on key transitions in the sector underscores the need for target-setting frameworks, such as the SBTi Corporate Net Zero Standard and the ISO Net Zero standard, to specifically focus and incentivise these transitions. This can be achieved by requiring companies to set transition-specific targets, complementary to emission reduction targets across the value chain. For example, the SBTi's latest draft standard for the automobile sector – released for public consultation in June 2025 – already builds around geographically differentiated sales targets for low-emission vehicles. The draft could go beyond this single transition-specific alignment target by piloting similar targets for other key transitions such as procuring near-zero steel and aluminium. This could enhance the integrity of automakers' target setting and address existing issues with current target validations. This points to the critical opportunity for major standard setters to further develop their accounting and target setting approaches to more effectively guide automakers' climate strategies.
- **Address outdated SBTi validations:** The SBTi currently continues to list outdated validations on its website, which are subsequently and continuously used by companies in their sustainability reporting. In addition, the SBTi still lists 'well-below 2°C' validations for the scope 3 emissions intensity targets for light-duty vehicles from automobile manufacturers such as **Volkswagen**, **Toyota**, **GM**, or **Ford** despite indefinitely pausing this methodology in March 2022 due to its incompatibility with a 1.5°C trajectory (SBTi, 2022). None of these companies have been validated under SBTi Land Transport guidance for automobile manufacturers (SBTi, 2024b), released in October 2024. This new guidance requires a 'phase out of new ICE cars and vans by 2035 in leading markets and by 2040 globally' (SBTi, 2024b, p. 17). Our analysis for Volkswagen and Toyota, for example, shows that neither of them has set ICE phase-out targets in line with these requirements nor the requirements listed in the new draft standard released for public consultation (SBTi, 2025a, pp. 74–76)

Broader issues that require further guidance and regulation for more structural change

With a long history of scattered and inconsistent regulations across jurisdictions, regulators need to double down on reliable, science-informed and comprehensive regulation to incentivise the largest incumbent manufacturers to effectively transition their business models, foster innovation of incumbents and new entrants alike, and guide a holistic shift towards low-emission mobility. For this purpose, they can lean on emerging good practice from automakers and standard setters alike, for example on science-aligned phase-out commitments for internal combustion engines as set out in the following non-exhaustive list.

- **Preserve and further develop existing regulations on the phase-out of internal combustion engines:** Regulators should recognise the long-term advantages of a timely EV transition and set clear and reliable regulatory environment for incumbent and newcomer companies alike. This can be centrally anchored by implementing – and if already in place, maintaining – an ICE phase-out target, such as the EU's 2035 target to reach 100% zero-emission vehicle sales (European Commission, 2025).
- **Expand regulation to include full lifecycle impact:** Regulation should address upstream emissions from purchased products such as steel, aluminium and batteries, and incentivise procurement of near-zero emission products, circularity and recycling throughout vehicle production.
- **Support accessibility of electric mobility:** Targeted policies can ensure affordability and access to EVs by expanding charging infrastructure and maintaining consumer purchase incentives, such as subsidies, to reduce upfront costs. Such policies should be embedded in wider strategies for low-emission, affordable and inclusive transport.
- **Encourage business model innovation and reduce car dependency:** Promote shared mobility schemes and integrated public transport solutions, especially in areas where EV ownership remains less accessible.

6.2 Company analyses

The following pages set out our detailed analyses of **Ford**, **General Motors**, **Stellantis**, **Toyota** and **Volkswagen**.

→ *See the assessment methodology for the Corporate Climate Responsibility Monitor. Guidance and assessment criteria for good practice corporate emission reduction and net-zero targets: Version 5.0 (NewClimate Institute, 2025).*

Our evaluation of the transparency and integrity of companies' climate strategies represents the authors' views and interpretations of publicly available information that is self-reported by the companies assessed. Due to the fragmentation, inconsistency and ambiguity of some of the information provided by the assessed companies, as well as the fact that the authors did not seek to validate the public self-reported information provided by those companies, the authors cannot guarantee the factual accuracy of all information presented in this report. Therefore, neither the authors nor NewClimate Institute makes representations or warranties as to the accuracy or reliability of any information in this report. The authors and NewClimate Institute expressly assume no liability for information used or published by third parties with reference to this report.

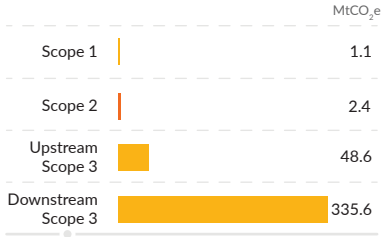
Ford

Ford has pledged to achieve carbon neutrality by 2050 but does not communicate any specific emission reduction target alongside this pledge. The company commits to entirely phase out the sales of internal combustion engine vehicles by 2040. Uncertainty remains on the commitment's status in the absence of interim targets for key markets. Ford also pledges to procure at least 10% near-zero steel and aluminium by 2030. Although this is a notable 1.5°C-compatible ambition, it currently provides limited information on how it will achieve these goals apart from several non-binding agreements with steel producers.

TRANSPARENCY	INTEGRITY
Moderate	Poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Ford discloses emissions for all scopes over the past 3 years, but does not provide historical data for the past 5 years to allow for a full assessment of its emission trends.



MAJOR EMISSION SOURCES

- Use of LDVs
- EV power consumption
- Steel
- Aluminium
- Batteries

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Carbon neutral by 2050*

		TRANSPARENCY	INTEGRITY
Short term	?	*Short-term target does not cover scope 3 emissions. Scope 1&2 reduction of 18% by 2023 vs 2017 is not sufficient to meet 1.5°C pathways.*	
Medium term	?	*Vehicle emissions intensity reduction targets of 50% by 2035 vs 2019 is not aligned with 1.5°C pathways.*	
Longer term	?	*Target to become carbon neutral by 2050 without any specific commitment for deep emission reductions.*	

EMISSION TRENDS

Ford's absolute emissions between 2021 and 2023 increased, a trend misaligned with 1.5°C pathways. A 1.5°C aligned reduction pathway requires emissions reductions in the near term.

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Phase-out of internal combustion engine LDVs	*Target of 40-50% US EV vehicle sales by 2030. Pledge to "work toward" 100% ZEVs in leading markets by 2035 and 100% globally by 2040. These targets fall short of regional and global 1.5°C-aligned benchmarks.*		
Efficiency of BEV's	*No target or measures on the efficiency of BEV's identified. Partial recognition of the tranistion's necessity.*		
Procurement of near-zero emission steel	*Target of 10% near-zero steel purchases likely aligns with 1.5°C-compatible benchmarks. Non-binding MoUs signed with Salzgitter Flachstahl, Tata Steel and ThyssenKrupp Steel in 2022.*		
Procurement of near-zero emission aluminium	*Target of 10% low-carbon aluminium by 2030. The target reflects an ambitious commitment, but measures and procurement volumes remain unclear.*		
Low-carbon batteries	*No target or measures on low-carbon batteries identified. Partial recognition of the tranistion's necessity.*		

TRANSITION PROGRESS

In 2023, BEV sales for LDVs remained at around 3% and did not increase compared to 2022. No data identified on progress on EV efficiency improvements or the procurement of near-zero aluminium or low-emission batteries. No progress data on near-zero steel despite several MoUs.

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions identified. Plant-specific carbon neutrality claims with minimal information provided.*		
Support for durable carbon dioxide removals	*No current support for durable CDR identified, although Ford's 2050 carbon neutrality target explicitly depends on carbon removals.*		

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- ✚ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Source: *Ford (2022, 2024a, 2024b, 2025a).*

Note: As of July 2025, Ford has not released a sustainability report covering the year 2024. Ford previously published its integrated sustainability and financial reports between March and April each year in 2022, 2023, and 2024. The company released its 2024 annual report in February 2025 (Ford, 2025a), which we have considered in this analysis.

Ford

Ford is one of the world's largest manufacturers of motor vehicles. Most of the company's 2024 emissions originate from the use phase of its sold cars and vans (86%) and sourced materials (11%), such as steel. Although Ford has pledged to achieve carbon neutrality by 2050, it has not communicated any specific emission reduction target alongside this pledge. The company commits to entirely phase out the sales of internal combustion engine vehicles by 2040. Uncertainty remains on the commitment's status in the absence of interim targets for key markets. Ford has also pledged to procure at least 10% near-zero steel and aluminium by 2030. Although this is a notable 1.5°C-compatible ambition, the company currently provides limited details on how it will achieve these goals, or data to track its progress.

Ford commits to phasing out internal combustion engines (ICEs) for light-duty vehicles (LDVs) by 2040, although the commitment's status remains unclear in the absence of recent updates. In 2021, the company signed the COP26 Accelerating to Zero declaration, pledging to achieve 100% EV sales in Europe by 2026, 100% BEV sales in Europe by 2030, and to reach 50% and 100% ZEV sales globally by 2030 and 2035 respectively (Accelerating to Zero Coalition, 2021b). However, we could not find a reference to these targets in Ford's most recent sustainability reports (Ford, 2024b, 2024a). Instead, the company now outlines a target to reach 40–50% EV sales in the US by 2030, and states that it will 'work toward' 100% ZEVs in leading markets by 2035 and 100% globally by 2040 (Ford, 2024b, p. 52). Ford also states that its 'strategy to offer all-electric fleet vehicles in Europe by 2035 is unchanged' (Ford, 2024b, p. 33). However, the revised wording around its global target suggests that Ford's original Accelerating to Zero pledge has been shifted from 2035 to 2040. This lack of clarity and consistency creates uncertainty around the status of its regional and global ICE phase-out commitments.

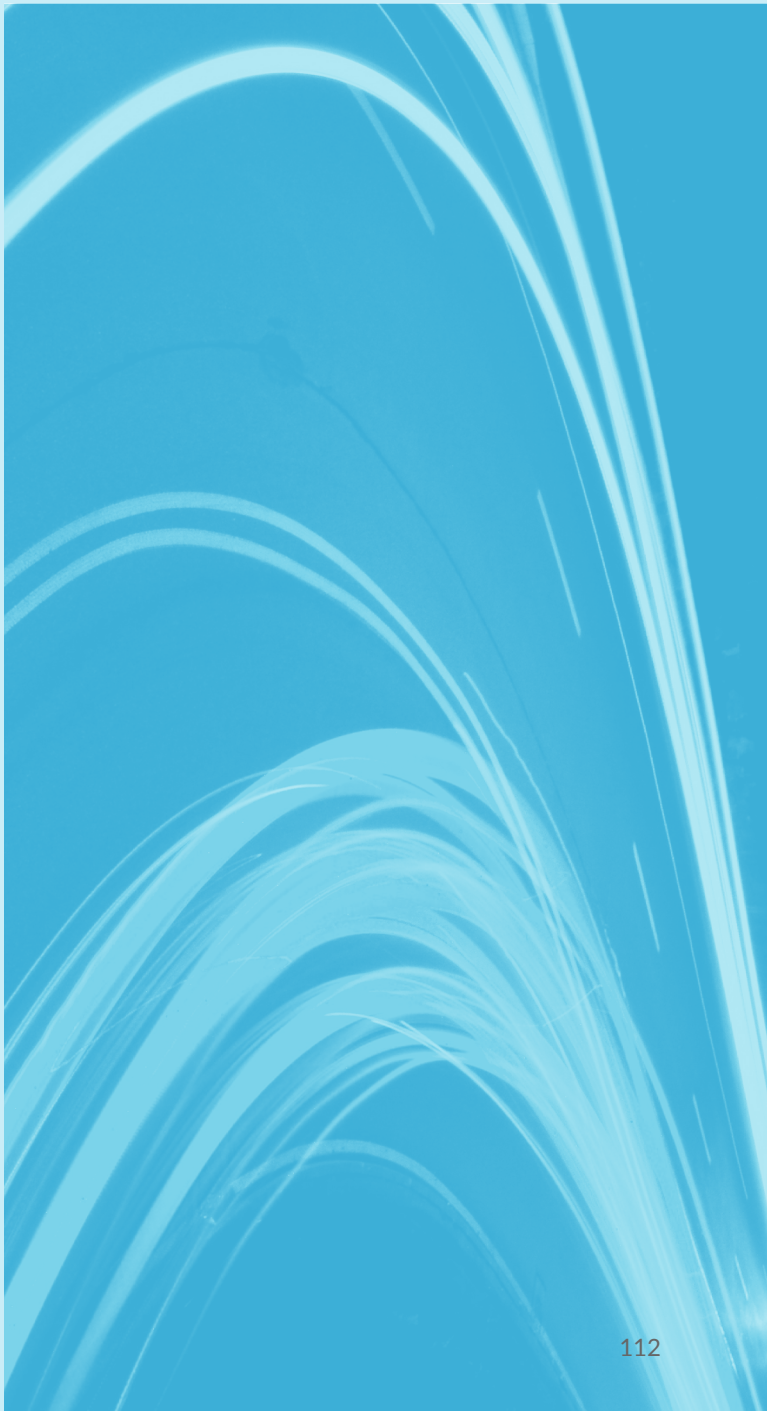
Ford's targets fall short of the electric LDV sales required in its European and US markets, which represent two key markets making up 69% of the company's annual total sales (Ford, 2025a, p. 5). In these markets, EV sales should reach 95–100% by 2030 to stay align with the Paris Agreement's 1.5°C limit (CAT, 2020, p. 27; UNFCCC, 2021, pp. 10–11; Teske *et al.*, 2022, p. 4). Additionally, progress on LDV electrification likely remains off track, with Ford's global retail ZEV sales remaining at 3% of total sales in 2023 (Ford, 2024b, p. 136), and not increasing compared to 2022. Ford's US retail sales increased from 4% in 2023 to 5% in 2024, but its wholesale sales fell from 5% to 3% (Ford, 2025a, p. 5). Achieving both its US 2035 target and global 2040 ZEV target would require Ford to accelerate EV sales significantly within the next decade.

Ford's headline target to achieve carbon neutrality no later than 2050, covering 95% of its emissions along the value chain, remains unsubstantiated without a specific commitment to deep emission reductions. Alongside this global pledge, the company has also set a target to reach carbon neutrality in Europe by 2035 (Ford, 2024b, p. 46). Ford does not disclose any information on the extent to which it will *reduce* its own emissions to meet these two targets, despite requirements for carbon neutrality pledges to include emission reduction targets, as laid out by the UN High-Level Expert Group and the International Organization for Standardization (ISO, 2022; UN HLEG, 2022). Ford states its intention to neutralise what it terms 'hard-to-reduce' GHG emissions in 2050 by 'using carbon removals, i.e., natural or technical strategies that remove CO_2 from the atmosphere and provide secure long-term storage' (Ford, 2024b, p. 47). However, we found no additional information on Ford's strategy to support durable CDR in the near-term nor the extent to which it aims to neutralise emissions as part of its carbon neutrality pledges.

Ford commits to purchasing 10% near-zero steel and aluminium globally by 2030, but neither communicates a detailed plan to reach these goals nor information to enable tracking of its progress. Upstream materials, including aluminium and steel, accounted for almost 11% of Ford's 2023 emissions across the value chain (Ford, 2024b, p. 138). As a member of the First Movers Coalition, Ford has pledged to purchase at least 10% near-zero aluminium and near-zero steel by 2030 (Ford, 2024b, p. 46), signalling a commitment toward near-zero steel and aluminium procurement, in line with the International Energy Agency's Net Zero pathway for decarbonization of the steel sector. Accordingly, the sector should reach at least 8% of near-zero steel and 7% near-zero aluminium by 2030 to be aligned with 1.5°C (IEA, 2023b, p. 95).

Alongside it steel procurement target, Ford signed non-binding Memorandums of Understanding (MoUs) with three European steel suppliers (Ford, 2024b, p. 48), namely Salzgitter, Tata Steel and ThyssenKrupp Steel in 2022 (Ford, 2022). We could not identify whether these agreements all specifically address the procurement of near-zero steel as defined by the First Mover Coalition (FMC, 2024). Ford also announced a partnership with Rio Tinto to procure 'low-carbon' aluminium (Rio Tinto, 2022). Overall, Ford does not present data on the status of procurement of near-zero steel and aluminium as of 2025, hindering an independent assessment of its progress. A shareholder proposal of 2025 also emphasised this lack of available information, asking the company to produce forward-looking disclosures on how it intends to meet its commitment to purchase at least 10% near-zero carbon steel by 2030 (Ford, 2025b, p. 93). In a proxy statement prior to its 2025 Annual General Meeting, Ford's Board of Directors asked investors to vote against this proposal (Ford, 2025b, p. 93). The proposal received 6.6% of shareholder votes in favour (Thomas, 2025). While the FMC target and signing of three MoUs are a clear step in the right direction, systematically reporting on its progress and implementation would strengthen the integrity of Ford's commitments.

Ford neither communicates a target on the CO_2 emissions from the batteries used in its EVs nor sets a target for improving energy efficiency of BEVs. We could not identify information on the emissions from batteries that Ford produces or sources, nor a commitment to reduce these emissions. Additionally, we could not identify any disclosure of the energy efficiency of its BEV fleet in terms of power consumption (kWh per vehicle-km). The lack of transparency and attention towards these two critical transitions neglects the increasing importance of battery emissions and the rising significance of downstream electricity consumption.



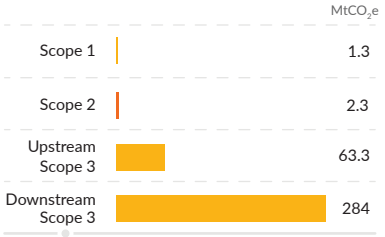
General Motors

GM aims to become carbon neutral by 2040 but does not communicate a specific emissions reduction target alongside this pledge. In 2021, the company committed to phase out the sales of internal combustion engine vehicles by 2035 in the United States and globally. Uncertainty remains on the commitment's status in the absence of transparent interim targets for key markets. GM has also pledged to procure at least 10% near-zero steel and aluminium by 2030. While this is a notable 1.5°C-compatible ambition, the company currently provides limited details on how it will achieve these goals apart from several non-binding agreements with steel producers.

TRANSPARENCY	INTEGRITY
Poor	Poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

GM discloses emissions for all scopes over the past 3 years, but does not provide historical data for the past 5 years to allow for a full assessment of its emission trends.



MAJOR EMISSION SOURCES

- Use of LDVs
- EV power consumption
- Steel
- Aluminium
- Batteries

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Carbon neutrality in global products and operations by 2040*

			TRANSPARENCY	INTEGRITY
Short term	?	*No emissions reduction target for 2030, only regional scope 2 target to source 100% renewable electricity for US sites by the end of 2025.*	○	○
Medium term	?	*2040 carbon neutrality pledge (scope 1, 2 and 3 category 11) not substantiated by an emissions reduction target. 2035 scope 3 category 11 intensity target (-51% per vehicle km below 2018), is not 1.5°C-aligned.*	◐	○
Longer term	N/A	*No target within the timeframe identified.*	N/A	N/A

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Phase-out of internal combustion engine LDVs	*GM commits to selling 50% EVs in the US by 2030 and 100% globally by 2035. While the global target aligns with 1.5°C-aligned global benchmarks, the US target falls short of regional benchmarks.*	◐	◐
Efficiency of BEV's	*No target on the efficiency of BEV's identified.*	○	○
Procurement of near-zero emission steel	*2030 target for 10% near-zero steel purchases for US, Canada and Mexico, likely in line with 1.5°C benchmarks. Several MoUs with steel producers, but timeline and volumes remain unclear.*	◔	◐
Procurement of near-zero emission aluminium	*2030 target for 10% near-zero aluminium purchases in US, Canada and Mexico, dependent on price conditions. The target reflects an ambitious intention, but underlying measures and volumes remain unclear.*	◐	◐
Low-carbon batteries	*No target on low-carbon batteries identified. Partial recognition of its necessity.*	○	○

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions identified.*	○	○
Support for durable carbon dioxide removals	*No support for durable CDR identified.*	○	○

EMISSION TRENDS

↩ *GM's absolute emissions between 2021 and 2023 have increased, a trend misaligned with 1.5°C pathways. A 1.5°C-aligned reduction pathway requires emissions reductions in the near term.*

TRANSITION PROGRESS

\+

?

✖ *In 2023, BEV sales for LDVs were around 10%, increasing slightly from 9% in 2022. No progress data on EV energy efficiency or the procurement of near-zero aluminium or low-emission batteries. No progress data on near-zero steel despite several MoUs.*

?

?

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- \+ Right direction, off track
- ✖ Well off track
- ↩ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: General Motors (2021, 2023a, 2023b, 2025).

Note: As of June 2025, GM has not released a sustainability report covering the year 2024. GM previously published its sustainability reports in April 2021, 2022, 2023, and 2024. The company released its 2024 annual report in January 2025 (General Motors, 2025), which we have considered in our analysis

General Motors

General Motors Company (hereafter: GM) is one of the world's largest manufacturers of motor vehicles, with brands including Chevrolet, Buick and Cadillac. Most of the company's 2023 emissions originate in the use phase of its sold cars and vans (69%) and sourced materials (16%) such as steel and aluminium. Although GM has pledged to achieve carbon neutrality by 2040, it has not communicated any specific emission reduction target alongside this pledge. The company's commitment of 2021 to phase out the sales of internal combustion engine vehicles by 2035 in the US and globally, if implemented, substantiates its 2040 carbon neutrality pledge. Uncertainties remain about GM's continued intention to indeed implement this target. GM has also pledged to procure at least 10% near-zero steel and aluminium by 2030. While this is a notable 1.5°C compatible ambition, the company currently provides limited details on how it will achieve these goals, or its progress achieved to date.

GM commits to phase out internal combustion engines for light-duty vehicles (LDVs) globally by 2035, although uncertainties around this commitment remain in the absence of any recent updates. In 2021, GM became a signatory of the COP26 declaration, committing to making 50% of its U.S. vehicle sales electric by 2030 and reaching 100% electric vehicle sales globally by 2035 (Accelerating to Zero Coalition, 2021a). While the US target falls slightly short of electric LDV sales reaching 95–100% by 2030 to meet the Paris Agreement's 1.5°C target (CAT, 2020, p. 27; UNFCCC, 2021, pp. 10–11; Teske *et al.*, 2022, p. 4), the global EV sales commitment aligns with a 1.5°C global pathway.

GM's most recent sustainability report, however, omits any reference to its global EV sales target. Instead, it reaffirms GM's intention to 'eliminate tailpipe emissions from new U.S. light-duty vehicles by 2035' (General Motors, 2023a, p. 43) and to reduce GHG emissions from the use of sold products by 51% per vehicle km compared to 2018 (General Motors, 2023a, p. 8). The company's statement that its 'all-electric future is guided by customer choice' while continuing to offer a 'compelling lineup of gas-powered vehicles' raises further uncertainty about its long-term commitment to phasing out ICEs (General Motors, 2025, p. 1). GM reached 10% zero-emissions vehicle sales of its total sales in 2023, up from 9% in 2022 (General Motors, 2023b, p. 28). To meet its 2035 global EV target, GM would need to further accelerate EV sales over the next decade.

GM's headline 2040 carbon neutrality pledge remains unsubstantiated in the absence of any specific emissions reduction target. Initially announced in 2021, we could not identify any improvements on GM's 2040 carbon neutrality target ever since, despite requirements for long-term pledges to include emissions reductions targets, as laid out by the UN High-Level Expert Group and the International Organization for Standardization (ISO, 2022; UN HLEG, 2022). When first announcing the target in 2021, GM announced to invest in carbon credits or offsets to neutralise remaining emissions (General Motors, 2021). GM has not further clarified how and to what extent it plans to use carbon credits, and it remains unclear to what extent the carbon neutrality target will be achieved through emission reductions in the first place.

In 2024, a US Environmental Protection Agency (EPA) investigation found that certain GM vehicles emitted on average over 10% more CO_2 than the company initially reported in its GHG compliance documentation (EPA Press Office, 2024). This discrepancy applied to approximately 5.9 million pickups and SUVs between 2012–2018, resulting in an estimated additional 5.9 million $MtCO_2$ emissions. GM agreed to retire approximately 50 million tons of greenhouse gas credits to neutralise CO_2 emissions but did not disclose the types of carbon credits used.

GM commits to purchasing 10% near-zero steel and aluminium globally by 2030, but it neither publishes a detailed plan to reach these goals nor enables tracking of its progress. Upstream materials including aluminium and steel, represent almost 16% of GM's 2023 emissions across the value chain (General Motors, 2023b, p. 59). As a member of the First Movers Coalition, GM has pledged to purchase at least 10% near-zero aluminium and near-zero steel by 2030. This target is regionally limited to the US, Canada and Mexico and is conditional on prices not exceeding 20% above current market rates or approval by GM leadership (General Motors, 2023a, pp. 10, 23). These pledges signal a meaningful commitment to reduce emissions from purchased steel and the level of ambition falls in line with the International Energy Agency's Net Zero pathway, according to which the sector should reach at least 8% of fossil-free steel and 7% near-zero aluminium by 2030 to be aligned with the 1.5°C temperature limit (IEA, 2023b, p. 95).

GM has implemented some forward-looking measures to meet these pledges, entering into strategic purchase agreements with select suppliers (General Motors, 2023a, p. 23). GM signed agreements to purchase near-zero emission steel from Nucor (2021) starting in 2022, U.S. Steel (2023), and ArcelorMittal (2023) beginning in Q2 of 2023, however it does not specify any purchase volumes. We could not identify whether these agreements all focus on the procurement of near-zero steel as defined by the First Mover Coalition (FMC, 2024). We could not identify any further updates on the status of these partnerships, or the volume of near-zero steel and aluminium currently purchasing.

GM neither communicates a target on the CO_2 emissions from the batteries used in its EVs nor sets a target for improving energy efficiency of BEVs. We could not identify information on the emissions from batteries that GM produces or sources, nor a commitment to reduce these emissions. Additionally, we could not identify any disclosure of the energy efficiency of its BEV fleet in terms of power consumption (kWh per vehicle-km). The lack of transparency and attention towards these two critical transitions neglects the increasing importance of battery emissions and the rising significance of downstream electricity consumption.

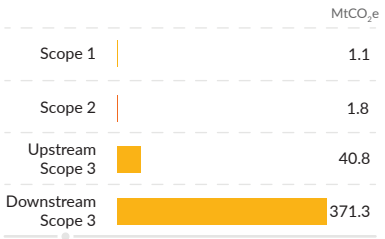
Stellantis

In 2024, **Stellantis** set an absolute emission reduction target for the first time, namely 30% below 2021 levels across all emissions scopes by 2030. This target improves the transparency of the company's ambition over the next five years towards its 2038 'carbon net zero target', even if not fully aligned with a 1.5°C emission pathway for the sector. The company also reconfirmed its commitment to sell 100% battery electric vehicles for passenger cars in the EU and 50% for passenger cars and light-duty trucks in the US by 2030. For the EU, Stellantis reached a sales share of 15% in 2024, making it unclear how it will achieve its 100% target by 2030. We have not identified any specific targets related to other key transitions, such as near-zero emission steel and aluminium procurement.

TRANSPARENCY	INTEGRITY
Reasonable	Moderate

1 TRACKING AND DISCLOSURE OF EMISSIONS

After a methodology change, Stellantis fails to disclose new emissions estimates for past years apart from its 2021 base year.



MAJOR EMISSION SOURCES

- Use of LDVs
- EV power consumption
- Steel
- Aluminium
- Batteries

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Carbon net zero by 2038.*

			TRANSPARENCY	INTEGRITY
Short term	**30%** by 2030 (below 2021)	*New absolute reduction target of 30% by 2030 below 2021 along the entire value chain falls short of a 1.5°C pathways for this sector, but is a positive step forward to commit to short-term reductions.*		
Medium term	**>90%** intensity by 2038 (below 2021)	*Carbon net zero by 2038 (>90% intensity reduction along the value chain) is aligned with 1.5°-compatible pathways.*		
Longer term	**N/A**	*Stellantis sets no longer-term target beyond 2041.*	N/A	N/A

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Phase-out of internal combustion engine LDVs	*Stellantis' EV sales target for the EU (100% by 2030) aligns with 1.5°C, but the US EV targets (50% by 2020, 100% by 2038) falls short of 1.5°C-aligned benchmarks. These targets do not cover all global sales.*		
Efficiency of BEV's	*No targets or measures identified.*		
Procurement of near-zero emission steel	*No targets or measures for low-carbon steel identified. Stellantis claims to consider carbon footprint targets in its steel purchasing roadmaps but provides no further public information.*		
Procurement of near-zero emission aluminium	*No targets or measures for low-carbon aluminium procurement identified. Stellantis reuses aluminium waste in its value chain.*		
Low-carbon batteries	*No targets or measures identified. Stellantis currently conducts pilot projects for more efficient battery technology and downstream battery recycling.*		

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*Stellantis does not mention any climate contributions beyond its value chain. Leasys, a joint venture between Stellantis and Crédit Agricole, plants trees for customers renting large fleets for offsetting.*		
Support for durable carbon dioxide removals	*In 2024, Stellantis set up a dedicated CDR team responsible to manage its activities to offset residual emissions. The company has also done first investments in carbon credits for biochar.*		

EMISSION TRENDS

\+ *Absolute emissions between 2021 and 2024 have declined by 21% (including market-based scope 2). These reductions are not yet aligned with 1.5°C-compatible pathways, but likely enough to reach Stellantis' own 2030 target (30% by 2030 below 2021 levels).*

TRANSITION PROGRESS

\+

? *Stellantis' sales share of EVs in 2024 has not increased compared to 2023, remaining below 11% in the EU and the US. It remains uncertain how Stellantis will meet its 100% EVs by 2030 target over the next five years. Stellantis fails to disclose information on its progress to implement key transitions, including sourcing low-carbon steel, aluminium, or phasing in EV trucks.*

?

?

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- \+ Right direction, off track
- ✖ Well off track
- ⮌ Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Stellantis (2022, 2023c, 2024, 2025).*

Stellantis

Stellantis is an automotive company headquartered in the Netherlands, comprising brands such as Fiat, Peugeot, Opel and Citroën. Most of Stellantis' emissions originate in the use phase of its vehicles (89% of 2024 emissions). The company commits to reaching 'carbon net zero' in 2038 by reducing at least 90% of its vehicles' CO_2 emissions intensity across their life cycle and offset all remaining emissions. Stellantis' newly announced 2030 target aims for a 30% absolute emission reduction below 2021 levels, substantiated by accelerated vehicle electrification in key markets. These targets partially align with 1.5°C-compatible sectoral pathways for the automobile industry.

Key developments over the past year: Stellantis has set a new absolute emission reduction goal of 30% by 2030 across all scopes (Stellantis, 2024, p. 178). A methodology change has affected its scope 1 and 2 baseline emissions, impeding a comparison of emissions over time. Stellantis announced it will purchase biochar carbon credits at the end of 2025 (Stellantis, 2025, p. 47). Apart from these, we have not identified any other major updates to Stellantis' climate strategy since the previous analysis was published in April 2024 (NewClimate Institute, 2024).

Stellantis has set a new ambitious target to reduce absolute scope 1, 2 and 3 emissions by 30% by 2030 compared to 2021 levels, committing to an *absolute* emission reduction target by 2030 for the first time. This target complements and further provides credibility to a range of previously announced 2030 targets, particularly the goal to reduce emission intensity across the entire vehicle life cycle by 50% by 2030 below 2021 levels (Stellantis, 2024, p. 178). Stellantis' emissions data suggests a 21% emission reduction across scopes between 2021 and 2024 (Stellantis, 2025, p. 43). This is a positive development and seems to align with its newly announced 2030 target, even if not yet in line with a 1.5°C-compatible pathway. Compared to 2023, Stellantis appears to have discontinued its disclosure of emissions data time series for previous reporting years. Stellantis also changed its methodology to calculate its scope 1 and 2 baseline data, which impedes a comparison with data from 2020, 2022 and 2023.

While Stellantis' EV sales target for the European market aligns with a 1.5°C-compatible pathway, the target for the US market does not. A major measure to reach emission reduction targets for the automotive sector is increasing the sales share of battery electric vehicles (BEV). Stellantis aims to sell 100% BEVs for passenger cars in Europe and 50% BEVs for passenger cars and light-duty trucks in the US by 2030 (Stellantis, 2025, p. 43). These two markets are responsible for 71% of the company's total sales in 2024 (Stellantis, 2024, pp. 21–23). Stellantis' target for the European market aligns with 1.5°C-compatible decarbonisation milestones, while the one for the US market falls short of them *(see detailed assessment in the Annex 6B)*. We could not identify information on how Stellantis has been progressing on its aspirational targets for Brazil, India, and China, as outlined in its 2022 strategic blueprint (Stellantis, 2022).

Stellantis seems to have discontinued its 2025 sales share target of battery electric vehicles (BEVs) and low-emission vehicles (LEVs), including hydrogen-powered vehicles, in its global sales. Stellantis previously set a goal for 2025 to increase the share of LEVs to 44% (including 34% BEVs) for passenger cars in the EU and 37% LEV (including 14% BEV) for passenger cars and light-duty trucks in the US (Stellantis, 2023b, p. 23). While the company still tracks progress toward its 2030 target, we could no longer identify the 2025 target in the 2024 edition of Stellantis' sustainability report (Stellantis, 2024).

In 2024, Stellantis' share of LEV sales reached 15% in the EU and 11% in the US. Contrary to its sustainability report in 2023, Stellantis no longer discloses regional BEV or LEV sales, nor total LEV sales for all key markets in 2024 (Stellantis, 2023a, p. 60). We calculate that 6% of Stellantis' global sales were LEVs (Stellantis, 2025, p. 123). While the share of BEV in total sales reached 11% in the EU in 2024, Stellantis does not disclose the share of BEV sales in the US (Stellantis, 2025, p. 43). Stellantis will need to accelerate BEV sales significantly over the next five years to meet its 2030 sales targets in the EU and the US.

Stellantis currently expands its portfolio of hydrogen-powered vehicles for midsize and large vans, with uncertain efficiency. In 2023, Stellantis acquired a third of Symbio, a company specialised in hydrogen-powered engines, and plans to produce eight fuel cell hydrogen versions of midsize and large vans by the end of 2025 (Stellantis, 2024, p. 200). However, compared to BEVs, the use of hydrogen for such vehicles might require significantly more renewable electricity production (Ajanovic, 2023).

Stellantis is taking some actions to reduce emissions from purchased aluminium, steel, and batteries, but these actions' scope, timeline and impact remain unclear without specific targets and reported progress. The company claims to consider carbon footprint targets when purchasing steel for its vehicle production (Stellantis, 2024, p. 202), but neither commits to specific zero-carbon steel procurement targets nor provides public information on the scope and progress of such measures. Similar as for near-zero steel, we could neither identify targets nor specific measures for the procurement of near-zero aluminium. Although Stellantis currently conducts pilot projects for more efficient battery technology and downstream battery recycling (Stellantis, 2024, p. 220), we did not identify specific targets or information on recent progress. Stellantis has a target to reduce CO_2 emissions from purchased parts for its BEV production; however, this is not yet backed by publicly communicated and trackable measures. The company aims to cut CO_2 emissions by 40% by 2030 compared to 2021 (Stellantis, 2025, p. 43), focusing on key components like batteries, steel, and aluminium that account for most emissions. Data on the progress towards this target is not yet available for 2023 or 2024, nor does the company communicate the base year emissions for 2021 (Stellantis, 2025, p. 43). Against this backdrop, uncertainty remains on how Stellantis plans to achieve its target to reduce CO_2 emissions from purchased parts for its BEV production.

Stellantis aims to reach its 2038 'carbon net zero' pledge by reducing its vehicle emission intensity along the value chain (>90% below 2021) and neutralise remaining emissions (<10%) with carbon dioxide removals. The company intends to neutralise the remaining emissions with carbon dioxide removal (Stellantis, 2025, p. 47). To that end, Stellantis set up a dedicated CDR team and has undertaken its first investments in carbon credits for biochar, a carbon dioxide removal with medium durability (i.e. more than 100 but less than 1,000 years storage). However, biochar is not a durable CDR technology (i.e. >1'000 years storage) and should not be used to neutralise residual emissions. Stellantis could further strengthen its support for durable CDR through longer-term offtake or prepurchase agreements for durable CDR. We have not yet identified an intention by Stellantis to make a climate contribution beyond it value chain to take responsibility for its ongoing emissions *(see explanations in section 4 of NewClimate Institute, 2025a)*.

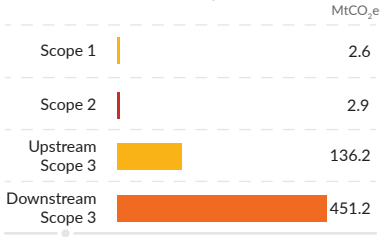
Toyota

Toyota aims to become carbon neutral by 2050 but does not communicate a specific emissions reduction target alongside this pledge. Toyota's climate strategy is critically undermined by a lack of transparency and specificity in its emission disclosure, reduction measures and pledges. Toyota falls short of several 1.5 °C-aligned transition milestones for the automobile industry, lacking targets for procurement of near-zero steel, aluminium and batteries. The company is lagging in its electrification of light-duty and heavy-duty vehicles while not comitting to a global target for electrifying its fleet.

TRANSPARENCY	INTEGRITY
Poor	Very poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Subsidiaries are included in emissions reporting, but Toyota lacks transparency on Scope 3 calculation assumptions like annual driving distance and WtW intensity.



MAJOR EMISSION SOURCES

- Use of LDVs
- Use of HDVs
- EV power consumption
- Steel
- Aluminium
- Batteries

2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net carbon neutrality by 2050*

		TRANSPARENCY	INTEGRITY
Short term	*Intensity targets for LDVs (-33.3%) and HDVs (-11.6%) for 2030 vs 2019 do not comply with 1.5°C-compatible pathways.*		
Medium term	*Vehicle emissions intensity target -50% by 2035 vs 2019 is not aligned with 1.5°C pathways.*		
Longer term	*Group target to become carbon neutral by 2050 without any commitment for deep emission reductions.*		

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
Phase-out of internal combustion engine LDVs	*No ICE phase-out targets for LDVs in key markets like US and Japan. Targets for EU fall way short of 1.5°C decarbonisation milestones.*		
Phase-out of internal combustion engine HDVs	*No ICE phase-out target for HDVs globally or in key markets.*		
Efficiency of BEV's	*No target on the efficiency of BEV's identified.*		
Procurement of near-zero emission steel	*No target or measures on near-zero steel procurement identified.*		
Procurement of near-zero emission aluminium	*No target or measures on near-zero aluminium procurement identified.*		
Low-carbon batteries	*No target on low-carbon batteries identified. Measures with limited scope towards battery recycling mentioned.*		

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions identified.*		
Support for durable carbon dioxide removals	*No support for durable CDR identified.*		

EMISSION TRENDS

Toyota's absolute emissions increased between 2020 and 2023, a trend misaligned with 1.5°C pathways. A 1.5°C aligned reduction pathway requires emissions reductions in the near term. The calculation of its scope 3 emissions cannot be independently assessed due to undisclosed assumptions.

TRANSITION PROGRESS

BEV sales remain less than 1% of total LDV sales in 2023, well below the 1.5°C aligned pathway. No disclosure for sales of electrified HDVs or progress on BEV efficiency. No information is available on the procurement of near-zero steel, near-zero aluminium, or low-carbon batteries.

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- ✚ Right direction, off track
- ✖ Well off track
- Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Toyota Europe (2021, 2023, 2024), Hino (2022, 2023), Hino Motors Ltd. (2025).*

Toyota

Toyota Motor Corporation (hereafter: Toyota) is one of the world's largest manufacturers of motor vehicles. The majority of the company's emissions footprint come from the use of its sold cars, vans, trucks, and buses. Vehicle use accounts for 75% of Toyota's 2023 emissions, with an additional 21% in upstream emissions from sourced materials such as steel. Toyota's climate strategy is critically undermined by a lack of transparency and specificity in its emission disclosure, reduction measures and pledges. Toyota falls short of several 1.5 °C-aligned transition milestones for the automobile industry, lacking targets for procurement of near-zero steel, aluminium and batteries. The company is lagging in its electrification of light-duty and heavy-duty vehicles while not committing to a global target for electrifying its vehicle fleet.

Key developments over the past year: We have identified limited developments and minor updates to Toyota's climate strategy since the previous analysis was published in April 2024 (NewClimate Institute, 2024, pp. 78–80). Differences in our evaluation are mainly due to further development of the methodology and evaluation criteria (NewClimate Institute, 2025a). The company remains off track in committing to or implementing key sectoral transition such as the accelerated transition towards electric vehicles, as reflected in an increase in its total scope 1, 2 and 3 emissions.

Toyota's headline carbon neutrality pledge for 2050 remains unsubstantiated, as the company provides no information on the extent to which it will reduce its own emissions and remains vague about its offsetting strategy. The company does not explain how its 2050 carbon neutrality pledge aligns with key 1.5°C-compatible decarbonisation milestones for the automobile industry, apart from vague references to the Paris Agreement's temperature limit (for example Toyota, 2024, p. 41). Toyota does not disclose any information on the extent to which it will *reduce* its own emissions and the extent to which it will rely on carbon credits to meet its 2050 carbon neutrality pledge (Toyota, 2024, p. 46). Medium-term emissions reduction targets also fall short of actions necessary for 1.5°C-aligned pathways in the automobiles sector. In 2035, the company intends to reduce 68% of its scope 1 and 2 emissions compared to 2019 levels, equivalent to a 4.8 $MtCO_2e$, or a 0.8% emissions reduction of total emissions. In the same year, it has set a 2035 carbon neutrality target which only applies to its operational emissions from plants (Toyota, 2024, p. 46). Toyota does not communicate the type of carbon credits or any integrity criteria for its future purchases of carbon credits to meet these targets, making both its medium-term and 2050 carbon neutrality pledges highly ambiguous and contentious.

The climate strategy provides only few details on the status of and commitments to transitions needed for 1.5°C-aligned climate action in the automobile sector, especially the urgent transition to electric mobility. Most prominently, Toyota does not commit to phase out internal combustion engines for light-duty vehicles (LDVs) or heavy-duty vehicles (HDVs) in key markets, falling short of action needed by 2030 and 2035. Battery electric vehicles (BEVs) made up only 3% of electrified vehicle sales in 2023 and less than 1% of total vehicle sales, excluding its subsidiary Hino (Toyota, 2024, p. 51). Toyota has communicated a production target of 1.5 million BEV vehicles annually by 2026 and 3.5 million vehicles per year worldwide by 2030 (Toyota, 2024, p. 39), but does not specify the share of the total fleet that BEVs will represent. However, according to news outlet reports in 2024 Toyota clarified that these figures were not targets but benchmarks for shareholders (Reuters, 2024), and reportedly informed suppliers of automobile parts that their production goal had been lowered to 800,000 units (Yao, 2025). In 2023, BEV sales reached 117,000, representing only 8% of the intended 2026 sales goal and 3% of the 2030 goal (Toyota, 2024, p. 51).

Only for the European Union and the United Kingdom, Toyota has set a target of 50% electric LDV sales by 2030 and to only sell zero-emission vehicles by 2035 (Toyota Europe, 2021, 2023). However, this targeted sales share for 2030 merely reflects the automobile sector's business-as-usual development for Europe, rather than a 1.5°C-compatible climate ambition going beyond this. The IEA estimates that the EV sales share for Europe will reach around 50% under its stated policies and announced pledges scenario (IEA, 2023a, p. 114), while electric LDV sales for Europe and other key markets should reach 95%–100% by 2030 to stay below the Paris Agreement's warming limit of 1.5°C (CAT, 2020, p. 27; UNFCCC, 2021, pp. 10–11; Teske *et al.*, 2022, p. 4). We could not identify any such targets for other key markets for light-duty vehicles such as Japan, the United States or China. The CEO of Toyota Motor North America stated that they were more likely to buy EV credits from other automakers than invest in expanding EVs (Vellequette, 2024). Similar to LDVs, we cannot identify any specific targets for the phase-in of zero emission heavy-duty vehicles (HDVs) by 2030 *(see Box 6.4)*.

At the expense of transitioning towards fully electrified mobility, Toyota continues to develop technologies with highly uncertain efficiency and sustainability such as hydrogen, e-fuels, and biofuel. The company has expanded its lineups of electrified vehicles but continues to be a strong proponent of light-duty hybrid vehicles (e.g. Keohane and Inagaki, 2024). Recent scientific literature raises concerns on energy efficiency and sustainability for all of these technologies to effectively and efficiently decarbonise light-duty vehicle transport towards 2030 and beyond (Jaramillo *et al.*, 2022, pp. 1064–1071). E-fuel produced with hydrogen and hydrogen-based fuel cells, for example, would require much greater amounts of renewable electricity production than BEVs (Transport & Environment, 2018). Toyota claims a CO_2 emissions reduction by selling hybrid vehicles, even though its total emissions keep increasing.

Toyota does not disclose the group-level average energy efficiency of its BEVs or a target to reduce the power consumption (kWh) per vehicle-km. While Toyota acknowledges that lowered emissions from BEV vehicles depend on renewable energy sources, it does not set targets to reduce the overall energy use by reducing the power consumption (kWh) per vehicle-km (Toyota, 2024, p. 19). Toyota has a target to reduce average GHG emissions from new vehicles by more than 50% by 2035 compared to 2019 levels (Toyota, 2024, p. 23), however, this falls short of the decarbonisation needed to align with 1.5°C pathways.

The climate strategy mentions very limited details on its activities to reduce emissions from sourced upstream materials such as aluminium and steel, despite upstream emissions representing almost one fifth of its emissions across the value chain. We could not identify any measures or plans aiming to systematically reduce emissions from purchased aluminium, steel and other sourced products. Toyota did not provide information on near-zero steel procurement in response to a request for information from Greenpeace (Greenpeace East Asia, 2024).

Toyota neither communicates the CO_2 emissions from its procured or in-house produced batteries nor sets a target for low-carbon in-house battery production. Toyota aims to develop battery recycling in Japan and North America with an aim of 'promoting carbon neutrality' and has expanded its in-house battery production by acquiring battery production facilities (Toyota, 2024, p. 43). While the in-house battery production would enable Toyota to directly influence battery-related emissions through decarbonising its own scope 1 and 2 emission, we could not identify any plan or activities to address the reduction of these emissions in the future. The company provides little information on renewable procurement constructs, a key levers to reducing battery production emissions, despite claiming 28% renewable electricity in 2023, already surpassing its 25% target for 2025, provided this share is maintained (Toyota, 2024, p. 55).

Box 6.4 – Analysis of Toyota's subsidiary Hino producing heavy-duty vehicles

Toyota produces heavy-duty trucks and buses through its subsidiary Hino. Hino's revenue of USD 11.5 billion in the financial year of 2024 (April 2023 to March 2024) accounts for around 3% of Toyota's total revenue over the same period (Hino Motors Ltd., 2024, p. 1). Hino has not published a sustainability report since 2021, but publishes ESG information on a Japanese language website (Hino Motors Ltd., 2025a). In 2023, its total emissions amounted to around 48 $MtCO_2e$, of which around 89% originate in the use phase of sold heavy-duty vehicles. Toyota includes Hino's downstream emissions from the use of HDVs in its group-wide emissions disclosure for 2022 and 2023 *(Toyota, 2024, see footnote 4 of Table D)*. In 2025, Hino was levied a USD 1.6 billion fine after pleading guilty to false and fraudulent data on its CO_2 emissions test data in California (Smith, 2025).

The lack of detailed information on base year emissions data or the link between group- and subsidiary-level intensity targets raises questions about Hino's target setting for 2030 and beyond. Similar to Toyota's group-level pledge, Hino's carbon neutrality target for 2050 lacks substantiation, with no information provided on the extent to which the carbon neutrality target is to be achieved through emission reductions as opposed to offsetting (Hino, 2022, 2023). In the period leading up to 2030, Toyota and Hino commit to different intensity reduction targets for the heavy-duty vehicles' use phase. Toyota aims for an 11.6% reduction below 2019 levels (Toyota, 2024, p. 47), while Hino targets a 40% reduction below 2013 levels (Hino Motors Ltd., 2025b). We could neither identify any explanation on how these targets relate to each other nor the disclosure of any base year emissions data for Hino's scope 3 emissions in 2013. Additionally, we cannot identify specific targets for the phase-in of zero-emission heavy-duty vehicles by 2030, neither at the group level by Toyota nor at the subsidiary level by Hino.

Hino provides limited information on its implemented or planned measures to achieve its emission reduction targets. We cannot identify targets for the phase-in of zero-emission heavy-duty vehicles by 2030, nor the expansion of related charging infrastructure (for example in Hino, 2022, 2023). Recent literature indicates that globally 30–37% of heavy-duty trucks should be battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs) by 2030 to align with the 1.5°C Paris Agreement temperature limit (UNFCCC, 2021, pp. 10–11; Mission Possible Partnership, 2022, p. 40; Boehm *et al.*, 2023, pp. 77–78; IEA, 2023b, pp. 88, 93). Hino also does not communicate any information on measures to address emissions related to the procurement of upstream materials such as low-carbon steel or aluminium.

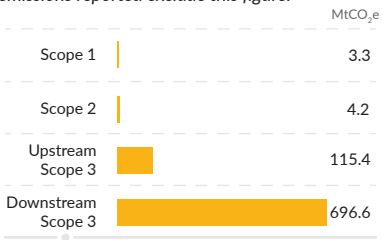
Volkswagen Group

Volkswagen aims to become carbon neutral by 2050 but continue to remain vague on its explicit emissions reduction target alongside this pledge. The company sets regional electrification targets for light-duty vehicles by 2030. These sales targets fall critically short of 1.5°C-aligned milestones, and their implementation is lagging. Volkswagen's subsidiary Traton aims for around 50% zero-emission heavy-duty vehicle sales by 2030, likely aligning with Paris Agreement goals, though sales have reached less than 1% as of 2024. The climate strategy offers limited details on commitments and measures for near-zero steel, aluminium, and batteries, which are critical for the company's 1.5°C-aligned tranistion.

	TRANSPARENCY	INTEGRITY
	Poor	Poor

1 TRACKING AND DISCLOSURE OF EMISSIONS

Volkswagen reports scope 3 emissions from Traton and MAN Energy Solutions for the first time in 2024 (403 $MtCO_2$), but no prior data disclosed and total emissions reported exclude this figure.



2 GHG EMISSION REDUCTION TARGETS

Headline pledge: *Net carbon neutrality by 2050*

		TRANSPARENCY	INTEGRITY
Short term	?	*2030 scope 3 category 11 target (-30% below 2018 by 2030), falls short of 1.5°C-aligned decarbonisation milestones. No group-level target set for upstream scope 3 emissions.*	
Medium term	?	*New net carbon neutrality target for 2040 only covers scope 1 and 2 emissions (90% by 2040 below 2018). No targets identified for scope 3 emissions responsible for 98% of all emissions.*	
Longer term	? (90% reduction below an undisclosed base year)	*The group aims to become carbon neutral by 2050 and intends to keep offsetting below 10%, but it does not specify an emissions reduction target against a base year.*	?

EMISSION TRENDS

The emissions time series is incomplete due to disclosure gaps in subsidiary emissions from HDV use-phase emissions before 2024 (43% of 2024 emissions). LDV use-phase emissions (36% of 2024 emissions) have fluctuated slightly over the past five years but have plateaued rather than decreased. This trend falls short of the reductions needed to align with a 1.5°C pathway.

MAJOR EMISSION SOURCES

3 TRANSITION TARGETS

MAJOR EMISSION SOURCES		TRANSPARENCY	INTEGRITY
Use of LDVs	Phase-out of internal combustion engine LDVs	*No global ICE phase-out target. Targets for electric LDV sales to reach 70% in Europe by 2030 and at least 50% in China and the US fall short of 1.5°C benchmarks for these markets.*	
Use of HDVs	Phase-out of internal combustion engine HDVs	*No global ICE phase-out target for HDVs identified. Target of ~50% zero-emission vehicles in EU27+3 region, USA, and Canada by 2030 aligns with regional 1.5°C-aligned milestones.*	
EV power consumption	Efficiency of BEV's	*No target or measures to reduce EV power consumption identified.*	
Steel	Procurement of near-zero emission steel	*No group-level target on near-zero steel procurement identified but MoUs signed with Tyssenkrupp, Salzgitter and Vulcan Green Steel. Subsidiary SCANIA targets 10% of low-carbon steel globally by 2030.*	
Aluminium	Procurement of near-zero emission aluminium	*No group target on near-zero aluminium procurement identified. No forward-looking measures, apart from small-scale pilots.*	
Batteries	Low-carbon batteries	*No group-level target on low-emission batteries identified. Some measures exist to reduce emissions of its battery-producing subsidiary PowerCo and to mandate binding supplier targets.*	

TRANSITION PROGRESS

- *In 2024, BEV sales for LDVs remained at around 8% and did not increase compared to 2023. Electrified HDVs made up 0.5% of Traton sales (excl. MAN TGE), likely below what is needed for 1.5°C-aligned pathways.*
- *No progress disclosed on near-zero steel, aluminium, or BEV efficiency.*
- *Goals for low-CO_2 battery production and supplier CO_2 limits lack detail, preventing assessment of ambition.*

4 RESPONSIBILITY FOR ONGOING EMISSIONS AND SCALING UP DURABLE REMOVALS

		TRANSPARENCY	INTEGRITY
Climate contributions & offsetting practices	*No climate contributions found. 6.7 $MtCO_2e$ credits (2024) used for product offset claims. Joint venture with ClimatePartner develops land-based CDR.*		
Support for durable carbon dioxide removals	*No support for durable CDR identified.*		

Transparency & integrity : 5-point rating scale:

High | Reasonable | Moderate | Poor | Very poor

Transparency refers to the disclosure of information.
Integrity refers to the quality and credibility of the approach.

? Integrity assessment not possible due to lack of available benchmarks for the transition.

Progress:
- ✔ Right direction, on track
- + Right direction, off track
- ✖ Well off track
- Wrong direction, critically off track
- ? No progress identified or insufficient data
- ? No benchmarking possible.

The analysis represents the authors' interpretations of publicly available information. NewClimate cannot guarantee the factual accuracy of all information presented in this factsheet due to potential fragmentation, inconsistency and ambiguity across data sources.

Sources: *Volkswagen (2023c, 2023a, 2023b, 2024a, 2024b, 2025); Scania (2024); Traton (2024); Volkswagen ClimatePartner (2024).*

Volkswagen Group

Volkswagen Group (hereafter: Volkswagen) is one of the world's largest manufacturers of motor vehicles. Most of the company's 2024 emissions originate in the use of its sold cars, vans, trucks, and buses (73%) and sourced materials (21%) such as steel. Over the last few years, the company has shown limited progress in aligning its group-level climate targets with the latest scientific and voluntary standards. The company aims to become carbon neutral by 2050 although it does not explicitly communicate a goal for emissions reductions to meet this target. Volkswagen's climate strategy provides limited details on commitments and measures for near-zero steel, aluminium and batteries, necessary to align with a 1.5°C transition pathway in the automotive sector. While it sets regional targets for light-duty vehicle electrification in key markets by 2030, these fall short of decarbonisation milestones for 1.5°C-aligned milestones for the automobile industry and implementation is lagging. Volkswagen's subsidiary Traton aims for around 50% of heavy-duty vehicle sales to be zero-emission by 2030, likely in line with 1.5°C Paris Agreement targets, although progress towards this target remains slow.

Key developments over the past year: We have identified several updates to Volkswagen's climate strategy since our analysis published in April 2024 (NewClimate Institute, 2024, pp. 81–83). Differences in our evaluation also reflect the development of methodology and evaluation criteria (NewClimate Institute, 2025a). In 2024, Volkswagen published emissions disclosures on its subsidiaries Traton and MAN Energy Solutions, which manufacture all its heavy-duty vehicles like trucks and buses, for the first time. While this disclosure nearly doubled its reported total emissions in 2024, the emissions remain excluded from aggregate figures. The new changes are in the same magnitude with the proxy estimates of this emissions source which we previously published (NewClimate Institute, 2024, pp. 81–83). The company also introduced a 2040 net-zero target for scope 1 and 2 emissions, which accounted for 1% of its value chain emissions in 2024. While Volkswagen provided more detail on its 2050 carbon neutrality goal, the target alignment with the 1.5°C pathway remains unclear due to the absence of a base year for emissions reductions.

Volkswagen's 2030 targets for electric light-duty vehicle sales in key markets fall short of 1.5°C-aligned climate action in the automobile sector. Volkswagen does not communicate a global target for the phase-out of internal combustion engines for LDVs. In 2023, Volkswagen communicated a target for electric light-duty vehicle sales to reach 70% in Europe and at least 50% in China and the US by 2030 (Volkswagen, 2023c, p. 8). However, the latest annual report does not mention any regional electric LDV sales targets, making their status uncertain. Moreover, the targets fall short of the electric LDV sales required in these markets by 2030, which should reach 95–100% to meet the Paris Agreement's 1.5°C target (CAT, 2020, p. 27; UNFCCC, 2021, pp. 10–11; Teske *et al.*, 2022, p. 4). Unlike several other automobile manufacturers in the US and Germany, Volkswagen has not signed the COP26 declaration committing to only sell electric vehicles by 2035 (COP26 Presidency, 2021; A2Z Coalition, 2025).

The absence of a specific timeline for the complete the phaseout of internal combustion engines leaves a major gap in the company's climate strategy. Progress towards increasing electric vehicle sales remains limited. Volkswagen reports that in 2024, BEVs made up only 8.3% its sales, unchanged from the previous year. While the company projects electrified vehicles to comprise 50% of global sales by 2030 (Volkswagen, 2025, p. 239), it is unclear how it plans to scale up its sales to meet this ambition within five years. Compared to 2023, the volume of electric vehicle sales decreased by 4.2% in Europe (Volkswagen, 2025, p. 103) and by 30.5% in the US (Volkswagen, 2025, p. 105). Although total sales by Volkswagen in China decreased by 10.3%, electric vehicle sales increased by 8.2% (Volkswagen, 2025, p. 105). For heavy-duty vehicles, Volkswagen's subsidiary Traton has set a new target for around 50% of sales to be zero-emission vehicles by 2030, which likely aligns with 1.5°C Paris Agreement compatible milestones. However, progress towards implementing the HDV transition is lagging *(see Box 6.5)*.

While Volkswagen has further specified its 2050 carbon neutrality target, it remains unlikely that it is in line with the Paris Agreement 1.5°C temperature limit. Volkswagen has provided some limited additional details on its carbon neutrality target, initially announced in 2019. It now communicates 'the goal of basing its carbon offsetting actions on the requirements of the SBTi and the GHG Protocol and to limit their share to below 10%' (Volkswagen, 2025, p. 297). As Volkswagen neither specifies the base year nor the base year emissions for the 10% offset limit, we cannot independently quantify the targeted absolute emissions reductions. Our analysis maintains that the company lacks a clear emissions reduction target for 2050, critically undermining its carbon neutrality goal. Even without clarity on targeted emissions reductions, the carbon neutrality target remains insufficient without any meaningful targets between 2020 and 2050 and transition plan to electrify light-duty vehicles significantly before 2050.

The climate strategy provides limited details on the scope, timeline, and intended impact of Volkswagen's activities to reduce emissions of purchased upstream materials such as steel and aluminium, which present 21% of its 2024 emissions across the value chain. The company does not communicate a group-wide goal on procurement for low-emissions steel. However, it communicates some forward-looking measures to address these emissions. For example, in 2024, Volkswagen signed a Memorandum of Understanding (MoU) to supply the company with low-carbon steel with ThyssenKrupp Steel from 2028 (Volkswagen, 2024a) and with Vulcan Green Steel from 2027 (Volkswagen, 2024b). Additionally, Volkswagen has partnered with Salzgitter AG since 2022 to become one of its first customers of low-CO_2 steel with a delivery start from the end of 2025 (Volkswagen, 2023b, pp. 42–43). The status of this partnership is unclear as there are no updates on its progress in the recent sustainability report. For near-zero aluminium, Volkswagen does not communicate a target or future actions and only mentions small-scale measures at the brand level (Volkswagen, 2025, p. 335).

Volkswagen does not communicate the CO_2 emissions from its procured or in-house produced batteries nor sets a specific target to reduce these emissions. However, the company communicates some measures to address these emissions through its subsidiary PowerCo and plans to set binding CO_2 targets for suppliers of batteries (Volkswagen, 2025, pp. 281–282). Despite these steps, the lack of details and specific milestones hinders an independent assessment of their level of ambition and comprehensiveness.

Despite recent integrity issues with carbon credits purchased through the voluntary carbon market, Volkswagen continues to make present-day carbon neutrality claims for specific production lines based on offsetting. In 2024, the company purchased credits of 6.7 $MtCO_2e$ and plans to continue this until the end of 2025 (Volkswagen, 2025, p. 283). Volkswagen's reliance on carbon credits to make product-specific carbon neutrality claims poses concerns due to the risks around offsetting claims. In 2022, Volkswagen acquired 20% of its total 5.9 $MtCO_2e$ carbon credits from the Kariba REDD+ project in Zimbabwe (Volkswagen, 2023a). However, this project received allegations of inflated climate benefits and due diligence issues, prompting South Pole, one of the project developers, to terminate its role in October 2023 (Elgin and White, 2023).

Volkswagen shares little information on the development of its own carbon credits despite recent reports of human rights violations. In 2022, Volkswagen formed a joint venture with ClimatePartner to develop projects to issue carbon credits from biological carbon dioxide removal (Volkswagen ClimatePartner, 2024). The venture focuses on forest and land use projects, operating 20 projects across 10 countries (Volkswagen ClimatePartner, 2025). However, it presents little to no details on individual project funding amount, additionality, permanence or estimated emissions impact. One of its projects, a soil carbon credit project in Northern Tanzania, has been criticised for violating the human rights of indigenous people, in a report published by the Maasai International Solidarity Alliance (Business & Human Rights Resource Centre, 2025; Volkswagen Climatepartner, 2025). This case highlights the potential negative social consequences of offsetting projects and underscores the continued need to prioritise actual emissions reductions over offsetting.

Box 6.5 – Analysis of Volkswagen Group's subsidiary Traton producing heavy-duty vehicles

Volkswagen produces heavy-duty trucks and buses through its subsidiary Traton. Traton manages four vehicle brands: Scania, MAN, International Motors (previously Navistar International Corporation) and Volkswagen Truck & Bus. In 2024, Traton generated revenue of EUR 46.2 billion (ca. 49.9 USD billion) representing around 14% of Volkswagen's total revenue (Volkswagen, 2025). For the first time, Volkswagen disclosed one year of Traton's consolidated up- and downstream scope 3 emissions in its annual emissions disclosure, nearly doubling its total emissions for 2024 (Volkswagen, 2025, pp. 292–293).

Traton's 50% zero-emission vehicle target aligns with 1.5°C Paris Agreement-compatible milestones for heavy-duty vehicles by 2030, however, progress on achieving these goals is lagging. Traton communicates a target of around 50% of annual new sales to be zero-emission vehicles in the EU27+3 region, the US, and Canada by 2030 (Traton, 2024, p. 117). This commitment would align with the 1.5°C Paris Agreement-aligned milestones for downstream scope 3 emissions of heavy-duty vehicle manufacturers, identified in existing literature (UNFCCC, 2021, pp. 10–11; Mission Possible Partnership, 2022, p. 40; Boehm *et al.*, 2023, pp. 77–78; IEA, 2023b, pp. 88, 93). Accordingly, global 1.5°C-compatible shares for heavy-duty trucks should reach 30–37% of BEVs and fuel cell electric vehicles (FCEVs) by 2030 (UNFCCC, 2021; Boehm *et al.*, 2023; IEA, 2023b). Despite this alignment, progress toward implementation remains limited, with overall sales of battery electric HDVs across all Traton brands accounting for only 0.5% of sales in 2024, down from 0.6% in the previous year (Traton, 2024, p. 42). These figures exclude MAN TGE vans, which represent approximately 8% of total unit sales. The progress towards HDV electrification is not in line with 1.5°C Paris Agreement-compatible decarbonisation milestones for heavy-duty trucks.

Apart from Tarton's overarching target, each brand additionally communicates its own targets and progress separately. MAN aligns with Traton's target by pledging that 50% of all new trucks will be equipped with zero-emission power units by 2030 but does not communicate progress towards this target achieved by 2025 (MAN Truck & Bus, 2025). Scania is a member of the First Movers Coalition's trucking commitment, which requires it to ensure that at least 30% of its heavy-duty and 100% of its medium-duty new truck purchases are zero-emission vehicles by 2030 (First Movers Coalition, 2025a). Despite this, Scania communicates falling short on its electric vehicle rollout and now has a goal to reduce use-phase CO_2e/km from vehicles produced in 2032 by 45% compared to 2022. However, the company has acknowledged falling behind in its electric vehicle rollout. As a result, Scania has set a revised target to reduce use-phase CO_2e/km from vehicles produced in 2032 by 45% compared to 2022 levels (Scania, 2024, p. 23). Additionally, the company has reported that it is not on track to meet its scope 3 emissions intensity target to reach a 20% reduction in CO_2e/km by 2025 compared to 2015. (Scania, 2024, p. 36). International Motors neither mentions any electric vehicle targets nor progress achieved (International Motors, 2025).

Some of Traton's brands have started to implement measures to reduce emissions from upstream materials, although the measures' scope and intended impact remain uncertain. As a member of the First Mover Coalition, Scania aims to procure at least 10% of low-carbon steel by 2030 (FMC, 2024). The truck maker also commits to procure 100% green purchases of steel, batteries, aluminium and cast iron for European operations by 2030 (Scania, 2024, pp. 23, 146), but does not substantiate the meaning of 'green purchases' in detail. This lack of clarity creates uncertainty about the target's potential impact. Since 2023, Scania has had a green steel agreement with its largest steel supplier, SSAB to buy hydrogen-made steel from 2026 (Michel, 2024) and a cooperation with H2 Green Steel (Volkswagen, 2023b, p. 43). There is no clear communication on measures by Traton's other brands.

References (Section A)

- ATP-Col (2024) *Assessing the credibility of a company's transition plan: framework and guidance*. Assessing Transition Plan Collective (ATP-Col). Available at: https://assets.worldbenchmarkingalliance.org/app/uploads/2024/09/ATP-Col-guidance-and-framework-document.pdf (Accessed: 17 December 2024).
- Broekhoff, D. and Gillenwater, M. (2024) 'What is GHG accounting? Is scope 3 fit for purpose? Alternative GHG accounting frameworks for inventories and intervention impacts', *GHG Management Institute*, 28 October. Available at: https://ghginstitute.org/2024/10/28/is-scope-3-fit-for-purpose-alternative-ghg-accounting-frameworks-for-inventories-and-intervention-impacts/.
- European Comission (2025) *Corporate sustainability reporting [Status: 20.06.2025]*. Available at: https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en (Accessed: 10 June 2025).
- GHG Protocol (2011) *Corporate Value Chain (Scope 3) Accounting and Reporting Standard*. Greenhouse Gas Protocol, World Resources Institute. Available at: http://publications.lib.chalmers.se/records/fulltext/245180/245180.pdf%0Ahttps://hdl.handle.net/20.500.12380/245180%0Ahttp://dx.doi.org/10.1016/j.jsames.2011.03.003%0Ahttps://doi.org/10.1016/j.gr.2017.08.001%0Ahttp://dx.doi.org/10.1016/j.precamres.2014.12 (Accessed: 6 March 2025).
- GHG Protocol (2022a) *Land Sector and Removals Guidance Part 1: Accounting and Reporting Requirements and Guidance.* WRI; WBCSD. Available at: https://ghgprotocol.org/sites/default/files/2022-12/Land-Sector-and-Removals-Guidance-Pilot-Testing-and-Review-Draft-Part-1.pdf (Accessed: 8 May 2025).
- GHG Protocol (2022b) *Land Sector and Removals Guidance Part 2: Calculation Guidance*. WRI; WBCSD. Available at: https://ghgprotocol.org/sites/default/files/standards_supporting/Land-Sector-and-Removals-Guidance-Pilot-Testing-and-Review-Draft-Part-2.pdf (Accessed: 14 May 2025).
- GHG Protocol (2025) *2024 Reflections and Looking Ahead: Letter from GHG Protocol Steering Committee Chair and Vice Chair*. Available at: https://ghgprotocol.org/blog/2024-reflections-and-looking-ahead-letter-ghg-protocol-steering-committee-chair-and-vice-chair.
- Hans, F. *et al.* (2023) *The corporate climate accountability loop - Introducing key functions of an accountability system for corporate climate action, and selected spotlights on how to improve the system's status quo*. Berlin, Germany: NewClimate Institute. Available at: https://doi.org/10.1038/486027a.
- Hombach, C. *et al.* (2025) 'Targeting Transparency : Early evidence on mandatory adoption of European sustainability reporting standards', *Accounting For Transparency Working Paper Series* [Preprint], (165). Available at: https://doi.org/https://dx.doi.org/10.2139/ssrn.5010700.
- Inditex (2025) *Sustainability report 2024, https://www.inditex.com/itxcomweb/api/media/d6d06b5c-4a2f-431d-915f-ce8ca9e95181/Sustainabilityreport2024.pdf?t=1742203448699page=81*. Inditex. Available at: https://www.inditex.com/itxcomweb/api/media/d6d06b5c-4a2f-431d-915f-ce8ca9e95181/Sustainabilityreport2024.pdf?t=1742203448699.
- IPCC (2022) *Mitigation of Climate Change – Summary for Policymakers (SPM), Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Edited by H.-O. Pörtner *et al.* Geneva, Switzerland, Switzerland: Intergovernmental Panel on Climate Change (IPCC). Available at: https://doi.org/10.1017/9781009157926.002.
- ISO (2022) *Net Zero Guidelines – Accelerating the transition to net zero.* Geneva, Switzerland: International Organization for Standardization (ISO). Available at: https://www.iso.org/obp/ui/en/#iso:std:iso:iwa:42:ed-1:v1:en (Accessed: 18 October 2023).
- ISO (2024) *Creation of international standard on net zero gets underway*. International Organization for Standardization (ISO). Available at: https://www.iso.org/contents/news/2024/06/netzero-standard-underway.html (Accessed: 27 June 2024).
- Net Zero Tracker (2023) *Net Zero Stocktake 2023*. Cologne, Berlin, Oxford, London, North Carolina: NewClimate Institute, Oxford Net Zero, Energy & Climate Intelligence Unit; Data-Driven EnviroLab. Available at: https://ca1-nzt.edcdn.com/Reports/Net_Zero_Stocktake_2023.pdf?v=1689326892 (Accessed: 5 September 2023).
- Net Zero Tracker (2025a) *Net Zero Good Practice*. Available at: https://zerotracker.net/net-zero-good-practice (Accessed: 16 May 2025).
- Net Zero Tracker (2025b) *Net Zero Tracker Data Explorer [Status: 20.06.2025]*. Available at: https://zerotracker.net/ (Accessed: 20 June 2025).
- NewClimate Institute (2024) *Corporate Climate Responsibility Monitor 2024: Assessing the Transparency and Integrity of Companies' Emission Reduction and Net-Zero Targets*. Berlin and Cologne, Germany: NewClimate Institute, Carbon Market Watch. Available at: https://newclimate.org/resources/publications/corporate-climate-responsibility-monitor-2024 (Accessed: 9 April 2024).
- NewClimate Institute (2025a) *Corporate Climate Responsibility: Guidance and assessment criteria for good practice on corporate climate strategies. Version 5.0, June 2025*. Berlin and Cologne, Germany: NewClimate Insitute. Available at: https://newclimate.org/resources/publications/corporate-climate-responsibility-monitor-2025-methodology.
- NewClimate Institute (2025b) *Evolution of corporate climate targets.* Berlin and Cologne, Germany: NewClimate Institute. Available at: https://newclimate.org/resources/publications/evolution-of-corporate-climate-targets (Accessed: 30 January 2025).
- NewClimate Institute (2025c) *Input for the update of the SBTi Corporate Net-Zero Standard: Position paper.* Berlin and Cologne, Germany: NewClimate Insitute. Available at: https://newclimate.org/sites/default/files/2025-04/input_for_the_update_of_the_sbti_corporate_net-zero_standard_1004_0.pdf.
- SBTi (2023) *SBTi Corporate Net-Zero Standard. Version 1.1 (April 2023)*. Science Based Targets initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf (Accessed: 30 November 2023).
- SBTi (2024) *Aligning Corporate Value Chains to Global Climate Goals: Scope 3 discussion paper.* Science Based Targets initiative. Available at: https://sciencebasedtargets.org/resources/files/Aligning-corporate-value-chains-to-global-climate-goals-SBTi-Research-Scope-3-Discussion-Paper.pdf (Accessed: 18 September 2024).
- SBTi (2025) Target dashboard [Status: 18.06.2025]. Available at: https://sciencebasedtargets.org/target-dashboard (Accessed: 18 June 2025).
- Stellantis, N. V (2024) *'Stellantis Annual report 2024'*. Available at: https://www.stellantis.com/content/dam/stellantis-corporate/investors/financial-reports/Stellantis-NV-20241231-Annual-Report.pdf.
- UN HLEG (2022) *Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities and Regions*. United Nations' High-Level Expert Group on the Net Zero Emissions Commitments of Non-State Entities. Available at: https://www.un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf (Accessed: 29 November 2022).
- UNFCCC (2025) *NAZCA Global Climate Action portal*. Available at: https://climateaction.unfccc.int/ (Accessed: 10 May 2025).
- Volkswagen (2025) *Annual Report 2024*. Volkswagen AG. Available at: https://uploads.vw-mms.de/system/production/documents/cws/002/940/file_en/dfed3f8c2cd2a5f5616e3371f8674356349e032e/Y_2024_e.pdf?1741784299 (Accessed: 11 March 2025).
- Volvo Cars (2024) *Volvo Cars position on chain of custody models*. Gothenburg, Sweden: Volvo Cars AB. Available at: https://www.volvocars.com/assets/volvocm/globalpages/live/DB152245B055429787072D4A618B7941/volvo_cars_position_on_chain_of_custody_models.pdf [accessed on 20.06.2025].

References (Food and agriculture sector)

- AFi (2023) *Core Principles.* Accountability Framework initiative. Available at: https://accountability-framework.org/the-accountability-framework/download-the-full-framework/ (Accessed: 8 May 2025).
- AFi (2025) *Who we are,* Accountability Framework initiative. Available at: https://accountability-framework.org/about/about-the-afi/who-we-are/ (Accessed: 12 May 2025).
- Boehm, S. *et al.* (2023) *State of Climate Action 2023*. Berlin and Cologne, Germany; San Francisco, CA; Washington, DC, Germany; San Francisco, CA; Washington, DC: Bezos Earth Fund, Climate Action Tracker, Climate Analytics, ClimateWorks Foundation, NewClimate Institute, the United Nations Climate Change High-Level Champions, and World Resources Institute. Available at: https://climateactiontracker.org/documents/1179/State_of_Climate_Action_2023_-_November_2023.pdf (Accessed: 15 November 2023).
- Bryan, K. and Pooler, M. (2024) 'Companies take step back from making climate target promises', *Financial Times,* 15 March. Available at: https://www.ft.com/content/3ebc5b56-a8f0-4fcd-99dd-9023d7a20013.
- Casey, C. (2025) 'JBS Spends $200M to expand US beef production', *Food Dive*, 10 February. Available at: https://www.fooddive.com/news/jbs-200m-texas-colorado-beef-meat-facility-production-investment/739595/.
- Changing Markets Foundation and IATP (2022) *Emissions Impossible: How emissions from big meat and dairy are heating up the planet.* Changing Markets Foundation; Institute for Agriculture & Trade Policy. Available at: https://www.iatp.org/emissions-impossible-methane-edition (Accessed: 10 February 2025).
- Danone (2021) *Regenerative Agriculture Scorecard: Full Pillar 1 Scorecard.* Danone S.A. Available at: https://www.danone.com/content/dam/corp/global/danonecom/about-us-impact/policies-and-commitments/en/2021/Danone-regenerative-agriculture-2021-scorecard.pdf (Accessed: 15 April 2024).
- Danone (2023a) *Climate Transition Plan.* Paris, France: Danone S.A. Available at: https://www.danone.com/content/dam/corp/global/danonecom/about-us-impact/policies-and-commitments/en/danone-climate-transition-plan-2023.pdf (Accessed: 22 December 2023).
- Danone (2023b) *Danone's Methane Ambition*. Paris, France: Danone S.A. Available at: https://www.danone.com/content/dam/corp/global/danonecom/about-us-impact/policies-and-commitments/en/2023/methane-matters.pdf (Accessed: 9 December 2023).
- Danone (2025) *Universal Registration Document | Annual financial report 2024*. Available at: https://www.danone.com/content/dam/corp/global/danonecom/investors/en-all-publications/2025/registrationdocuments/urd2024accessibleversion.pdf (Accessed: 15 March 2025).
- Dietz, S. and Jahn, V. (2024) *Carbon Performance assessment of food producers: note on methodology.* London, United Kingdom: Transition Pathway Initiative (TPI). Available at: https://transitionpathwayinitiative.org/publications/uploads/2024-carbon-performance-assessment-of-food-producers-note-on-methodology (Accessed: 6 February 2024).
- Douglas, L. (2023) 'COP28 summit: Global dairy companies join alliance to cut methane', *Reuters*, 5 December. Available at: https://www.reuters.com/sustainability/climate-energy/global-dairy-companies-announce-alliance-cut-methane-cop28-2023-12-05/.
- Ellen MacArthur Foundation (2024) *The Global Commitment 2024 Progress Report*. Ellen MacArthur Foundation; UNEP. Available at: https://emf.thirdlight.com/link/pqm3hmtgpwtn-dwj3yc/@/preview/1?o (Accessed: 13 February 2025).
- Eschenbacher, S., Novaes Magalhaes, L. and Jessop, S. (2025) 'Brazilian meatpacker JBS says net-zero emissions pledge was "never a promise"', *Reuters*, 15 January. Available at: https://www.reuters.com/sustainability/brazilian-meatpacker-jbs-says-net-zero-emissions-pledge-was-never-promise-2025-01-15/ (Accessed: 15 May 2025).
- Gao, Y. and Serrenho, A.C. (2023) 'Greenhouse gas emissions from nitrogen fertilizers could be reduced by up to one-fifth of current levels by 2050 with combined interventions', *Nature Food*, 4, pp. 170–178. Available at: https://doi.org/https://doi.org/10.1038/s43016-023-00698-w.
- GHG Protocol (2022a) *Land Sector and Removals Guidance Part 1: Accounting and Reporting Requirements and Guidance.* WRI; WBCSD. Available at: https://ghgprotocol.org/sites/default/files/2022-12/Land-Sector-and-Removals-Guidance-Pilot-Testing-and-Review-Draft-Part-1.pdf (Accessed: 8 May 2025).
- GHG Protocol (2022b) *Land Sector and Removals Guidance Part 2: Calculation Guidance.* WRI; WBCSD. Available at: https://ghgprotocol.org/sites/default/files/standards_supporting/Land-Sector-and-Removals-Guidance-Pilot-Testing-and-Review-Draft-Part-2.pdf (Accessed: 14 May 2025).
- GHG Protocol (2023) *Land Sector and Removals Guidance: Where We Are Now, Greenhouse Gas Protocol.* Available at: https://ghgprotocol.org/blog/land-sector-and-removals-guidance-where-we-are-now (Accessed: 16 May 2025).
- GHG Protocol (2025) *Land Sector and Removals Guidance, Greenhouse Gas Protocol.* Available at: https://ghgprotocol.org/land-sector-and-removals-guidance (Accessed: 8 May 2025).
- Giles, J. (2025) 'PepsiCo downgrades its sustainability ambitions', *Trellis*, 22 May. Available at: https://trellis.net/article/pepsico-downgrades-sustainability-ambitions/.
- Giller, K.E. *et al.* (2021) 'Regenerative Agriculture: An agronomic perspective', *Outlook on Agriculture*, 50(1), pp. 13–25. Available at: https://doi.org/https://doi.org/10.1177/0030727021998063.
- Greenpeace Nordic (2024) *Turning Down the Heat: Pulling the climate emergency break on big meat and dairy.* Greenpeace Nordic. Available at: https://www.greenpeace.org/static/planet4-sweden-stateless/2024/10/2996f732-2024.10.07_turning-down-the-heat-report-with-design_english.pdf (Accessed: 15 May 2025).
- IEA (2023) *Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach (2023 Update).* Paris, France: International Energy Agency. Available at: https://iea.blob.core.windows.net/assets/9a698da4-4002-4e53-8ef3-631d8971bf84/NetZeroRoadmap_AGlobalPathwaytoKeepthe1.5CGoalinReach-2023Update.pdf (Accessed: 18 October 2023).
- InfluenceMap (2024) *JBS InfluenceMap Score for Climate Policy Engagement*. Available at: https://lobbymap.org/company/JBS-2594dc94bcf60fec8c3a506a42cc041f/projectlink/JBS-in-Climate-Change-61e9edad4ea478dcea0ff196a2477f73 (Accessed: 11 February 2025).
- IPCC (2022) *Mitigation of Climate Change – Summary for Policymakers (SPM), Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Edited by H.-O. Pörtner et al. Geneva, Switzerland, Switzerland: Intergovernmental Panel on Climate Change (IPCC). Available at: https://doi.org/10.1017/9781009157926.002.
- JBS (2020) *JBS Fund for the Amazon*, JBS Global. Available at: https://www.jbsglobal.co.uk/2020/10/jbs-fund-for-the-amazon/ (Accessed: 6 February 2025).
- JBS (2023) 2022 *JBS Sustainability Report*. JBS S.A. Available at: https://jbsesg.com/wp-content/uploads/2023/08/2022-JBS-SUSTAINABILITY-REPORT.pdf (Accessed: 22 April 2024).
- JBS (2024) *Sustainability Report 2023*. JBS S.A. Available at: https://jbsesg.com/docs/JBS_Sustainability_Report_2023.pdf (Accessed: 27 January 2025).
- JBS (2025) *Our Approach to Net Zero*, JBS. Available at: https://jbsfoodsgroup.com/our-purpose/net-zero (Accessed: 27 January 2025).
- Jones, S. and Mitchell, C. (2024) 'JBS Barred from Gold Standard for Corproate Climate Action over its "bogus" Net Zero Plans', *Mighty Earth*, 7 March. Available at: https://mightyearth.org/article/jbs-barred-from-gold-standard-for-corporate-climate-action-over-its-bogus-net-zero-plans/.
- Mars (2019) *Land Use Position Statement*. Available at: https://www.mars.com/about/policies-and-practices/land-use (Accessed: 9 January 2025).
- Mars (2023a) *Climate Action Position Statement*. Available at: https://www.mars.com/about/policies-and-practices/climate-action (Accessed: 26 February 2024).
- Mars (2023b) *Mars CDP Climate Change Questionnaire 2023.* CDP; Mars. Available at: https://www.mars.com/sites/g/files/dfsbuz106/files/2024-07/Mars CDP Climate Change 2023.pdf (Accessed: 10 January 2025).
- Mars (2023c) *Net Zero Roadmap.* McLean, United States of America: Mars, Incorporated. Available at: https://www.mars.com/sites/g/files/dfsbuz106/files/2023-09/Mars Net Zero Roadmap 2050_2.pdf (Accessed: 15 December 2023).
- Mars (2023d) *Sustainable in a Generation Plan.* McLean, United States of America: Mars, Incorporated. Available at: https://www.mars.com/sites/g/files/dfsbuz106/files/2023-10/Sustainability_Plan_2022_Final.pdf (Accessed: 15 December 2023).
- Mars (2024) *2023 Sustainable in a Generation Report*. Mars, Incorporated. Available at: https://www.mars.com/sites/g/files/dfsbuz106/files/2024-07/2023 Sustainable in a Generation Report_5.pdf (Accessed: 9 January 2025).
- Mcclelland, S.C. *et al.* (2025) 'Managing for climate and production goals on crop-lands', *Nature Climate Change* [Preprint]. Available at: https://doi.org/10.1038/s41558-025-02337-7.
- Mighty Earth and AidEnvironment (2024) Failure to Act: Preventable Destruction in the Amazon and Cerrado surges by over 18,000 hectares as JBS ignores deforestation alerts. *Mighty Earth*. Available at: https://mightyearth.org/wp-content/uploads/2024/04/ME_BR_JBS_FactSheet_A4_ENG_Apr04_Final.pdf (Accessed: 6 February 2025).
- MSCI ESG Research LLC (2024) *Implied Temperature Rise Methodology.* Available at: https://www.msci.com/documents/10199/7118a4c1-e446-ffa8-87f2-f4d6d2d07d36 (Accessed: 7 November 2024).
- Nestlé (2021) *Nestlé's Net Zero Roadmap.* Vevey, Switzerland: Nestlé S.A. Available at: https://www.nestle.com/sites/default/files/2020-12/nestle-net-zero-roadmap-en.pdf (Accessed: 15 January 2024).
- Nestlé (2022) *Nestlé S.A. CDP Climate Change Questionnaire 2022.* Nestlé S.A.and CDP. Available at: https://www.cdp.net/en/responses/12942/Nestle?back_to=https%3A%2F%2Fwww.cdp.net%2Fen%2Fresponses%3Fqueries%255Bname%255D%3Dnestl&queries%5Bname%5D=nestl (Accessed: 31 January 2024).
- Nestlé (2023a) *Creating Shared Value and Sustainability Report 2022.* Switzerland: Nestlé S.A. Available at: https://www.nestle.com/sites/default/files/2023-03/creating-shared-value-sustainability-report-2022-en.pdf (Accessed: 31 January 2024).

- Nestlé (2023b) *Nestlé's Net Zero Roadmap | March 2023.* Vevey, Switzerland: Nestlé S.A. Available at: https://www.nestle.com/sites/default/files/2023-12/nestle-net-zero-roadmap-en.pdf (Accessed: 5 February 2024).
- Nestlé (2024) *Climate action by our brands.* Available at: https://www.nestle.com/sustainability/climate-change/brands-initiatives (Accessed: 30 January 2024).
- Nestlé (2025a) *Creating Shared Value at Nestlé.* Available at: https://www.nestle.com/sites/default/files/2025-02/creating-shared-value-nestle-2024.pdf (Accessed: 2 April 2025).
- Nestlé (2025b) *Non-Financial Satement 2024.* Available at: https://www.nestle.com/sites/default/files/2025-02/non-financial-statement-2024.pdf (Accessed: 2 April 2025).
- NewClimate Institute (2023) *Corporate Climate Responsibility Monitor 2023: Assessing the Transparency and Integrity of Companies' Emission Reduction and Net-Zero Targets.* Berlin and Cologne, Germany: NewClimate Institute, Carbon Market Watch. Available at: https://newclimate.org/sites/default/files/2023-02/NewClimate_CorporateClimateResponsibilityMonitor2023_Feb23.pdf (Accessed: 20 February 2023).
- NewClimate Institute (2024a) *Corporate Climate Responsibility Monitor 2024: Assessing the Transparency and Integrity of Companies' Emission Reduction and Net-Zero Targets.* Berlin and Cologne, Germany: NewClimate Institute, Carbon Market Watch. Available at: https://newclimate.org/resources/publications/corporate-climate-responsibility-monitor-2024 (Accessed: 9 April 2024).
- NewClimate Institute (2024b) *Navigating regenerative agriculture in corporate climate strategies.* NewClimate Institute. Available at: https://newclimate.org/sites/default/files/2024-09/Navigating regenerative agriculture in corporate climate strategies_sep2024.pdf (Accessed: 6 January 2025).
- NewClimate Institute (2024c) *Navigating the nuances of corporate renewable electricity procurement: Spotlight on Fashion and Tech.* Berlin and Cologne, Germany: NewClimate Institute. Available at: https://newclimate.org/resources/publications/navigating-the-nuances-of-corporate-renewable-electricity-procurement (Accessed: 24 October 2024).
- NewClimate Institute (2024d) *The role of environmental attribute certificates in corporate climate strategies.* Berlin and Cologne. Available at: https://newclimate.org/resources/publications/the-role-of-environmental-attribute-certificates-for-corporate-climate (Accessed: 4 November 2024).
- NewClimate Institute (2025) *Evolution of corporate climate targets.* Berlin and Cologne, Germany: NewClimate Institute. Available at: https://newclimate.org/resources/publications/evolution-of-corporate-climate-targets (Accessed: 30 January 2025).
- Oudman, T. (2025) 'Sjoemelsoja: de schimmige wereld achter FrieslandCampina's gezellige imago', *de Correspondent*, 12 May. Available at: https://decorrespondent.nl/16090/sjoemelsoja-de-schimmige-wereld-achter-frieslandcampina-s-gezellige-imago/d01e0181-c2ba-0969-0396-ac289c112c78.
- Paul, C. *et al.* (2023) 'Carbon farming: Are soil carbon certificates a suitable tool for climate change mitigation?', *Journal of Environmental Management*, 330(October 2022). Available at: https://doi.org/10.1016/j.jenvman.2022.117142.
- PepsiCo (2023) *PepsiCo, Inc. CDP Climate Change Questionnaire 2023.* CDP. Available at: https://www.pepsico.com/docs/default-source/sustainability-and-esg-topics/2023-cdp-climate-submission.pdf?sfvrsn=e4d1d3_6 (Accessed: 6 January 2025).
- PepsiCo (2024) *2023 ESG Summary.* Available at: https://www.pepsico.com/docs/default-source/sustainability-and-esg-topics/2023-esg-summary/pepsico-2023-esg-summary.pdf?sfvrsn=2fba921a_1 (Accessed: 6 January 2025).
- PepsiCo (2025a) *Climate Change.* Available at: https://www.pepsico.com/our-impact/esg-topics-a-z/climate-change (Accessed: 26 May 2025).
- PepsiCo (2025b) *Deforestation*. Available at: https://www.pepsico.com/our-impact/esg-topics-a-z/deforestation (Accessed: 26 May 2025).
- PepsiCo (2025c) *Packaging*. Available at: https://www.pepsico.com/our-impact/esg-topics-a-z/packaging (Accessed: 26 May 2025).
- PepsiCo (2025d) *PepsiCo Climate Transition Plan (May 2025)*. PepsiCo. Available at: https://www.pepsico.com/docs/default-source/sustainability-and-esg-topics/pepsico-climate-transition-plan.pdf (Accessed: 26 May 2025).
- PepsiCo (2025e) *Renewable Energy.* Available at: https://www.pepsico.com/our-impact/esg-topics-a-z/renewable-energy (Accessed: 26 May 2025).
- Reisinger, A. *et al.* (2021) 'How necessary and feasible are reductions of methane emissions from livestock to support stringent temperature goals?', *Phil. Trans. R. Soc. A*, 379(20200452), pp. 1–18. Available at: https://doi.org/https://doi.org/10.1098/rsta.2020.0452.
- Roe, S. *et al.* (2021) 'Land-based measures to mitigate climate change: Potential and feasibility by country', *Global Change Biology*, 27(23), pp. 6025–6058. Available at: https://doi.org/10.1111/gcb.15873.
- SBTi (2022) *Forest, land and agriculture science-based target-setting methods addendum.* Available at: https://files.sciencebasedtargets.org/production/files/SBTiFLAGMethodsAddendum.pdf?dm=1734357653 (Accessed: 20 May 2025).
- SBTi (2023a) *Forest, Land and Agriculture Science Based Target-Setting Guidance | Version 1.1 | December 2023.* Science Based Targets initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/files/SBTiFLAGGuidance.pdf (Accessed: 17 February 2024).
- SBTi (2023b) *Target Dashboard: Nestlé*, Science Based Targets Initiative (SBTi). Available at: https://sciencebasedtargets.org/target-dashboard (Accessed: 31 January 2024).
- SBTi (2024) *JBS*, Science Based Targets Initiative (SBTi). Available at: https://sciencebasedtargets.org/target-dashboard (Accessed: 4 February 2025).
- SBTi (2025) *SBTi Corporate Net Zero Standard v2.0 Draft for Consultation.* Science Based Targets initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard-v2-Consultation-Draft.pdf (Accessed: 2 April 2025).
- Searchinger, T., Waite, R., Hanson, C., *et al.* (2019) *Creating a Sustainable Food Future: A Menu of Solutions to Feed Nearly 10 Billion People by 2050. Final report*. Washington D.C: World Resource Institute
- The AIM Platform (2024) *Advanced and Indirect Mitigation Platform Association Test.* Available at: https://aimplatform.org/wp-content/uploads/2025/02/AIM-Platform-Association-Test-Stakeholder-Comment-Draft.pdf (Accessed: 17 April 2025).
- UNEP (2022) *Emissions Gap Report 2022: The Closing Window – Climate Crisis Calls for Rapid Transformation of Societies*. Nairobi, Kenya: United Nations Environment Programme (The Emissions Gap Report). doi:10.18356/9789210023993
- de Vries, W., Römkens, P.F.A.M., Kros, J., *et al.* (2022) *Impacts of nutrients and heavy metals in European agriculture.* Available at: https://www.eionet.europa.eu/etcs/etc-di/products/etc-di-products/impacts-of-nutrients-and-heavy-metals-in-european-agriculture-current-and-critical-inputs-in-relation-to-air-soil-and-water-quality
- Ward, N., Atkins, A. and Atkins, P. (2024) 'Estimating methane emissions from manure: a suitable case for treatment?', *Environmental Research: Food Systems*, 1(2), p. 025003. Available at: https://doi.org/10.1088/2976-601x/ad64d7.
- Zhou, M. *et al.* (2017) 'Stimulation of N2 O emission by manure application to agricultural soils may largely offset carbon benefits: a global meta-analysis', *Glob Chang Biol*, 23(10). Available at: https://doi.org/https://doi.org/10.1111/gcb.13648.
- Ziegert, R.F. and Sotirov, M. (2024) 'Regulatory politics and hybrid governance: the case of Brazil's Amazon Soy Moratorium', *Global Environmental Change*, 88. Available at: https://doi.org/https://doi.org/10.1016/j.gloenvcha.2024.102916.

References (Tech sector)

- 24/7 Carbon-Free Energy Compact (2024) *24/7 Carbon-Free Energy: Our signatories*. Available at: https://gocarbonfree247.com/our-signatories/ (Accessed: 15 January 2024).
- Allen, M.R. *et al*. (2024) 'Geological Net Zero and the need for disaggregated accounting for carbon sinks', *Nature* [Preprint]. Available at: https://doi.org/10.1038/s41586-024-08326-8.
- Amazon (2024) 2023 *Amazon Sustainability Report*. Amazon.com, Inc. Available at: https://sustainability.aboutamazon.com/2023-amazon-sustainability-report.pdf (Accessed: 15 January 2025).
- Amazon (2025) *Amazon launches a carbon credit service, enabling access to high-quality credits for qualified companies*. Available at: https://www.aboutamazon.com/news/sustainability/amazon-carbon-credit-service-sustainability (Accessed: 29 March 2025).
- Apple (2024a) *Apple's Product Use Electricity Strategy*. Apple Inc. Available at: https://www.apple.com/environment/pdf/Apples_Product_Use_Electricity_Strategy.pdf (Accessed: 16 December 2024).
- Apple (2024b) *Environmental Progress Report*. Apple Inc. Available at: https://www.apple.com/environment/pdf/Apple_Environmental_Progress_Report_2024.pdf (Accessed: 16 December 2024).
- Apple (2024c) *Product Environmental Report: Apple Watch Series 10*. Apple Inc. Available at: https://www.apple.com/environment/pdf/products/watch/Apple_Watch_Series_10_PER_Sept2024.pdf (Accessed: 8 February 2025).
- Apple (2024d) *Product Environmental Report: Mac mini*. Apple Inc. Available at: https://www.apple.com/environment/pdf/products/desktops/Mac_mini_PER_Oct2024.pdf (Accessed: 8 February 2025).
- Apple (2025) *Environmental Progress Report*. Apple Inc. Available at: https://www.apple.com/environment/pdf/Apple_Environmental_Progress_Report_2025.pdf (Accessed: 13 May 2025)
- Brunner, C., Hausfather, Z. and Knutti, R. (2024) 'Durability of carbon dioxide removal is critical for Paris climate goals', *Communications Earth & Environment*, 5(645), pp. 1–6. Available at: https://doi.org/10.1038/s43247-024-01808-7.
- CDR.fyi (2024) *CDR.fyi Insight - Microsoft*. Available at: https://www.cdr.fyi/blog/cdr-fyi-insight-microsoft (Accessed: 14 March 2025).
- CDR.fyi (2025) *Keep Calm and Remove On - CDR.fyi 2024 Year in Review*. Available at: https://www.cdr.fyi/blog/2024-year-in-review (Accessed: 2 April 2025).
- Emissions First Partnership (2023) *Principles*. Available at: https://www.emissionsfirst.com/principles (Accessed: 21 September 2023).
- European Parliament (2024) *Right to repair: Making repair easier and more appealing to consumers*. Available at: https://www.europarl.europa.eu/news/en/press-room/20240419IPR20590/right-to-repair-making-repair-easier-and-more-appealing-to-consumers (Accessed: 3 April 2025).
- Foxconn (2024) *2023 Sustainability Report*. Hon Hai Technology Group. Available at: https://image.honhai.com/reports/CSR/2023 Sustainability Report_English(Updated_10).pdf (Accessed: 8 February 2025).
- GHG Protocol (2024) *Survey on Need and Scope for Updates or Additional Guidance: Market-based accounting approaches survey memo*. Available at: https://ghgprotocol.org/sites/default/files/Market-based accounting Survey Memo.pdf (Accessed: 6 April 2025).
- Hulshof, D., Jepma, C. and Mulder, M. (2019) 'Performance of markets for European renewable energy certificates', *Energy Policy*, 128, pp. 697–710. Available at: https://doi.org/10.1016/j.enpol.2019.01.051.
- IEA (2021) *The Role of Critical Minerals in Clean Energy Transitions, The Role of Critical Minerals in Clean Energy Transitions*. Paris, France. Available at: https://doi.org/10.1787/f262b91c-en.
- IEA (2024) *World Energy Outlook 2024*. Paris: IEA. Available at: https://www.iea.org/reports/world-energy-outlook-2024 (Accessed: 20 February 2024).
- IEA (2025) *Energy and AI: World Energy Outlook Special Report*. Available at: https://iea.blob.core.windows.net/assets/b8a83930-5c77-4da7-b795-270ab6a6c272/EnergyandAI.pdf.
- Meta (2023) *2023 CDP Climate Change Response*. Available at: https://sustainability.atmeta.com/wp-content/uploads/2024/02/2023_Meta_CDP_Climate-Change-Survey.pdf (Accessed: 5 December 2024).
- Meta (2024) *For a Better Reality - Meta 2024 Sustainability Report*. Available at: https://sustainability.atmeta.com/wp-content/uploads/2024/08/Meta-2024-Sustainability-Report.pdf (Accessed: 5 February 2025).
- Microsoft (2024a) *2024 Environmental Sustainability Report*. Available at: https://cdn-dynmedia-1.microsoft.com/is/content/microsoftcorp/microsoft/msc/documents/presentations/CSR/Microsoft-2024-Environmental-Sustainability-Report.pdf (Accessed: 20 January 2025).
- Microsoft (2024b) *2024 Environmental Sustainability Report Data Fact Sheet*. Available at: https://cdn-dynmedia-1.microsoft.com/is/content/microsoftcorp/microsoft/msc/documents/presentations/CSR/2024-Environmental-Sustainability-Report-Data-Fact.pdf (Accessed: 20 January 2025).
- Microsoft (2024c) *Climate Change Questionnaire 2023*. Available at: https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RW1g0Xl (Accessed: 20 January 2025).
- Microsoft (2025a) *2025 Environmental Sustainability Report*. Available at: https://cdn-dynmedia-1.microsoft.com/is/content/microsoftcorp/microsoft/msc/documents/presentations/CSR/2025-Microsoft-Environmental-Sustainability-Report-PDF.pdf (Accessed: 09 June 2025).
- Microsoft (2025b) *2025 Environmental Sustainability Report Data Fact Sheet*. Available at: https://cdn-dynmedia-1.microsoft.com/is/content/microsoftcorp/microsoft/msc/documents/presentations/CSR/2025-Microsoft-Environmental-Data-Fact-Sheet-PDF.pdf (Accessed: 09 June 2025).
- Miller, G. (2020) 'Beyond 100 % renewable: Policy and practical pathways to 24/7 renewable energy procurement', *Electricity Journal*, 33, p. 106695. Available at: https://doi.org/10.1016/j.tej.2019.106695.
- MSCI ESG Research LLC (2024) *Implied Temperature Rise Methodology*. Available at: https://www.msci.com/documents/10199/7118a4c1-e446-ffa8-87f2-f4d6d2d07d36 (Accessed: 7 November 2024).
- Netflix (2024) *Environmental Social Governance Report 2024*. Available at: https://s22.q4cdn.com/959853165/files/doc_downloads/2024/6/2023-Netflix-Environmental-Social-Governance-Report.pdf (Accessed: 2 April 2025).
- NewClimate Institute (2023) *Corporate Climate Responsibility Monitor 2023: Assessing the Transparency and Integrity of Companies' Emission Reduction and Net-Zero Targets*. Berlin and Cologne, Germany: NewClimate Institute, Carbon Market Watch. Available at: https://newclimate.org/sites/default/files/2023-02/NewClimate_CorporateClimateResponsibilityMonitor2023_Feb23.pdf (Accessed: 20 February 2023).
- NewClimate Institute (2024a) *A repository of sector-specific decarbonisation benchmarks informing 1.5C-aligned corporate climate action*. Cologne and Berlin, Germany. Available at: https://newclimate.org/sites/default/files/2024-04/NewClimate_CorporateBenchmarksRepository_April2024.pdf (Accessed: 1 March 2025).
- NewClimate Institute (2024b) *Briefing: 24/7 renewable electricity matching is a far more credible approach for the GHG Protocol and the SBTi than the Emissions First Partnership proposal*. Available at: https://www.newclimate.org/news/briefing-247-renewable-electricity-matching-is-a-far-more-credible-approach-for-the-ghg (Accessed: 28 March 2025).
- NewClimate Institute (2024c) *Corporate Climate Responsibility Monitor 2024: Assessing the Transparency and Integrity of Companies' Emission Reduction and Net-Zero Targets*. Berlin and Cologne, Germany: NewClimate Institute, Carbon Market Watch. Available at: https://newclimate.org/resources/publications/corporate-climate-responsibility-monitor-2024 (Accessed: 9 April 2024).
- NewClimate Institute (2024d) *Navigating the nuances of corporate renewable electricity procurement: Spotlight on Fashion and Tech*. Berlin and Cologne, Germany: NewClimate Institute. Available at: https://newclimate.org/resources/publications/navigating-the-nuances-of-corporate-renewable-electricity-procurement (Accessed: 24 October 2024).
- NewClimate Institute (2025) *Evolution of corporate climate targets*. Berlin and Cologne, Germany: NewClimate Institute. Available at: https://newclimate.org/resources/publications/evolution-of-corporate-climate-targets (Accessed: 30 January 2025).
- Riepin, I. and Brown, T. (2024) 'On the means, costs, and system-level impacts of 24/7 carbon-free energy procurement', *Energy Strategy Reviews*, 54, p. 101488. Available at: https://doi.org/10.1016/j.esr.2024.101488.
- Samarakoon, S. *et al*. (2024) *24/7 TRUEZERO: Tracking Renewables Utilisation for Zero Emission Reporting and Operation*. Available at: https://racefor2030.com.au/wp-content/uploads/2024/08/247TRUZERO-Final.pdf (Accessed: 16 September 2024).
- Samsung Electronics (2024) *A Journey Towards a Sustainbale Future*. Samsung Electronics Co., Ltd. Available at: https://doi.org/10.1177/17504589211061214.
- SBTi (2020a) *Guidance for ICT Companies Setting Science Based Targets: Mobile networks operators, fixed networks operators, and data centres operators*. Science Based Targets Initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/legacy/2020/04/GSMA_IP_SBT-report_WEB-SINGLE.pdf (Accessed: 28 November 2022).
- SBTi (2020b) *Setting 1.5°C-Aligned Science-Based Targets: Quick Start Guide for Electric Utilities*. Science Based Targets initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/legacy/2020/06/SBTi-Power-Sector-15C-guide-FINAL.pdf (Accessed: 28 February 2023).
- SBTi (2024) *SBTi Corporate Net-Zero Standard. Version 1.2 (March 2024)*. Science Based Targets Initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf (Accessed: 14 March 2024).
- SBTi (2025) *SBTi Corporate Net Zero Standard v2.0 Draft for Consultation*. Science Based Targets initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard-v2-Consultation-Draft.pdf (Accessed: 2 April 2025).
- Synergy Research Group (2022) *Q3 Cloud Spending Up Over $11 Billion from 2021 Despite Major Headwinds; Google Increases its Market Share, Synergy Research Group*. Available at: https://www.srgresearch.com/articles/q3-cloud-spending-up-over-11-billion-from-2021-despite-major-headwinds-google-increases-its-market-share (Accessed: 13 January 2023).
- University of Oxford (2024) *Serviced emissions: Placing professional services at the heart of Net Zero*. Available at: https://netzeroclimate.org/serviced-emissions-placing-professional-services-at-the-heart-of-net-zero/ (Accessed: 19 February 2025).
- Xu, Q. *et al*. (2024) 'System-level impacts of voluntary carbon-free electricity procurement strategies', *Joule*, 8(2), pp. 374–400. Available at: https://doi.org/10.1016/j.joule.2023.12.007.

References (Fashion sector)

- adidas (2024) *2024 annual report*. Adidas AG. Available at: https://report.adidas-group.com/2024/en/_assets/downloads/annual-report-adidas-ar24.pdf (Accessed: 21 March 2025)
- Berg, A., Magnus, K.-H., Kappelmark, S., *et al.* (2020) *Fashion on climate: How the fashion industry can urgently act to reduce its greenhouse-gas emissions.* McKinsey & Company and Global Fashion Agenda. Available at: https://www.mckinsey.com/industries/retail/our-insights/fashion-on-climate (Accessed: 17 August 2023)
- Brown, A. and Börkey, P. (2024) *Extended producer responsibility in the garments sector.* Organization for Economic Cooperation & Development (OECD). doi:10.1787/8ee5adb2-en
- Calvin, K., Cowie, A., Berndes, G., *et al.* (2020) 'Bioenergy for climate change mitigation: Scale and sustainability', *GCB Bioenergy*, 13, pp. 1346–1371. doi:10.1111/gcbb.12863
- Carr, M. (2023) *Fabric Dyeing Tech Cut GHG by 58%: Press Release + Adidas Report*, *CarrZee Sustain*. Available at: https://carrzee.org/2023/09/28/fabric-dyeing-tech-cut-ghg-by-58-press-release-adidas-report/
- Changing Markets Foundation (2023) *Take-Back Trickery: an investigation into clothing take-back schemes.* Changing Markets Foundation. Available at: https://changingmarkets.org/report/take-back-trickery-an-investigation-into-clothing-take-back-schemes/ (Accessed: 7 January 2025)
- Clarke, L., Wei, Y.-M., Navarro, A. de la V., *et al.* (2022) 'Energy Systems', in Shukla, P.R. *et al.* (eds) *IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge, UK and New York, NY, USA: Cambridge University Press. doi:10.1017/9781009157926.008
- Cobbing, M. and Vicaire, Y. (2017) *Fashion at the Cross Roads: A review of initiatives to slow and close the loop in the fashion industry.* Hamburg, Germany: Greenpeace Germany. Available at: https://www.greenpeace.org/international/publication/6969/fashion-at-the-crossroads/ (Accessed: 4 March 2024)
- Coscieme, L., Akenji, L., Latva-Hakuni, E., *et al.* (2022) *Unfit, Unfair, Unfashionable: Realizing Fashion for a Fair Consumption.* Berlin. Available at: https://hotorcool.org/wp-content/uploads/2022/12/Hot_or_Cool_1_5_fashion_report_.pdf
- DUH (2025) 'Rechtswidriges Zukunftsversprechen zu Klimaneutralität: Deutsche Umwelthilfe gewinnt Klimaklage gegen Adidas', *Deutsche Umwelthilfe*, 26 March. Available at: https://www.duh.de/presse/pressemitteilungen/pressemitteilung/rechtswidriges-zukunftsversprechen-zu-klimaneutralitaet-deutsche-umwelthilfe-gewinnt-klimaklage-gege/
- Dzhengiz, T., Haukkala, T. and Sahimaa, O. (2024) '(Un)Sustainable transitions towards fast and ultra-fast fashion', Fashion and Textiles, 10(19). doi:https://doi.org/10.1186/s40691-023-00337-9
- EEA (2024) *The destruction of returned and unsold textiles in Europe's circular economy*, European Environment Agency. Available at: https://doi.org/10.2800/752 (Accessed: 4 June 2025)
- ETC (2021) *Bioresources within a Net-Zero Emissions Economy: Making a Sustainable Approach Possible.* Energy Transitions Commission. Available at: https://www.energy-transitions.org/wp-content/uploads/2022/07/ETC-Bioresources-Report-Final.pdf (Accessed: 20 October 2022)
- Fashion Revolution (2024) *What Fuels Fashion?* Fashion Revolution. Available at: https://issuu.com/fashionrevolution/docs/full_report_31_july?fr=xKAE9_zU1NQ (Accessed: 4 April 2025)
- Flynn, G. and Ball, A. (2023) 'Forests in the furnace: Can fashion brands tackle illegal logging in their Cambodian supply chains?', *Mongabay News*, 12 July. Available at: https://news.mongabay.com/2023/07/forests-in-the-furnace-can-fashion-brands-tackle-illegal-logging-in-their-cambodian-supply-chains/
- Ford, P. (2025) *Fashion has a coal problem, but the solutions are electrifying (commentary)*, Mongabay. Available at: https://news.mongabay.com/2025/01/fashion-has-a-coal-problem-but-the-solutions-are-increasingly-electric-commentary/
- French National Assembly (2024) *Proposition de loi n° 2129 visant à réduire l'impact environnemental de l'industrie textile.* National Assembly of the French Republic. Available at: https://www.assemblee-nationale.fr/dyn/16/textes/l16b2129_proposition-loi
- Greenext (2025) *H&M Group pilots waterless dyeing tech to reduce environmental impact*. Available at: https://greenext.co/trending-this-month/hampm-group-pilots-waterless-dyeing-tech-to-reduce-environmental-impact
- H&M Group (2023) *Annual and Sustainability Report 2022.* Stockholm, Sweden: H&M Group. Available at: https://hmgroup.com/investors/annual-and-sustainability-report/ (Accessed: 16 August 2023)
- H&M Group (2024a) *A transitional solution for supply chain energy*. Available at: https://hmgroup.com/case-studies/transitional-solution/ (Accessed: 4 April 2025)
- H&M Group (2024b) *Climate Transition Plan.* Available at: https://hmgroup.com/wp-content/uploads/2024/03/Climate-Transition-Plan.pdf (Accessed: 4 April 2025)
- H&M Group (2024c) *H&M Group and Vargas Holding launch Syre, a new venture to scale textile-to-textile recycled polyester*. Available at: https://hmgroup.com/news/hmgroup-and-vargas-holding-launch-syre/
- H&M Group (2024d) *Recycled and sustainably sourced materials.* Available at: https://hmgroup.com/wp-content/uploads/2024/03/HM-Group-Recycled-or-sustainably-sourced-materials.pdf (Accessed: 4 April 2025)
- H&M Group (2025a) *Annual & Sustainability Report 2024*. Available at: https://hmgroup.com/wp-content/uploads/2025/03/HM-Group-Annual-and-sustainability-report-2024.pdf (Accessed: 4 April 2025)
- H&M Group (2025b) *CDP Corporate Questionnaire 2024*. Available at: https://hmgroup.com/wp-content/uploads/2025/03/HM-Group-CDP-response-Climate-change-2024.pdf (Accessed: 4 April 2025)
- H&M Group (2025c) *Green investment*. Available at: https://hmgroup.com/sustainability/leading-the-change/green-investment/ (Accessed: 4 April 2025)
- H&M Group (2025d) *Powering change: Our energy use 2024*. Available at: https://hmgroup.com/wp-content/uploads/2025/03/HM-Group-Powering-change-our-energy-use.pdf (Accessed: 4 April 2025)
- H&M Group (2025e) *Sustainability Progress Report 2024*. Available at: https://hmgroup.com/wp-content/uploads/2025/03/HM-Group-Sustainability-progress-report-2024.pdf (Accessed: 4 April 2025)
- Hasanbeigi, A. and Springer, C. (2025) *Textile Heating Electrification Tool, Global Efficiency Intelligence*. Available at: https://www.globalefficiencyintel.com/textile-heating-electrification-tool
- Hasanbeigi, A., Springer, C. and Wei, D. (2024) *Low-Carbon Thermal Energy Technologies for The Textile Industry*. Global Efficiency Intelligence, LLC. Available at: https://apparelimpact.org/wp-content/uploads/2024/08/Low-Carbon-Thermal-Energy-8.27.24.pdf (Accessed: 18 June 2025)
- Hasanbeigi, A., Springer, C. and Wei, D. (2025) *Low-Carbon Thermal Energy Roadmap for the Textile Industry.* Global Efficiency Intelligence, LLC. Available at: https://apparelimpact.org/wp-content/uploads/2025/03/Aii-GEI-Low-Carbon-Thermal-Energy-Roadmap-for-the-Textile-Industry.pdf (Accessed: 18 June 2025)
- Hasanbeigi, A. and Zuberi, J. (2022) *Electrification of Heating in the Textile Industry: A Techno-Economic Analysis for China, Japan, and Taiwan. Florida, United States: Global Efficiency Intelligence*. Available at: https://www.globalefficiencyintel.com/electrification-of-heating-in-the-textile-industry (Accessed: 8 February 2024)
- Inditex (2023) 'Inditex signs a three-year agreement to buy textile to textile recycled polyester cycora® for over €70 million', 25 October. Available at: https://www.inditex.com/itxcomweb/es/en/press/news-detail/0128e1e6-67ab-4656-ad1f-5e2b80158a31/news-detail
- Inditex (2024a) *BATstool*. Available at: https://batstool.inditex.com/home/ (Accessed: 5 May 2025)
- Inditex (2024b) *Climate Transition Plan.* Inditex. Available at: https://www.inditex.com/itxcomweb/api/media/450e8c9d-3266-4ffe-abb0-62fe206a188c/Inditex+Climate+Transition+Plan.pdf?t=1710345903031 (Accessed: 22 March 2024)
- Inditex (2025) *Sustainability report 2024.* Inditex. Available at: https://www.inditex.com/itxcomweb/api/media/d6d06b5c-4a2f-431d-915f-ce8ca9e95181/Sustainabilityreport2024.pdf?t=1742203448699 (Accessed: 4 April 2025)
- IPCC (2022) *Mitigation of Climate Change – Summary for Policymakers (SPM), Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Edited by H.-O. Pörtner *et al.* Geneva, Switzerland, Switzerland: Intergovernmental Panel on Climate Change (IPCC). doi:10.1017/9781009157926.002
- Jensen, B., Stoneburner, M., Martinez-Pardo, C., *et al.* (2023) *Sustainable Raw Materials Will Drive Profitability for Fashion and Apparel Brands*. Available at: https://web-assets.bcg.com/2f/a3/8bf925184dfe969547a484ddc5d4/bcg-sustainable-raw-materials-will-drive-profitability-oct-23.pdf
- Karali, N., Khanna, N. and Shah, N. (2024) *Climate Impact of Primary Plastic Production*. Lawrence Berkeley National Laboratory. Available at: https://energyanalysis.lbl.gov/publications/climate-impact-primary-plastic
- Lara, L., Cabral, I. and Cunha, J. (2022) 'Ecological Approaches to Textile Dyeing: A Review', *Sustainability*, 14(14), p. 8353. doi:10.3390/su14148353
- LEAF Coalition (2024) 'Pará signs $180m LEAF Coalition deal – first in Brazil', *Emergent*, 24 September. Available at: https://emergentclimate.com/wp-content/uploads/2024/09/Para-ERPA-announcement-Emergent-Final.pdf
- Ley, K., Mazijk, R. van, Hugill, R., *et al.* (2021) *Unlocking the trillion-dollar fashion decarbonisation opportunity: Existing and innovative solutions. Apparel Impact Institute (Aii) and Fashion for Good*. Available at: https://apparelimpact.org/reports/unlocking-the-trillion-dollar-fashion-decarbonisation-opportunity-report/ (Accessed: 17 August 2023)
- lululemon (2022) *lululemon 2021 impact report*. Vancouver, Canada: Lululemon Athletica Inc. Available at: https://corporate.lululemon.com/~/media/Files/L/Lululemon/our-impact/reporting-and-disclosure/2021-lululemon-impact-report-final-13-09-22.pdf (Accessed: 27 August 2023)

- lululemon (2023) *Impact Report 2022*. Lululemon Athletica Inc. Available at: https://corporate.lululemon.com/~/media/Files/L/Lululemon/our-impact/reporting-and-disclosure/2022-lululemon-impact-report.pdf (Accessed: 11 January 2024)
- lululemon (2024a) *Impact Report 2023*. Lululemon Athletica Inc. Available at: https://corporate.lululemon.com/~/media/Files/L/Lululemon/our-impact/reporting-and-disclosure/2023-lululemon-impact-report.pdf (Accessed: 7 January 2025)
- lululemon (2024b) *Lululemon Athletica Inc. - CDP Corporate Questionnaire 2024*. CDP; Lululemon Athletica Inc. Available at: https://corporate.lululemon.com/~/media/Files/L/Lululemon/our-impact/reporting-and-disclosure/lululemon-cdp-2024-65.pdf (Accessed: 7 January 2025)
- lululemon (2025) *Climate Action, lululemon*. Available at: https://corporate.lululemon.com/our-impact/our-planet/climate-action (Accessed: 22 May 2025)
- Macintosh, E. (2024) *Circular textiles policy review*. Available at: https://eeb.org/wp-content/uploads/2024/12/Circular-textiles-policy-review_December-2024.pdf (Accessed: 4 June 2025)
- Majumdar, A., Shukla, S., Singh, A.A. and Arora, S. (2020) 'Circular fashion: Properties of fabrics made from mechanically recycled poly-ethylene terephthalate (PET) bottles', *Resources, Conservation and Recycling*, 161, p. 104915. doi:https://doi.org/10.1016/j.resconrec.2020.104915
- Maldini, I. and Grimstad Klepp, I. (2025) 'The EU Textile Strategy: How to Avoid Overproduction and Overconsumption Measures in Environmental Policy', *Journal of Sustainable Marketing*, pp. 1–17. doi:10.51300/JSM-2025-141
- McLymore, A., Hall, C. and Barrington, L. (2024) 'Focus: Rise of fast-fashion Shein, Temu roils global air cargo industry', *Reuters*, 10 April. Available at: https://www.reuters.com/business/retail-consumer/rise-fast-fashion-shein-temu-roils-global-air-cargo-industry-2024-02-21/
- Mörsen, T. (2023) *A Zero Waste Vision for Fashion Chapter 1: All We Need Is Less*. Available at: https://zerowasteeurope.eu/wp-content/uploads/2023/09/20230904-ZWE-Textiles-Vision-part-1_-sufficiency_final-TM-1.pdf (Accessed: 4 June 2025)
- MSCI ESG Research LLC (2024) *Implied Temperature Rise Methodology*. Available at: https://www.msci.com/documents/10199/7118a4c1-e446-ffa8-87f2-f4d6d2d07d36 (Accessed: 7 November 2024)
- NewClimate Institute (2023) *Corporate Climate Responsibility Monitor 2023: Assessing the Transparency and Integrity of Companies' Emission Reduction and Net-Zero Targets*. Berlin and Cologne, Germany: NewClimate Institute, Carbon Market Watch. Available at: https://newclimate.org/sites/default/files/2023-02/NewClimate_CorporateClimateResponsibilityMonitor2023_Feb23.pdf (Accessed: 20 February 2023)
- NewClimate Institute (2024a) *Briefing: 24/7 renewable electricity matching is a far more credible approach for the GHG Protocol and the SBTi than the Emissions First Partnership proposal*. Available at: https://www.newclimate.org/news/briefing-247-renewable-electricity-matching-is-a-far-more-credible-approach-for-the-ghg (Accessed: 28 March 2025)
- NewClimate Institute (2024b) *Corporate Climate Responsibility Monitor 2024: Assessing the Transparency and Integrity of Companies' Emission Reduction and Net-Zero Targets*. Berlin and Cologne, Germany: NewClimate Institute, Carbon Market Watch. Available at: https://newclimate.org/resources/publications/corporate-climate-responsibility-monitor-2024 (Accessed: 9 April 2024)
- NewClimate Institute (2024c) *Navigating the nuances of corporate renewable electricity procurement: Spotlight on Fashion and Tech*. Berlin and Cologne, Germany: NewClimate Institute. Available at: https://newclimate.org/resources/publications/navigating-the-nuances-of-corporate-renewable-electricity-procurement (Accessed: 24 October 2024)
- NewClimate Institute (2025) *Evolution of corporate climate targets*. Berlin and Cologne, Germany: NewClimate Institute. Available at: https://newclimate.org/resources/publications/evolution-of-corporate-climate-targets (Accessed: 30 January 2025)
- OECD (2024) *Extended Producer Responsibility: Basic facts and key principles*. Organization for Economic Cooperation & Development (OECD). Available at: https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/04/extended-producer-responsibility_4274765d/67587b0b-en.pdf (Accessed: 4 June 2025)
- Parsons, L., Campos, R.S. de, Moncaster, A., *et al.* (2021) *Disaster Trade: The Hidden Footprint of UK Production Overseas*. University of London. Available at: https://pure.royalholloway.ac.uk/en/publications/disaster-trade-the-hidden-footprint-of-uk-production-overseas
- Pavlenko, N. and Kharina, A. (2018) *Policy and Environmental Implications of using HEFA+ for aviation*. Washington D.C., USA: International Council on Clean Transportation (ICCT). Available at: https://www.theicct.org/sites/default/files/publications/Green-Diesel-Aviation_ICCT-Working-Paper_20180321_vF.pdf (Accessed: 27 January 2023)
- Public Eye (2024) *One-Earth Fashion: 33 Transformations for a Just Fashion System within Planetary Boundaries*. Public Eye. Available at: https://www.publiceye.ch/fileadmin/img/Mode/One_earth_fashion/One-Earth_Fashion_Full_Report_2024.pdf (Accessed: 2 June 2025)
- Reid, H. (2024) 'Online retailer Shein's 2023 sales hit $2 billion in UK', *Reuters*, 8 October. Available at: https://www.reuters.com/business/retail-consumer/online-retailer-sheins-2023-sales-hit-2-bln-uk-2024-10-08/
- Reuters (2025) 'Shein's annual profit down by more than a third, FT reports', *Reuters*, 23 February. Available at: https://www.reuters.com/business/retail-consumer/sheins-profits-drop-by-more-than-third-2024-ft-reports-2025-02-23/
- Sadowski, M., Perkins, L. and McGarvey, E. (2021) *Roadmap to Net Zero: Delivering Science-Based Targets in the Apparel Sector, World Resources Institute*. Washington D.C., United States of America: World Resources Institute (WRI) and Apparel Impact Institute (Aii). doi:10.46830/wriwp.20.00004
- Samsara Eco (2025) 'lululemon and Samsara Eco Announce 10-Year Plan to Advance Recycled Material Portfolio', *Samsara Eco*, 12 June. Available at: https://www.samsaraeco.com/press-release-lulu-lemon-10-yearplan/
- SBTi (2025) *SBTi Corporate Net Zero Standard v2.0 Draft for Consultation*. Science Based Targets initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard-v2-Consultation-Draft.pdf (Accessed: 2 April 2025)
- Segal, M. (2025) 'EU Lawmakers Agree to New Rules Requiring Fashion Brands to Pay to Recycle Clothes', *ESG Today*, 19 February. Available at: https://www.esgtoday.com/eu-lawmakers-agree-to-new-rules-requiring-fashion-brands-to-pay-to-recycle-clothes/ (Accessed: 4 June 2025)
- Shein (2023) *2022 Sustainability and Social Impact Report*. Shein. Available at: https://sheingroup.com/esg-reports/ (Accessed: 18 June 2025)
- Shein (2024) *2023 Sustainability and Social Impact Report*. Shein. Available at: https://www.sheingroup.com/our-impact/reports/ (Accessed: 18 December 2024)
- Shein (2025a) *2024 Sustainability and Social Impact Report*. Shein. Available at: https://www.sheingroup.com/our-impact/reports/ (Accessed: 16 June 2025)
- Shein (2025b) *Our On-Demand Business Model*. Available at: https://www.sheingroup.com/our-business/our-business-model/ (Accessed: 28 January 2025)
- Shein (2025c) 'SHEIN's Science-Based Net-Zero Target is Approved by SBTi', 23 May. Available at: https://www.sheingroup.com/corporate-news/sheins-science-based-net-zero-target-is-approved-by-sbti/
- Shein (2025d) 'SHEIN Marks A Milestone with the Development of an Innovative Polyester Recycling Process', 22 January. Available at: https://www.sheingroup.com/corporate-news/shein-marks-a-milestone-with-the-development-of-an-innovative-polyester-recycling-process/
- Sonotronic (2025) *Ultrasonic washing*. Available at: https://sonotronic.de/en/technologies/ultrasonic/ultrasonic-washing/ (Accessed: 18 June 2025)
- Stand.earth (2024) *Clean Energy Close Up 2024*. Available at: https://stand.earth/fashion/wp-content/uploads/sites/8/2024/04/STND-Clean-Energy-Close-Up-V5-2.pdf (Accessed: 4 April 2025)
- Teske, S. (2022) *Achieving the Paris Climate Agreement Goals. Part 2: Science-based Target Setting for the Finance industry – Net-Zero Sectoral 1.5˚C Pathways for Real Economy Sectors*. Cham, Switzerland: Springer. Available at: https://link.springer.com/content/pdf/10.1007/978-3-030-99177-7.pdf (Accessed: 24 August 2022)
- Textile Exchange (2023) *Material Pathways: Accelerating action towards Climate + goals. Textile Exchange*. Available at: https://textileexchange.org/app/uploads/2023/03/Material-Pathways_March-2023.pdf (Accessed: 4 June 2025)
- Textile Exchange (2025) 'Preferred Fiber & Materials Matrix'. Textile Exchange. Available at: https://textileexchange.org/pfmm/ (Accessed: 13 November 2024)
- Textile Network (2020) *Weber Ultrasonic: Using ultrasound for textile treatment*. Available at: https://textile-network.com/en/Technical-Textiles/Technologien/Weber-Ultrasonic-Using-ultrasound-for-textile-treatment?utm_source=chatgpt.com
- UNFCCC (2021) *Fashion Industry Charter for Climate Action*. United Nations Climate Change Secretariat. Available at: https://unfccc.int/sites/default/files/resource/Fashion Industry Carter for Climate Action_2021.pdf (Accessed: 18 June 2025)
- Wenzel, E. (2025) 'How H&M will push suppliers to use thermal batteries for energy', *Trellis*, 8 June. Available at: https://trellis.net/article/how-hm-will-push-suppliers-to-use-thermal-batteries-for-energy/
- Wilson, A. (2022) 'Brands commit to disruptive Dyecoo technology', *Innovation in Textiles*, 14 November. Available at: https://www.innovationintextiles.com/brands-commit-to-disruptive-dyecoo-technology/
- Zhang, X. (2023) *Biomass Burning : The Fashion Industry's False Phase-Out Contents*. Stand.earth. Available at: https://stand.earth/wp-content/uploads/2023/11/2023-Biomass-brand-analysis-report_Final.pdf (Accessed: 11 March 2024)

References (Automotive manufacturers)

- A2Z Coalition (2025) *Accelerating to Zero Coalition - Signatories [Status 17.04.2024]*. Available at: https://acceleratingtozero.org/signatories/ (Accessed: 17 April 2025).
- Accelerating to Zero Coalition (2021a) 'Accelerating to Zero - General Motors'. Available at: https://acceleratingtozero.org/signatories/general-motors/ (Accessed: 30 April 2025).
- Accelerating to Zero Coalition (2021b) 'Accelerating to Zero Coalition - Ford'. Available at: https://acceleratingtozero.org/signatories/ford/.
- AcelorMittal (2023) *ArcelorMittal North America Announces Supply Agreement with General Motors for North American-Sourced Sustainable XCarb® Steel | ArcelorMittal*. Available at: https://corporate.arcelormittal.com/media/news-articles/arcelormittal-north-america-announces-supply-agreement-with-general-motors-for-north-american-sourced-sustainable-xcarb-steel (Accessed: 5 May 2025).
- Ajanovic, A. (2023) 'Electricity vs hydrogen in the transition towards sustainable mobility', *Oxford Open Energy*. Oxford University Press. Available at: https://doi.org/10.1093/ooenergy/oiad013.
- BMW (2025) *BMW Group Report 2024*. Munich, Germany: BMW Group. Available at: https://www.bmwgroup.com/content/dam/grpw/websites/bmwgroup_com/ir/downloads/en/2025/bericht/BMW-Group-Report-2024-en.pdf (Accessed: 20 June 2025).
- Boehm, S. *et al.* (2023) *State of Climate Action 2023*. Berlin and Cologne, Germany; San Francisco, CA; Washington, DC, Germany; San Francisco, CA; Washington, DC: Bezos Earth Fund, Climate Action Tracker, Climate Analytics, ClimateWorks Foundation, NewClimate Institute, the United Nations Climate Change High-Level Champions, and World Resources Institute. Available at: https://climateactiontracker.org/documents/1179/State_of_Climate_Action_2023_-_November_2023.pdf (Accessed: 15 November 2023).
- Bonaccorsi, L., Ferraro, E. and Massuama, M. (2022) *Oil companies in disguise - On a ticking 'carbon bomb' called 'Scope 3 emissions' mandatory reporting'. And why investors should avoid car stocks and cars' ESG ratings*. Transport & Environment. Available at: https://www.transportenvironment.org/wp-content/uploads/2022/09/Carbon-ESG-finance-Car-Study-V6.pdf (Accessed: 28 December 2022).
- Bonaccorsi, L., Ferraro, E. and Scott, B. (2024) *Oil companies in disguise 2024: 2024 edition.* Nomisma; Carbon Tracker. Available at: https://carbontracker.org/reports/oil-companies-in-disguise-2024-edition/.
- Business & Human Rights Resource Centre (2025) *Tanzania: Carbon projects undermine Maasai land rights Sequenza temporale Volkswagen's response to the report, Business & Human Rights Resource Centre*. Available at: https://www.business-humanrights.org/it/ultime-notizie/tanzania-new-report-claims-serious-abuses-linked-to-new-carbon-projects-including-one-financed-by-volkswagen-incl-co-response/ (Accessed: 17 April 2025).
- CAT (2020) *Paris Agreement Compatible Sectoral Benchmarks.* Berlin, Germany: Climate Action Tracker (Climate Analytics, NewClimate Institute). Available at: https://climateactiontracker.org/documents/753/CAT_2020-07-10_ParisAgreementBenchmarks_FullReport.pdf (Accessed: 7 March 2024).
- Climate Arc (2025) *Methodology [Status: June 2025]*. Available at: https://transitionarc.climatearc.org/methodology/data-sources/ (Accessed: 20 June 2025).
- Climate Group (2025) *SteelZero members*. Available at: https://www.theclimategroup.org/steelzero-members (Accessed: 28 April 2025).
- COP26 Presidency (2021) *Policy paper: COP26 declaration on accelerating the transition to 100% zero emission cars and vans*. UK Government. Available at: https://www.gov.uk/government/publications/cop26-declaration-zero-emission-cars-and-vans#full-publication-update-history (Accessed: 2 November 2022).
- Dietz, S., Chiu, H. and Sokol-Sachs, T. (2023) *Carbon performance assessment of automobile manufacturers: note on methodology [January 2023]*. London, United Kingdom: Transition Pathway Initiative (TPI). Available at: https://www.transitionpathwayinitiative.org/publications/111.pdf?type=Publication (Accessed: 28 February 2023).
- Elgin, B. and White, N. (2023) 'Carbon Offset Market Faces Chaos as African Mega-Project Collapses', *Bloomberg Green*, 27 October. Available at: https://www.bloomberg.com/news/articles/2023-10-27/shaky-zimbabwe-project-puts-whole-carbon-market-at-risk?leadSource=uverify wall (Accessed: 13 December 2023).
- EPA Press Office (2024) 'General Motors Agrees to Retire 50 million Metric Tons of Greenhouse Gas Credits to Resolve Excess Emissions'. Available at: https://www.epa.gov/newsreleases/general-motors-agrees-retire-50-million-metric-tons-greenhouse-gas-credits-resolve#:~:text=WASHINGTON – Today%2C July 3%2C,vehicle in-use testing program. (Accessed: 30 April 2025).
- European Comission (2025) *Light-duty vehicles [Status: 20.06.2025]*. Available at: https://climate.ec.europa.eu/eu-action/transport-decarbonisation/road-transport/light-duty-vehicles_en (Accessed: 20 June 2025).
- European Union (2023) *Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC (Text with EEA relevance)*. Available at: https://eur-lex.europa.eu/eli/reg/2023/1542/oj (Accessed: 12 June 2025).
- First Movers Coalition (2025a) *First Movers Coalition Members*. Available at: https://initiatives.weforum.org/first-movers-coalition/community (Accessed: 23 April 2025).
- First Movers Coalition (2025b) *First Movers Coalition Members (Status: June 2025)*. Available at: https://initiatives.weforum.org/first-movers-coalition/community (Accessed: 12 June 2025).
- FMC (2022a) *First Movers Coalition – Aluminium commitment*. First Mover Coalition (FMC); World Economic Forum (WEF); Department of State of the United States of America. Available at: https://www3.weforum.org/docs/WEF_First_Movers_Coalition_Aluminium_Commitment_2022.pdf (Accessed: 13 December 2023).
- FMC (2022b) *Steel commitment*. First Mover Coalition (FMC); World Economic Forum (WEF); US Department of the State. Available at: https://www3.weforum.org/docs/WEF_FMC_Steel_2022.pdf (Accessed: 13 December 2023).
- FMC (2024) *First Movers Coalition - Steel commitment*. World Economic Forum. Available at: https://www3.weforum.org/docs/WEF_FMC_Sector_One_pagers_2024_Steel.pdf (Accessed: 4 April 2025).
- Ford (2022) 'Ford Media Center FORD TAKES NEXT STEPS TOWARDS CARBON NEUTRALITY IN EUROPE BY 2035 – SIGNS MOUS WITH KEY SUPPLIERS'. Available at: https://media.ford.com/content/fordmedia/feu/en/news/2022/10/25/ford-takes-next-steps-towards-carbon-neutrality-in-europe-by-203.html (Accessed: 30 April 2025).
- Ford (2024a) *'Environmental, Social, and Governance Review - November 2024'*, (November). Available at: https://s205.q4cdn.com/882619693/files/doc_downloads/ESG/2024/11/Ford-2024-ESG-Presentation.pdf (Accessed: 11 February 2025).
- Ford (2024b) *'Integrated Sustainability and Financial Report 2024'*. Available at: https://corporate.ford.com/content/dam/corporate/us/en-us/documents/reports/2023-integrated-sustainability-and-financial-report.pdf (Accessed: 28 April 2025).
- Ford (2025a) *'Ford 2024 Annual Report'*. Available at: https://d18rn0p25nwr6d.cloudfront.net/CIK-0000037996/36cee874-3415-4088-a03e-8f255a43cd89.pdf (Accessed: 15 February 2025).
- Ford (2025b) *Notice of 2025 Virtual Annual Meeting of Shareholders and Proxy Statement*. Ford Motor Company. Available at: https://shareholder.ford.com/financials/sec-filings/sec-filings-details/default.aspx?FilingId=18320722 (Accessed: 30 April 2025).
- General Motors (2021) *General Motors, the Largest U.S. Automaker, Plans to be Carbon Neutral by 2040*. Available at: https://investor.gm.com/news-releases/news-release-details/general-motors-largest-us-automaker-plans-be-carbon-neutral-2040 (Accessed: 13 May 2025).
- General Motors (2023a) *'2023 Sustainability Report: Journey to zero waste'*. Available at: https://www.gm.com/commitments/sustainability (Accessed: 30 April 2025).
- General Motors (2023b) *'2023 Sustainability Supplement'*. Available at: https://www.gm.com/content/dam/company/docs/us/en/gmcom/company/GM_ESG_Data_2023.pdf (Accessed: 30 March 2025).
- General Motors (2025) *'General Motors 2024 Annual Report'*. General Motors. Available at: https://investor.gm.com/static-files/bb036538-2486-4f65-ab98-1d12bea0061a.
- Greenpeace East Asia (2024) *Toyota's Reply to Our Open Letter Concerning the Automaker's Climate Measures.* Greenpeace. Available at: https://www.greenpeace.org/eastasia/press/8724/toyotas-reply-to-our-open-letter-concerning-the-automakers-climate-measures/ (Accessed: 5 December 2025).
- Hino (2022) *Hino Sustainability Report 2021*. Hino, Japan: Hino Motors Ltd. Available at: https://www.hino-global.com/corp/csr/backnumber/parts/pdf/2021/sr21_environment.pdf (Accessed: 27 November 2023).
- Hino (2023) *Strategy of Hino towards Carbon Neutrality*. Hino Motors Ltd. Available at: https://www.hino-global.com/corp/for_investors/financial_results/assets/Strategy of Hino towards Carbon Neutrality.pdf (Accessed: 18 December 2023).
- Hino Motors Ltd. (2024) *'Financial Results for the Fiscal Year ended March 31, 2015'*, (March), pp. 1–19. Available at: https://www.hino-global.com/corp/for_investors/disclosure/assets/Financial Results for the Fiscal Year Ended March 31%2C 2024.pdf (Accessed: 30 January 2025).
- Hino Motors Ltd. (2025a) *ESG Data Collection*. Available at: https://www.hino.co.jp/corp/sustainability/esg_data/ (Accessed: 12 February 2025).
- Hino Motors Ltd. (2025b) *Hino Environment Website*. Available at: https://www.hino-global.com/corp/sustainability/environment/ (Accessed: 18 June 2025).
- IEA (2023a) *Global EV Outlook 2023: Catching up with climate ambitions*. Paris, France: International Energy Agency (IEA). Available at: https://iea.blob.core.windows.net/assets/dacf14d2-eabc-498a-8263-9f97fd5dc327/GEVO2023.pdf (Accessed: 9 January 2024).
- IEA (2023b) *Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach (2023 Update)*. Paris, France: International Energy Agency. Available at: https://iea.blob.core.windows.net/assets/9a698da4-4002-4e53-8ef3-631d8971bf84/NetZeroRoadmap_AGlobalPathwaytoKeepthe1.5CGoalinReach-2023Update.pdf (Accessed: 18 October 2023).
- International Motors (2025) *FLEET ELECTRIFICATION*, International Motors, LLC. Available at: https://www.international.com/services/fleet-electrification (Accessed: 17 April 2025).

- ISO (2022) *Net Zero Guidelines – Accelerating the transition to net zero*. Geneva, Switzerland: International Organization for Standardization (ISO). Available at: https://www.iso.org/obp/ui/en/#iso:std:iso:iwa:42:ed-1:v1:en (Accessed: 18 October 2023).
- Jaramillo, P. *et al.* (2022) 'Transport', in P.R. Shukla *et al.* (eds) *Climate Change 2022: Mitigation of Climate Change - Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK and New York, NY, USA: Intergovernmental Panel on Climate Change (IPCC). Available at: https://doi.org/10.1017/9781009157926.012.
- Keohane, D. and Inagaki, K. (2024) Toyota bets on new line of combustion engines in challenge to Tesla, Financial Times. *Financial Times*. Available at: https://www.ft.com/content/b54ddc3a-1924-457b-a680-0a2ef098de76 (Accessed: 5 December 2024).
- Linder, M. *et al.* (2023) *The race to decarbonize electric-vehicle batteries*. McKinsey & Company. Available at: https://www.mckinsey.com/~/media/mckinsey/industries/automotive and assembly/our insights/the race to decarbonize electric vehicle batteries/the-race-to-decarbonize-electric-vehicle-batteries-vf.pdf (Accessed: 12 December 2023).
- MAN Truck & Bus (2025) *Zero Emissions*. Available at: https://www.man.eu/corporate/en/zero-emission/zero-emission.html (Accessed: 17 April 2025).
- Michel, M. (2024) *Volkswagen will make EVs with low-carbon steel from 2028, CSO Futures*. Available at: https://www.csofutures.com/news/volkswagen-will-make-evs-with-low-carbon-steel-from-2028/ (Accessed: 17 April 2025).
- Mission Possible Partnership (2022) *Making zero-emissions trucking possible: An industry-backed, 1.5°C-aligned transition strategy*. Mission Possible Partnership. Available at: https://missionpossiblepartnership.org/wp-content/uploads/2022/11/Making-Zero-Emissions-Trucking-Possible.pdf (Accessed: 18 October 2023).
- MSCI ESG Research LLC (2024) *Implied Temperature Rise Methodology*. Available at: https://www.msci.com/documents/10199/7118a4c1-e446-ffa8-87f2-f4d6d2d07d36 (Accessed: 7 November 2024).
- Net Zero Tracker (2025) *Net Zero Good Practice*. Available at: https://zerotracker.net/net-zero-good-practice (Accessed: 16 May 2025).
- NewClimate Institute (2024) *Corporate Climate Responsibility Monitor 2024: Assessing the Transparency and Integrity of Companies' Emission Reduction and Net-Zero Targets*. Berlin and Cologne, Germany: NewClimate Institute, Carbon Market Watch. Available at: https://newclimate.org/resources/publications/corporate-climate-responsibility-monitor-2024 (Accessed: 9 April 2024).
- NewClimate Institute (2025a) *Corporate Climate Responsibility: Guidance and assessment criteria for good practice on corporate climate strategies. Version 5.0, June 2025*. Berlin and Cologne, Germany: NewClimate Insitute. Available at: https://newclimate.org/resources/publications/corporate-climate-responsibility-monitor-2025-methodology.
- NewClimate Institute (2025b) *Evolution of corporate climate targets*. Berlin and Cologne, Germany: NewClimate Institute. Available at: https://newclimate.org/resources/publications/evolution-of-corporate-climate-targets (Accessed: 30 January 2025).
- Nucor (2021) *Nucor Launches Econiq™ Net-Zero Steel*. Available at: https://nucor.com/news-release/nucor-launches-econiq%22-net-zero-steel-122597 (Accessed: 13 May 2025).
- Reuters (2024) T*oyota cuts 2026 global EV output plans by a third, Nikkei reports*. Available at: https://www.reuters.com/business/autos-transportation/toyota-cut-2026-global-ev-production-by-around-third-1-mln-nikkei-reports-2024-09-06/ (Accessed: 4 April 2025).
- Rio Tinto (2022) *Rio Tinto and Ford sign MOU for battery and low carbon materials supply to support net-zero future*. Available at: https://www.riotinto.com/en/news/releases/2022/ford-rio-tinto-sign-mou-for-battery-and-low-carbon-materials-supply-to-support-net-zero-future (Accessed: 18 June 2025).
- RMI (2024) *Sustainable Steel Buyers Platform*. Available at: https://rmi.org/our-work/climate-aligned-industries/sustainable-steel-buyers-platform/#:~:text=RMI-led Sustainable Steel Buyers Platform is enabling corporate,near-zero emissions steel in North America this decade. (Accessed: 15 September 2024).
- SBTi (2022) *Transport - Our updated OEMS policy (Status: October 2022)*. Science Based Targets initiative (SBTi). Available at: https://sciencebasedtargets.org/sectors/transport#our-updated-oems-policy (Accessed: 11 October 2022).
- SBTi (2024a) *Aligning Corporate Value Chains to Global Climate Goals: Scope 3 discussion paper*. Science Based Targets initiative. Available at: https://sciencebasedtargets.org/resources/files/Aligning-corporate-value-chains-to-global-climate-goals-SBTi-Research-Scope-3-Discussion-Paper.pdf (Accessed: 18 September 2024).
- SBTi (2024b) *Land transport science-based target-setting guidance (Version 1.1, October 2024)*. Science Based Targets initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/files/Land-Transport-Guidance.pdf (Accessed: 7 May 2025).
- SBTi (2024c) *SBTi Corporate Net-Zero Standard. Version 1.2 (March 2024)*. Science Based Targets Initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf (Accessed: 14 March 2024).
- SBTi (2025a) *SBTi automotive sector net-zero standard consultation draft*. Available at: https://files.sciencebasedtargets.org/production/files/SBTi-Automotive-Net-Zero-Standard.pdf?dm=1749719769&_gl=1*1b0g4ro*_gcl_au*MTAyMjkzNDcwMi4xNzQ5NzE2ODUy*_ga*MTA5NzgzOTUyNC4xNzM5ODk2MTAx*_ga_22VNHNTFT3*czE3NTAwODY0MjUkbzI2JGcxJHQxNzUwMDg2NDQwJGo0NSRsM (Accessed: 13 June 2025).
- SBTi (2025b) *SBTi Corporate Net Zero Standard v2.0 Draft for Consultation*. Science Based Targets initiative (SBTi). Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard-v2-Consultation-Draft.pdf (Accessed: 2 April 2025).
- Scania (2024) *Annual and Sustainability Report 2024*. Scania AB. Available at: https://www.scania.com/content/dam/group/investor-relations/annual-review/download-full-report/scania-annual-and-sustainability-report-2024.pdf (Accessed: 17 April 2025).
- Smith, C. (2025) *Toyota Hit With Astronomical Fine for Cheating Diesel Emissions*. Motor.com. Available at: https://www.motor1.com/news/747717/toyota-hino-motors-cheated-emissions-fine/ (Accessed: 20 January 2025).
- Stellantis (2022) *Dare Forward 2030: Stellantis Long-Term Strategic Plan*. Amsterdam, the Netherlands: Stellantis N.V. Available at: https://www.stellantis.com/content/dam/stellantis-corporate/investors/events/strategic-plan-2030/2022_03_01_Strategic_Plan.pdf (Accessed: 6 April 2024).
- Stellantis (2023a) *2022 Corporate Social Responsibility Report: Powered By Our Diversity, We Lead the Way The World Moves*. Hoofddorp, The Netherlands: Stellantis N.V. Available at: https://www.stellantis.com/content/dam/stellantis-corporate/sustainability/csr-disclosure/stellantis/2022/Stellantis-2022-CSR-Report.pdf (Accessed: 22 January 2024).
- Stellantis (2023b) *2023 Corporate Social Responsibility Report: Powered By Our Diversity, We Lead the Way The World Moves*. Hoofddorp, The Netherlands: Stellantis N.V. Available at: https://www.stellantis.com/content/dam/stellantis-corporate/sustainability/csr-disclosure/stellantis/2023/Stellantis-2023-CSR-Report.pdf (Accessed: 8 April 2024).
- Stellantis (2025) '*Expanded Sustainability Statement 2024 Expanded Sustainability Statement*'. Available at: https://www.stellantis.com/content/dam/stellantis-corporate/sustainability/esg-disclosures/Stellantis-Expanded-Sustainability-Statement-2024.pdf (Accessed: 26 May 2025).
- Stellantis, N. V (2024) *'Stellantis Annual report 2024'*. Available at: https://www.stellantis.com/content/dam/stellantis-corporate/investors/financial-reports/Stellantis-NV-20241231-Annual-Report.pdf (Accessed: 26 May 2025).
- Teske, S. *et al.* (2022) *The Internal Combustion Engine Bubble*. Hamburg, Germany: Greenpeace. Available at: https://www.greenpeace.de/publikationen/ICE-Bubble_2.pdf (Accessed: 11 November 2022).
- Thomas, A. (2025) *Ford Shareholders Fail to Adopt Resolution on Clean Supply Chains, Disappointing NGOs and Advocates - Mighty Earth, Mighty Earth*. Available at: https://mightyearth.org/article/ford-shareholders-fail-to-adopt-resolution-on-clean-supply-chains-disappointing-ngos-and-advocates/ (Accessed: 26 May 2025).
- Toyota (2024) *Sustainability Data Book 2024*. Toyota, Japan: Toyota Motor Corporation. Available at: https://global.toyota/pages/global_toyota/sustainability/report/sdb/sdb24_en.pdf (Accessed: 31 October 2024).
- Toyota Europe (2021) *Toyota Motor Europe outlines its path to 100% CO_2 reduction by 2035, Press Release*. Toyota Motor Corporation. Available at: https://newsroom.toyota.eu/toyota-motor-europe-outlines-its-path-to-100-co2-reduction--by-2035/ (Accessed: 24 November 2023).
- Toyota Europe (2023) *Electrification [Status: 24.11.2023]*. Toyota Motor Corporation. Available at: https://www.toyota-europe.com/electrification (Accessed: 24 November 2023).
- Transport & Environment (2018) *How to decarbonise European transport by 2050*. Brussels, Belgium: Transport & Environment. Available at: https://www.transportenvironment.org/discover/how-decarbonise-european-transport-2050/ (Accessed: 26 October 2022).
- Traton (2024) *2024 Annual Report*. Traton Group. Available at: https://annualreport.traton.com/2024/en/index.html (Accessed: 17 April 2025).
- UN HLEG (2022) *Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities and Regions*. United Nations' High-Level Expert Group on the Net Zero Emissions Commitments of Non-State Entities. Available at: https://www.un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf (Accessed: 29 November 2022).
- UNFCCC (2021) *Upgrading our systems together: A global challenge to accelerate sector breakthroughs for COP26 – and beyond*. UNFCCC Climate Champions. Available at: https://racetozero.unfccc.int/wp-content/uploads/2021/09/2030-breakthroughs-upgrading-our-systems-together.pdf (Accessed: 1 December 2022).
- US Steel (2023) *U. S. Steel Announces Supply Agreement with General Motors for U.S.-Sourced Sustainable verdeX® Steel - www.ussteel.com*. Available at: https://www.ussteel.com/newsroom/-/blogs/u-s-steel-announces-supply-agreement-with-general-motors-for-u-s-sourced-sustainable-verdex-steel (Accessed: 5 May 2025).
- Vellequette, L. (2024) *Toyota N.A. CEO Ted Ogawa: U.S. EV demand will be 30% in 2030, Automotive News*. Available at: https://www.autonews.com/executives/toyota-na-ceo-ted-ogawa-us-ev-demand-will-be-30-2030/ (Accessed: 4 April 2025).
- Volkswagen (2023a) *Volkswagen AG - Climate Change Questionnaire 2023*. Volkswagen, CDP. Available at: https://www.cdp.net/en/responses?queries%5Bname%5D=volkswagen (Accessed: 18 December 2023).
- Volkswagen (2023b) *Volkswagen Aktiengesellschaft: Sustainability Report 2022*. Wolfsburg, Germany: Volkswagen AG. Available at: https://www.volkswagen-group.com/en/publications/more/group-sustainability-report-2022-1644/download?disposition=attachment (Accessed: 16 November 2023).
- Volkswagen (2023c) *Volkswagen Group: Association Climate Review 2023*. Volkswagen Group. Available at: https://www.volkswagen-group.com/en/sustainability-15772 (Accessed: 16 November 2023).
- Volkswagen (2024a) *Green steel for sustainable mobility: Thyssenkrupp Steel and Volkswagen Group's new collaboration*. Volkswagen AG. Available at: https://www.volkswagen-group.com/en/press-releases/green-steel-for-sustainable-mobility-thyssenkrupp-steel-and-volkswagen-groups-new-collaboration-18757 (Accessed: 14 April 2025).
- Volkswagen (2024b) *Low - carbon steel : Volkswagen AG and Vulcan Green Steel enter into partnership Partnership with Vulcan Green Steel*. Volkswagen AG. Available at: https://www.volkswagen-group.com/en/press-releases/low-carbon-steel-volkswagen-ag-and-vulcan-green-steel-enter-into-partnership-18450 (Accessed: 14 April 2025).

- Volkswagen (2025) *Annual Report 2024*. Volkswagen AG. Available at: https://uploads.vw-mms.de/system/production/documents/cws/002/940/file_en/dfed3f8c2cd2a5f5616e3371f8674356349e032e/Y_2024_e.pdf?1741784299 (Accessed: 11 March 2025).
- Volkswagen Climatepartner (2025) *Volkswagen ClimatePartner's Statement on the MISA Report*. Available at: https://volkswagen-climate-partner.com/misa-report/ (Accessed: 23 April 2025).
- Volkswagen ClimatePartner (2024) *Projects - Forests are important carbon sinks [Status: 22.02.2024]*, Website. Volkswagen Climate-Partner GmbH. Available at: https://volkswagen-climatepartner.com/en/projects (Accessed: 13 December 2023).
- Volkswagen ClimatePartner (2025) Explore our climate projects around the world, Volkswagen ClimatePartner. Available at: https://volkswagen-climatepartner.com/projects/ (Accessed: 17 April 2025).
- Yao, T. (2025) *Toyota delays Japan battery plant project on EV slowdown - Nikkei Asia, Nikkei Asia.* Available at: https://asia.nikkei.com/Business/Automobiles/Electric-vehicles/Toyota-delays-Japan-battery-plant-project-on-EV-slowdown?utm_campaign=GL_JP_up-date&utm_medium=email&utm_source=NA_newsletter&utm_content=article_link&del_type=4&pub_date=20250326070000&seq_nu (Accessed: 4 April 2025).

Glossary and abbreviations

Additional potential (of CDR)	See '*Scarcity (of CDR)*'
BECCS	Bioenergy with carbon capture and storage
BEV	Battery electric vehicles
Biological capture and storage	See '*Nature-based solutions*'
BVCM	Beyond value chain mitigation (SBTi terminology; see *Climate contribution*)
CAR	Climate Action Reserve
CCS	Carbon capture and storage
CCU	Carbon capture and utilisation
Climate contribution	We define climate contributions as the financial support provided by a company to support climate change action beyond the company's own value chain, without claiming the neutralisation of its own emissions in return.
Carbon dioxide removals (CDR)	All scenarios consistent with a 1.5°C temperature increase include a major role for carbon dioxide removals (Rogelj *et al.*, 2018). This includes nature-based solutions for carbon sequestration in forests, soils, peatlands and mangroves, technological solutions such as BECCS and DACCS with underground storage, and solutions with mineral storage.
Carbon credit	A carbon credit is a certified unit of a reduction of GHG emissions, or a removal of carbon dioxide (see *Carbon dioxide removals*). Companies sometimes used carbon credits to claim to balance out GHG emissions elsewhere.
CDM	Clean Development Mechanism
CDP	Formerly the Carbon Disclosure Project: Many companies report emissions as well as other details of their climate strategies to CDP. CDP provide companies with a certified rating of their level of climate transparency, which is often used in company's marketing materials.
CEO	Chief Executive Officer
CO_2	Carbon dioxide
COP	Conference of the Parties (see *UNFCCC*).

DACCS	Direct Air Carbon Capture and Storage, see also '*Carbon dioxide removals (CDR)*'
DRI-EAF	Direct reduced iron – Electric arc furnace
ESG	Environmental Social Governance
EU	European Union
EV	Electric vehicle
FLAG	Forest, Land and Agriculture Science Based Target Setting Guidance (a standard by the Science Based Targets initiative for land-based emissions disclosure and target setting).
GHG Protocol	The GHG Protocol is an initiative driven by the World Resources Institute and World Business Council for Sustainable Development, that provides international guidance and standards for GHG emissions accounting.
GHG	Greenhouse gas
Guarantees of origin (GOs)	Other terminology for Renewable Energy Certificate (REC), see '*Renewable Energy Certificate (REC)*'
HDV	Heavy-duty vehicle
High-hanging fruit	The high-hanging fruit of mitigation potential refers to the technologies and measures to decarbonise emission sources that remain otherwise entirely inaccessible to host country governments in the near- and mid-term future, on account of high costs or other insurmountable barriers that cannot reasonably be overcome.
HLEG	The United Nations' High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities
ICT	Information and communications technology
IEA	International Energy Agency
Insetting	'Insetting' is a business-driven concept used by a limited number of actors with no universally accepted definition. Insetting is often described as offsetting within the value chain. The approach can lead to low credibility GHG emission offsetting claims and presents a significant risk of double counting the same emission reductions.
Integrity (rating)	The *Corporate Climate Responsibility Monitor* assesses the transparency and integrity of companies' climate pledges. Integrity, in this context, is a measure of the quality, credibility and comprehensiveness of a company's approaches towards the various elements of corporate climate responsibility.
IPCC	Intergovernmental Panel on Climate Change

ISO	International Organisation for Standardisation
Land sequestration CDR	Measures for carbon dioxide removal that involve biological carbon capture and storage in natural ecosystems, such as soils, forests, peatland and mangroves.
LEV	Low-emission vehicles
LNG	Liquified natural gas
Location-based method (for scope 2 emissions accounting)	The location-based method for scope 2 emissions accounting reflects the average emission intensity of the electricity grid from which the consumer's energy is delivered.
Market-based method (for scope 2 emissions accounting)	The market-based method for scope 2 emissions accounting reflects the emissions from electricity generation specifically procured by the consumer (which may not reflect the electricity they actually consume from a grid that features multiple buyers and sellers). It derives emission factors from contractual renewable electricity procurement instruments.
Nationally determined contributions (NDCs)	Nationally determined contributions (NDCs) are the pledges made by national governments to the United Nations Framework Convention on Climate Change to mitigate climate change. The Paris Agreement requires all Parties to submit and regularly update their NDCs to represent their possible highest level of ambition. Recognising the insufficiency of climate change mitigation commitments in existing NDCs, the Glasgow Pact from COP26 urged all Parties to update their NDCs again ahead of COP27.
Neutralisation	Fundamentally, companies' plans to neutralise emissions towards net zero targets constitute a form of offsetting. Nevertheless, we recognise an emerging consensus that the terminology 'neutralisation' is differentiated by other forms of offsetting on the basis that it should apply only to residual emissions.
Non-GHG climate forcers	Non-GHG climate forcers include the emission of gases and aerosols, and processes that change cloud abundance, leading to radiative forcing. Radiative forcing is a change in the balance of radiation in the atmosphere, which contributes to global warming. For example, the non-GHG climate forcers are estimated to increase the climate impact of GHG emissions from the aviation industry by a factor of approximately 3 (Atmosfair, 2016).
Offsetting	See *carbon credits*.
Ongoing emissions	Ongoing emissions are GHG emissions that a company continues to release into the atmosphere as it progresses toward its (net-)zero or other type of emissions reduction target.
Permanence (of CDR)	The *permanence* of a CDR outcome refers to the timescale and degree to which sequestered carbon remains stored and not released into the atmosphere.

Power purchase agreement (PPA)	A PPA is a long-term contract between an electricity provider and an electricity consumer, usually spanning 10-20 years. The consumer agrees to purchase a certain amount of electricity from a specific asset under a pre-determined pricing arrangement. PPAs are generally signed with new renewable energy installations and form part of the project investment decision (NewClimate Institute and Data-Driven EnviroLab, 2020). PPAs can also be signed for existing installations, in which case it is less likely the PPA results in additional renewable electricity capacity. However, it may be that existing installations would cease operations if the operator cannot sign a new PPA.
PV	Photovoltaics
R&D	Research & development
Renewable energy certificate (REC)	Renewable Energy Certificates (RECs) are also known under various names, such as Guarantees of Origin (GOs) or Energy Attribute Certificates (EACs). RECs can be acquired simply as an accounting tool alongside other renewable electricity procurement constructs, or may be procured as 'standalone RECs'. *Standalone RECs*: The procurement of RECs without any accompanying renewable electricity procurement construct, such as a PPA.
Residual emissions	Residual emissions are the remaining GHG emissions from hard-to-abate emission sources where no known feasible options remain for further decarbonisation. (See also *unabated emissions*)
Scarcity (of CDR)	The maximum potential of most carbon dioxide removal measures is technically limited, and even further restricted by environmental constraints. Due to issues such as land requirements, high water consumption, high energy consumption, land degradation and pollution, among other environmental costs, carbon dioxide removal technologies can only be scaled-up so far without significantly endangering sustainable development goals, including food security. The scarcity of carbon dioxide removals measures – in terms of their maximum absolute or annual technical potential – is an important consideration when evaluating the feasibility of net-zero claims at the level of individual actors. Robust future use of scarce carbon dioxide removal options must be consistent with achieving net-zero and eventually net-negative emissions at the global level, which is required to avoid the most damaging effects of climate change over the coming decades.
Science Based Targets initiative (SBTi)	SBTi reviews and certifies the climate targets of companies who join the initiative as members. Companies' climate targets are certified as 1.5°C or 2°C compatible if they align with SBTi's own methodology and benchmarks.
Scope (of GHG emissions)	The GHG Protocol Corporate Standard classifies a company's GHG emissions into three 'scopes' (WBCSD and WRI, 2004):
Scope 1 emissions	Scope 1 emissions are direct emissions from owned or controlled sources.
Scope 2 emissions	Scope 2 emissions are indirect emissions from the generation of purchased energy (see also *location-based method* and *market-based method*).

Scope 3 emissions	Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions (GHG Protocol, 2013).
Upstream scope 3 emission sources	Upstream emissions are indirect GHG emissions related to purchased or acquired goods and services (GHG Protocol, 2013).
Downstream scope 3 emission sources	Downstream emissions are indirect GHG emissions related to sold goods and services (GHG Protocol, 2013).
Normal scope 3 emission sources	The GHG Protocol's Scope 3 Standard identifies 15 distinct reporting categories for scope 3 emission sources, and requires companies to quantify and report scope 3 emissions from each category (GHG Protocol, 2013).
Optional scope 3 emission sources (indirect use-phase emissions)	*Indirect use-phase emissions* are described by the GHG Protocol Scope 3 Standard (GHG Protocol, 2013) as an optional reporting component. In contrast to direct use-phase emissions from products, such as the energy consumption of vehicles and appliances, indirect use-phase emissions refer to the emissions that occur indirectly from the use of a product. For example, apparel requires washing and drying; soaps and detergents are often used with heated water.
Social cost of carbon (SCC)	The social cost of carbon (SCC) measures the monetised value of net damages to society caused by the emission of one additional ton of carbon dioxide equivalent units (tCO_2e).
Sustainable aviation fuels (SAF)	Sustainable aviation fuels are aviation fuels derived from renewables or waste considering certain sustainability criteria.
Transparency (rating)	The *Corporate Climate Responsibility Monitor* assesses the transparency and integrity of companies' climate pledges. Transparency ratings refer to the extent to which a company publicly discloses the information necessary to fully understand the integrity of that company's approaches towards the various elements of corporate climate responsibility.
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
Value chain emissions	A company's full value chain emissions refers to the entirety of scope 1, scope 2, and scope 3 emissions.

Annex 3A – Comparison to other assessors and validators

The comparison of the *Corporate Climate Responsibility Monitor*'s (CCRM) integrity assessments for short-, medium-, and long-term emission reduction targets with the validations and target assessments by other voluntary initiatives and research organisations reveal several key differences.

Table 3.2: Comparison between assessment for emission reduction targets by (1) the *Corporate Climate Responsibility Monitor* (CCRM) 2025, (2) the Science Based Targets initiative (SBTi), (3) the Transition Pathways Initiative (TPI), (4) the MSCI Net Zero Tracker as of March 2025 and (5) the Planet Tracker; all as of May 2025. Companies listed in alphabetical order for each sector.

COMPANY	CCRM 2025				SBTi	SBTi	TPI	TPI	TPI	MSCI*	Planet Tracker
	Section 2	*Short-term (by 2030)*	*Medium-term (2031-2040)*	*Long-term (beyond 2041)*	*Near-term*	*Net zero*	*Carbon Performance Alignment 2027*	*Carbon Performance Alignment 2035*	*Carbon Performance Alignment 2050*		*Climate alignment*
Danone	*Poor*	*Moderate*	*Very poor*	*Unclear*	*1.5°C*	*1.5°C*	*No or unsuitable disclosure*	*No or unsuitable disclosure*	*No or unsuitable disclosure*	*2.4°C*	*> 2°C*
JBS	*Very poor*	*Very poor*	*Very poor*	*Very poor*	*Commitment removed*	*Commitment removed*	*No or unsuitable disclosure*	*No or unsuitable disclosure*	*No or unsuitable disclosure*	*>3.2°C*	
Mars	*Reasonable*	*High*	*Very poor*	*Reasonable*	*1.5°C*	*1.5°C*				*N/A*	
Nestlé	*Poor*	*Poor*	*Very poor*	*Unclear*	*1.5°C*	*1.5°C*	*Below 2 Degrees*	*1.5 Degrees*	*1.5 Degrees*	*1.9°C*	*> 2°C*
PepsiCo	*Very poor*	*Unclear*	*Very poor*	*Unclear*	*1.5°C*	*Commited*				*1.7°C*	*> 2°C*

** The MSCI Net Zero Track discontinued the public disclosure on its website for single company evaluations in the first half of 2025. Evaluations presented date back to March 2025 before this change in policy.*

Key issues for difference with the Science Based Target initiative (SBTi) validations

The SBTi is currently in the process to revise its Corporate Net Zero Standard with a first draft published in March 2023 (SBTi, 2025). Some of the differences identified below might be addressed in the next version of the standards, which is intended for publication withing the next months.

- **Accounting for land-based removals:** The SBTi Food, Land and Agriculture (FLAG) guidance and the SBTi Corporate Net Zero Standard allow companies operating in the FLAG sector to use carbon dioxide removals within the value chain to meet their 2030 and net-zero targets (SBTi, 2023b, pp. 27–28, 2024d, pp. 26–27). We do not consider the reliance on land-based removals to achieve emission reduction targets as a meaningful target setting strategy in the FLAG sector. While land-based removals are important at the global level, they should not be treated the same as actual emission reductions. This is particularly relevant for the difference of our target integrity assessments with SBTi's near-term and net-zero target validations for **Nestlé** and **PepsiCo**.

Key issues for difference with the Transition Pathways Initiative (TPI) assessments

- **Accounting for land-based removals:** The Transition Pathways Initiative (TPI) assessments carbon performance assessment methodology for food producers allows for the use offsets from outside and inside the value chain to meet their emission reduction targets (Dietz and Jahn, 2024, p. 17). We do not consider the reliance on offsets and land-based removals to achieve emission reduction targets as a meaningful target setting strategy in the FLAG sector. This is particularly relevant for the difference of our target integrity assessments with TPI's carbon performance assessments for **Nestlé**.

Key issues for difference with the MSCI Net Zero Tracker assessments

- **Lack of disclosure on method and underlying data:** The MSCI Net Zero Tracker does not disclose specific data and methodological approaches on emission reduction targets going into its temperature alignment assessments (MSCI ESG Research LLC, 2024). For this reason, we cannot understand whether and to which degree the MSCI allows for offsetting and/or land-based removals in agrifood companies short-, medium-, and long-term targets. This is particularly relevant for the difference of our target integrity assessments with MSCI's assessments for **Nestlé** and **PepsiCo**.

Annex 3B – Target Integrity assessments

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
1 – What are the targets and what do they mean in terms of emission reductions?			
Nestlé	By 2025, compared to 2018 levels: - Reduce emissions by 20%. By 2030, compared to 2018 levels: - Reduce FLAG scope 3 emissions by 50%. - Reduce energy & industry scope 1, 2 & 3 emissions by 50% .	No target identified.	By 2050: - Net-zero emissions. - Reduce scope 3 FLAG emissions by 75% compared to 2018 levels. - Reduce scope 1, 2 & 3 energy and industry emissions by 90% compared to 2018 levels.
JBS	By 2030, compared to 2019 levels: Reduce scope 1 and 2 emissions intensity by 30%.	By 2040: Reach net-zero emissions, but without a specific deep emission reduction target.	No target identified.
PepsiCo	By 2030, compared to 2022 levels: - Reduce scope 1 & 2 emissions by 50% - Reduce scope 3 FLAG emissions by 30% - Reduce scope 3 energy and industry emissions by 42%	No target identified.	By 2050, compared to 2022 levels: - Reach net-zero GHG emissions - Reduce scope 1 & 2 emissions by 90% - Reduce scope 3 energy and industry emissions by 90% - Reduce scope 3 FLAG emissions by 72%
Mars	By 2025, compared to 2015 levels: Reduce scope 1, 2 & 3 emissions by 27%. By 2030, compared to 2015 levels: Reduce scope 1, 2 & 3 emissions by 50%.	No target identified.	By 2050: Net-zero pledge with a target to reduce scope 1, 2 & 3 emissions by 80% compared to 2019 levels
Danone	By 2030, compared to 2020 levels: - Reduce scope 1 & 2 energy & industry-related emissions by 46.3% - Reduce scope 3 energy & industry-related emissions by 42% - Reduce scope 1 & 3 FLAG emissions by 34.8% - Reduce CH_4 emissions from fresh milk by 30%	No target identified.	By 2050, compared to 2020 levels: - Net-zero emissions - Reduce scope 1, 2 & 3 energy & industry-related emissions by 90% - Reduce scope 1 & 3 FLAG emissions by 72%

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
2 – What do the targets mean in terms of emission reductions?			
Nestlé	14-24%	N/A	?
	We compared the targeted emission levels to the value chain emissions reported in the Net Zero Roadmaps, as well as the updated latest sustainability reporting. We did not include land-based removals as reductions.	No target identified.	Undefined role of land-based CDR in net-zero target.
JBS	Unclear	Unclear	N/A
	We cannot independently quantify JBS's intensity targets in terms of absolute emission reductions. JBS does not provide base year intensity emissions.	JBS does not commit to a deep emission reduction target alongside its net-zero pledge.	No target identified.
PepsiCo	37% by 2030	Very poor	Unclear
	PepsiCo's targets translate to a 31% reduction by 2030 below 2022 levels. PepsiCo's targets translate to a 33% reduction by 2030 below 2019 levels, but this value may be inaccurate due to company's divestments and therefore altered base year emissions.	No target identified.	PepsiCo commits to deep emission reductions by 2050 alongside its net-zero target. The company's targets translate to an 86% reduction by 2050 below 2022 levels. PepsiCo's targets translate to an 86% reduction by 2050 below 2019 levels, but this value may be inaccurate due to company's divestments and therefore altered base year emissions.
Mars	46%	N/A	79%
	Mars' target translates to a 46% reduction by 2030 below 2019 if considering location-based emission approaches.	No target identified.	Mars' target translates to 77% by 2050 below 2019 if considering location-based emission approaches. We assume that the company does not plan to claim land sequestration carbon dioxide removals towards this 80% target, as the company has explicitly ruled this out for its 50% 2030 target.
Danone	?	N/A	?
	Danone gives an estimate of residual emissions by 2030. This however likely includes land-based CDR. Target to reduce emissions from fresh milk is most likely separate from removals.	No target identified.	Danone gives an estimate of residual emissions by 2050, which translated to an emission reduction of 80% compared to value chain emissions. This most likely already includes an estimate of land-based CDR within the value chain.

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
3 – Is this emission reduction commitment in line with 1.5°C-compatible trajectories or benchmarks for the sector?			
Nestlé	Poor	Very poor	?
	Land-based CDR will count towards achievement of emission reduction targets; presented measures and mitigation potential suggest significant role.	No target identified.	Undefined role for land-based CDR to count towards achievement of net-zero target.
JBS	Very poor	Very poor	Very poor
	JBS's short-term target to reduce scope 1 and 2 intensity emissions by 30% by 2030 below 2019 levels covers only 4% of emissions in its base year. If the intensity target is interpreted as leading to an equivalent amount of absolute emission reductions, this would lead to a 1.1% emission reduction by 2030 compared to 2019 levels. This reduction is misaligned with cross-sector and sectoral benchmarks. Teske (2022, p. 328) describes that between 2019 and 2030, the food and agriculture industry should reduce its scope 3 emissions by 34%. The SBTi FLAG guidance requires companies to set targets to reduce emissions by 30.3% by 2030 below 2020 levels (SBTi).	We are unable to compare JBS's 2040 net-zero emission reduction target to sectoral 1.5°C-aligned benchmarks as JBS does not commit to reducing emissions alongside its net-zero commitment.	JBS sets no emissions reduction target for the long-term (2041-2050).
PepsiCo	?	Very poor	?
	Undefined role for land-based CDR to count towards achievement of 2030 targets.	No target identified.	Undefined role for land-based CDR to count towards achievement of 2030 targets.
Mars	High	Very poor	Reasonable
	Mars's 2030 short-term target goes beyond the benchmarks for the food and agriculture sector and are aligned with 1.5°C Paris Agreement-aligned global milestones. Mars has further set a short-term target for 2025 that is in line with its 2030 target.	Mars's lack of targets for the period between 2031–2040 neglects the need for interim targets to chart a trajectory towards the company's long-term vision.	Mars's 2050 target meets 1.5°C Paris Agreement aligned milestones for food and agriculture sector. We evaluate Mars's implied emission reduction target reasonable rather than high because of the lack of interim targets on five-year intervals, as per the recommendations of the UN High Level Expert Group on Net Zero. • Teske (2022) identifies 1.5°C-aligned absolute emission reduction milestones for various emission sources of agricultural activities, which represent upstream scope 3 emissions for Mars. All energy-related emissions need to reduce 100% by 2050, whereas AFOLU emissions and non-CO_2 emissions need to reduce by 42% by 2050 below 2019 levels. In sum, these required reductions mean a reduction of 51% across all scopes, below 2019 levels. Mars's implied emission reduction commitment aligns with this. • The Transition Pathways Initiative (TPI) derives an emission intensity per tonne of agricultural input aligned with '1.5°C' trajectories by 2050: 0.414 tCO_2 /tonne agricultural input (Dietz *et al.*, 2022). This represents an 85% reduction in intensity compared to 2.751 tCO_2 /tonne agricultural input in the 2020 base year. Due to a lack of information on intensity and volumes of agricultural input, we cannot directly assess whether Mars's implied emission reduction commitment meets these intensity benchmarks. Moreover, TPI specifies that their benchmarks are developed for human food only, and Mars's products are only partially for human consumption. However, Mars's emission reduction target alongside its 2050 net-zero target contribute to the shift that is signalled by the required change in intensities. Boehm *et al.* (2023) describe emission reduction requirements of 29% for enteric fermentation and 39% for manure management, both below 2017 levels. Mars's emission reduction target goes beyond these levels.
Danone	Moderate	Very poor	?
	Targets are in line with benchmarks, but depend on an undefined role of CDR. Land-based CDR will most likely not contribute to achievement of methane target.	Danone sets no emissions reduction target for the medium term (2031-2040).	Targets appear in line with benchmarks, but the achievement will depend on an unspecified role of land-based CDR.

Annex 3C – Key transition integrity assessments

	Shift to plant-based protein	Reduction in food loss and waste in operations and supply chain	Reduction in fertiliser use	Commit to no-deforestation, no land conversion and no peat-burning	Accompanying measures	Packaging
1 – What transition targets does the company set?						
Nestlé	No targets or measures identified.	No targets or measures identified.	No targets or measures identified.	Nestlé aims to achieve and maintain 100% assessed deforestation-free primary supply chains: meat, palm oil, pulp and paper, soy, sugar, cocoa and coffee.	Nestlé aims to reduce virgin plastic use by a third.	
JBS	No targets or measures identified.	2030 target: JBS and Pilgrim's have committed to reduce food loss and waste in their US operations by 50%	No targets or measures identified.	Delivering zero illegal deforestation in all Brazilian biomes by the end of 2025 for direct and tier 1 indirect cattle suppliers	No targets or measures identified.	
PepsiCo	Increase diverse ingredients: Use more diverse ingredients such as legumes, whole grains, plant-based proteins, fruits and vegetables and nuts and seeds to deliver 145 billion portions of diverse ingredients annually in global convenient foods portfolio by 2030	98% waste diverted from landfill by 2030	No targets or measures identified.	PepsiCo strives to realize deforestation-free sourcing in its company owned and -operated activities and global supply chains by 2025 and conversion-free sourcing by 2030.	No targets or measures identified.	Design 100% of packaging to be recyclable, compostable, biodegradable or reusable by 2025 Cut virgin plastic from non-renewable sources per serving across global beverages and convenient foods portfolio by 50%, including delivering 20% of all beverage servings through reusable models + reducing absolute tonnage of virgin plastic from non-renewable sources by 20% by 2030
Mars	No targets or measures identified.	No targets or measures identified.	No targets or measures identified.	Committed to a deforestation and conversion free cocoa. Committed to stop deforestation and conversion of natural ecosystems in Mars supply chains for direct soy ingredients in Latin America by 2025. Limit or stop deforestation and conversion of natural ecosystems in Mars supply chains, up to the direct cattle supplier for beef ingredients in Latin America. Has achieved a deforestation-free directly sourced palm and palm kernel oil. Also has a target to reduce its land footprint and land-use change emissions.	No commitments to specific measures, but commits to reducing emissions in every accompanying measure through many smaller changes/initiatives	
Danone	No targets or measures identified.	Halve all food waste not fit for human, animal consumption or biomaterial processing by 2030 vs 2020 (LFL)	No targets or measures identified.	Deforestation & conversion-free key commodities by 2025	Some targets and significant measures identified. Most notably targets on packaging: Aims to halve the use of virgin fossil-based packaging by 2040, with a 30% reduction by 2030, accelerating reuse and recycled materials. Aims to make packaging 100% reusable, recyclable or compostable by 2030.	

	Shift to plant-based protein	Reduction in food loss and waste in operations and supply chain	Reduction in fertiliser use	Commit to no-deforestation, no land conversion and no peat-burning	Accompanying measures	Packaging
2 – Are the transition targets in line with 1.5°C-compatible trajectories or benchmarks for the sector?						
Nestlé	Poor	Poor	Very poor	Reasonable	Poor	
	No targets or measures identified.	Presents significant measures, and shows some quantifiable targets for parts of the waste value chain.	No targets or measures identified.	Target covers the major share of deforestation-related activities and is aligned with sectoral requirements. Shareholder farms are excluded from management system requirements.	No targets or measures identified.	
JBS	Very poor	Poor	Very poor	Poor	Very poor	
	JBS sets no targets or significant measures for the transitioning away from livestock farming and towards plant-based products.	JBS sets a target for the transition that covers only very limited parts of the company's activities.	JBS sets no target or significant measures for reducing the use of fertilisers.	JBS does not address the issue of legal deforestation, and its target to address illegal deforestation covers only very limited parts of the company's activities.	JBS explores some short term, accompanying measures but these are not significant, nor does JBS set targets on accompanying measures.	
PepsiCo	Very poor	Very poor	Very poor	High	Poor	?
	PepsiCo does not have a target to transition towards plant-based proteins. PepsiCo has a target to use more diverse ingredients, including plant-based ingredients, but target formulation and metrics are unclear. Clear measures are also missing.	PepsiCo does not set targets or significant measures to reduce food loss and waste in operations and in the supply chain.	PepsiCo does not set targets or significant measures to reduce fertiliser use.	PepsiCo sets a target that is in line with the Afi's target to adopt a deforestation free and conversion free supply chain by 2025 and 2030 respectively. The target covers all of the company's activities, and reflects a timely implementation of the transition in line with sector-specific and long-term action.	PepsiCo implements some measures to address the transition such as improving energy efficiency, but it does not commit to a specific target on any of the key accompanying measures.	[...]
Mars	Poor	Very poor	Very poor	Moderate	Poor	
	Mars does not set a target on increasing the sale of plant-based products but acknowledges the need for a transition and implements some measures to address the transition.	Mars does not set targets or significant measures for reducing food loss and waste in operations and the supply chain.	Mars does not set targets or significant measures for reducing fertiliser use.	Mars sets commodity-specific targets to end deforestation in its operations and supply chain. The targets are partially in line with 1.5C compatible trajectories or benchmarks for the sector, according to available literature. They cover selected parts of the company's activities, leaving out deforestation linked to dairy. Measures reflect a timely implementation of the transition in line with sector-specific decarbonisation pathways, including short- and long-term action.	Mars implements some measures to address this transition, but it does not commit to specific targets and the estimated emission reductions from key measures do not facilitate a clear understanding of the sufficiency of such measures.	
Danone	Moderate	High	Very poor	Moderate	Very poor	
	No target identified, but Danone has a target to reduce methane emissions from fresh milk production and implements significant measures to increase the share of plant-based protein in its portfolio.	Main target & measures mostly cover consumer waste. Food loss is only partially covered.	No targets identified, but some measures presented.	Commitment covers key commodities only; no target identified for other commodities	No target identified, but several significant measures in place.	

	Shift to plant-based protein	Reduction in food loss and waste in operations and supply chain	Reduction in fertiliser use	Commit to no-deforestation, no land conversion and no peat-burning	Accompanying measures	Packaging
3 – What is the companies progress towards the sectoral transition?						
Nestlé	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	Right direction, off track	No benchmarking possible (lack of available benchmarks)	
	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	Some progress identified, but lack of progress on key commodity (cocoa).	No benchmarking possible (lack of available benchmarks)	
JBS	Wrong direction, critically off track	No progress identified or insufficient data	No progress identified or insufficient data	Wrong direction, critically off track	No progress identified or insufficient data	
	JBS has purchased several plant-based brands but continues to expand its different livestock and animal protein businesses. The company does not show any sign of transitioning away from emissions-intensive livestock farming.	No progress indicators identified.	No progress indicators identified.	JBS does not provide progress against its target to phase out illegal deforestation from a subset of its suppliers, however investigations from organisations point to continued deforestation in JBS's supply chain.	No progress indicators identified.	
PepsiCo	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	Wrong direction, critically off track
	PepsiCo reports progress on its commitment to use more diverse ingredients, however there is insufficient information to assess progress.	No progress identified or insufficient data.	No progress identified or insufficient data.	No progress identified or insufficient data.	No progress identified or insufficient data.	Although plastics intensity is reducing and PepsiCo is progressing on some of its other packaging targets, the company reported an increase in the absolute tonnage of plastic in 2023.
Mars	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	Right direction, on track	No progress identified or insufficient data	
	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	Mars reports that most of its sourcing as of 2024 is deforestation free for its key commodities and is on track to source 100% deforestation-free commodities by 2025.	Mars describes planned measures in its decarbonisation roadmap but does not report progress on these measures on its latest sustainability communication, except for progress on packaging targets.	
Danone	No benchmarking possible (lack of available benchmarks)	No progress identified or insufficient data	No progress identified or insufficient data	Right direction, on track	No benchmarking possible (lack of available benchmarks)	
	Danone makes significant progress with regards to plant-based protein offerings and shows that plant-based protein replaces dairy. However, due to lack of available benchmarks, it remains unclear whether this is sufficient.	Danone implements significant measures to reduce food loss and waste. However, due to a lack of data, it remains unclear whether Danone has made any progress.	No progress indicators identified.	Danone presents data on progress towards is zero deforestation target and, based on own reporting, is on track to meet this target.	Limited progress indicators identified, and substantive information on planned and implemented measures provided. No benchmarks available to assess sufficiency of benchmarks.	

Annex 4A – Comparison to other assessors and validators

The comparison of the *Corporate Climate Responsibility Monitor*'s (CCRM) integrity assessments for short-, medium-, and long-term emission reduction targets with the Science Based Target initiative's validations and MSCI Net Zero Tracker target assessments reveal several key differences.

Table 4.1: Comparison between assessment for emission reduction targets by (1) the Corporate Climate Responsibility Monitor (CCRM) 2025, (2) the Science Based Targets initiative (SBTi), and (3) the MSCI Net Zero Tracker; all as of May 2025. Companies listed in alphabetical order for each sector.

COMPANY	CCRM 2025				SBTi	SBTi	MSCI
		Short-term (by 2030)	*Medium-term (2031-2040)*	*Long-term (beyond 2041)*	*Near-term*	*Net zero*	
Amazon	*Very poor*	*Very poor*	*Very poor*	*Very poor*	*Commitment removed*		*2.6°C*
Apple	*Moderate*	*Moderate*	*Very poor*	*Reasonable*	*1.5°C*		*1.7°C*
Google	*Poor*	*Unclear*	*Very poor*	*Very poor*	*Commited*		*1.4°C*
Meta	*Very poor*	*Very poor*	*Very poor*	*Very poor*	*1.5°C*	*Commited*	*1.3°C*
Microsoft	*Poor*	*Unclear*	*Very poor*	*Very poor*	*1.5°C*		*1.4°C*

The MSCI Net Zero Tracker discontinued the public disclosure on its website for single company evaluations in the first half of 2025. Evaluations presented date back to March 2025 before this change in policy.

Key issues for difference with the Science Based Target initiative (SBTi) validations

The SBTi is currently in the process to revise its Corporate Net Zero Standard with a first draft published in March 2023 (SBTi, 2025). Some of the differences identified below might be addressed in the next version of the standards, which is intended for publication withing the next months.

- **Market-based accounting:** The SBTi's current methodologies allow for market-based accounting using all type of renewables procurement constructs to meet scope 2 and scope 3 emission reduction targets (SBTi, 2020a, 2024). We do not consider the reliance on low-integrity procurement constructs such as standalone Renewable Energy Certificates (RECs) as a meaningful emission reduction for our target integrity assessments. We also cannot determine the meaning of targets based on market-based accounting, in the context that the GHG Protocol methodologies for market based accounting are under revision, and that these companies targets could take on very different meanings or need to be updated depending on the outcome of that revision process. This is particularly relevant for the near-term validations of **Apple**, **Meta** and **Microsoft**.
- **Renewable energy targets:** Related to the point above, the SBTi currently does not provide specific high-integrity criteria for validating companies renewable energy targets. This is particularly relevant for the near-term validations of **Apple**, **Meta** and **Microsoft** that all claim to annually source 100% renewable electricity through 2030 as part of their SBTi 1.5°C-aligned near-term validations.
- **Outdated validations:** The SBTi continues to list validations dating back more than six years on their website, for example for **Microsoft** carried out in 2019.
- **Consideration of recent emission trends for targets' feasibility:** The SBTi validations are not regularly reviewed in light of companies' actual emission trends. We consider the meaning of some companies 2030 targets to be unclear in the context that these five companies' emissions have on average nearly doubled between 2019 and 2023, and that the mainstreaming of artificial intelligence applications is projected to lead to rapid increases in data centre capacity and associated energy demand.

Key issues for difference with the MSCI Net Zero Tracker assessments

- **Lack of disclosure on method and underlying data:** The MSCI Net Zero Tracker does not disclose specific data and methodological approaches on emission reduction targets going into its temperature alignment assessments (MSCI ESG Research LLC, 2024). For this reason, we cannot understand whether and to which degree the MSCI allows for market-based accounting in tech companies short-, medium-, and long-term targets.

Annex 4B – Target Integrity assessments

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
1 – What are the targets and what do they mean in terms of emission reductions?			
Amazon	Amazon sets no short-term emissions reduction target (up to 2030).	Amazon pledges net-zero carbon emissions by 2040.	Amazon sets no emissions reduction target for the long term (beyond 2041).
Apple	Apple pledges to be carbon neutral across entire value chain by 2030. This includes a commitment to reduce emissions by 75% below 2015 levels by 2030.	Apple sets no emission reduction target for the medium term (2031-2040).	Reduce emissions by 90% below 2015 levels by 2050
Google	Google pledges to achieve net zero emissions by 2030. This includes the commitment to reduce 50% market-based emissions reduction across all scopes by 2030 compared to 2019 levels.	Google sets no emissions reduction target for the medium-term (2031-2040).	Google sets no emissions reduction target for the long term (beyond 2040).
Meta	Meta pledges to achieve net-zero emissions across the value chain by 2030.	The net zero pledge is accompanies by the following GHG targets for 2031: - Reduce scope 1 and scope 2 emissions by 42% in 2031 from a 2021 baseline. - Not exceed 2021 baseline scope 3 emissions by the end of 2031.	Meta sets no emission reduction target for the long term (beyond 2041).
Microsoft	Microsoft pledges to be carbon negative by 2030 (Remove more carbon than emitted by 2030) This is accompanied by targets to achieve near-zero scope 1 and 2 emissions by 2025, and >50% reduction of scope 3 emissions by 2030.	Microsoft sets no emission reduction target for the medium term (2031-2040).	By 2050, remove an amount of carbon equivalent to historical operational emissions.

2 – What do the targets mean in terms of emission reductions?			
Amazon	**N/A**	**?**	**N/A**
	N/A	Amazon neither commits to any emission reduction target alongside its 2050 net-zero carbon pledge nor specifies its emission coverage along its value chain.	N/A
Apple	**75%**	**N/A**	**90%**
	We estimate that the 2030 commitment is equal to a 75% reduction of full value chain emissions below 2019 levels. Actual ambition level could be much lower if Apple makes significant use of standalone RECs to claim emission reductions in the supply chain.	N/A	The 2050 commitment is equal to a 90% reduction of full value chain emissions below 2019 levels. Actual ambition level could be much lower if Apple makes significant use of standalone RECs to claim emission reductions in the supply chain.
Google	**?**	**N/A**	**N/A**
	The level of emission reductions remains unclear due to heavy reliance on market-based accounting.	N/A	N/A
Meta	**?**	**Increase of 12-92% by 2030**	**N/A**
	The level of emission reductions remains unclear due to heavy reliance on market-based accounting.	Meta's targets for the medium term will lead to an increase in emissions compared to 2019 levels. The range originates from the difference in market-based and location-based accounting in scope 2: unclear if base year emissions are location-based or market-based.	N/A
Microsoft	**?**	**N/A**	**?**
	The level of emission reductions remains unclear due to heavy reliance on market-based accounting.	N/A	It remains unknown to what extent Microsoft aims to reduce emissions alongside its removal target.

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
3 – Is this emission reduction commitment in line with 1.5°C-compatible trajectories or benchmarks for the sector?			
Amazon	**Very poor**	**Very poor**	**Very poor**
	Amazon's lack of GHG targets for the period towards 2030 neglects the need for interim targets to chart a trajectory towards the company's long-term vision.	We consider the lack of any post-2030 emission reduction target alongside Amazon's net-zero carbon by 2040 pledge as highly insufficient considering the need for deep and credible emission reductions towards mid-century to stand a reasonable chance of limiting global warming to 1.5°C.	No long-term target beyond 2041 identified.
Apple	**Moderate**	**Very poor**	**Reasonable**
	Targeted emission reductions would in theory be in line with 1.5°C compatible trajectories, but the integrity of the target depends on the constructs for procuring renewable electricity in the supply chain. Apple states that it plans to rely only on high quality constructs but still uses standalone RECs for a significant share of supply chain electricity and its target does not rule this out.	No emission reduction target identified.	Targeted emission reductions for most of the company's major emission sources are in line with 1.5°C compatible trajectories or benchmarks for the sector, according to available literature).
Google	**?**	**Very poor**	**Very poor**
	Significance of this target for GHG emissions is unclear due to a) uncertainty in future market-based emission accounting methodologies and b) rapid expansion of data centre energy consumption.	We consider the lack of any post-2030 emission reduction target as highly insufficient considering the need for deep and credible emission reductions towards mid-century to stand a reasonable chance of limiting global warming to 1.5°C.	We consider the lack of any post-2030 emission reduction target as highly insufficient considering the need for deep and credible emission reductions towards mid-century to stand a reasonable chance of limiting global warming to 1.5°C.
Meta	**Very poor**	**Very poor**	**Very poor**
	Meta's lack of GHG targets for the period towards 2030 neglects the need for interim targets to chart a trajectory towards the company's long-term vision.	Emission reduction target will lead to an increase in emissions.	We consider the lack of any post-2040 emission reduction target as highly insufficient considering the need for deep and credible emission reductions towards mid-century to stand a reasonable chance of limiting global warming to 1.5°C.
Microsoft	**?**	**Very poor**	**Very poor**
	Significance of this target for GHG emissions is unclear due to a) uncertainty in future market-based emission accounting methodologies and b) rapid expansion of data centre energy consumption.	We consider the lack of any post-2030 emission reduction target as highly insufficient considering the need for deep and credible emission reductions towards mid-century to stand a reasonable chance of limiting global warming to 1.5°C.	We consider the lack of any post-2030 emission reduction target as highly insufficient considering the need for deep and credible emission reductions towards mid-century to stand a reasonable chance of limiting global warming to 1.5°C.

Annex 4C – Key transition integrity assessments

	Renewable energy in own operated data centres	Renewable energy in 3rd-party operated data centres	Renewable energy in the supply chain	Increase lifespan of products	Increase share of recycled materials
1 – What transition targets does the company set?					
Amazon	100% carbon-free energy (annual matching) by 2025	No targets or measures identified.	No targets identified, although Amazon describes measures to support suppliers with RE.	No targets identified, although Amazon describes measures to increase lifespan of hardware.	No targets identified, although Amazon describes measures to increase share of recycled materials and refurbished equipment.
Apple	Continue using 100% renewable electricity (annual matching) for Apple facilities	Continue matching 100% of third-party energy use with renewables	100% clean electricity in the entire value chain by 2030	No targets or measures identified.	- 100% recycled cobalt, tin, gold, and rare earth elements in select components and applications by 2025 - 100% fibre-based packaging by 2025
Google	Run on 24/7 carbon-free energy on every grid where we operate by 2030	No targets or measures identified.	Google targets 5 GW installed renewable capacity in supplier regions by 2030, alongside several other measures to support suppliers with RE.	No targets identified, but Google describes measures to increase lifespan of hardware, including through the use of refurbished equipment.	- Use recycled or renewable material in at least 50% of plastic used across our consumer hardware product portfolio by 2025 (year set: 2020) - Make product packaging 100% plastic-free by 2025 - Starting in 2022, 100 percent of Made by Google products will include recycled materials with a drive to maximize recycled content wherever possible.
Meta	Continue matching 100% of its electricity use for operations with renewable electricity (annual matching)	No targets or measures identified.	No targets or measures identified.	No targets or measures identified.	No targets or measures identified.
Microsoft	Use 24/7 carbon-free electricity by 2030.	No targets or measures identified.	No targets or measures identified.	No targets or measures identified.	- Make a range of products and product packaging to be 100% recyclable in OECD countries by 2030. - Reuse and recycle 90% of servers and components for all cloud hardware by 2025.

	Renewable energy in own operated data centres	Renewable energy in 3rd-party operated data centres	Renewable energy in the supply chain	Increase lifespan of products	Increase share of recycled materials
2 – Are the transition targets in line with 1.5°C-compatible trajectories or benchmarks for the sector?					
Amazon	Poor	Very poor	Poor	N/A	N/A
	The target metric is significantly undermined by annual energy matching, and the undefined role for nuclear and CCS.	We could not identify measures related to third-party operated data centres.	No targets identified, but the measures described indicate that some action is being taken.	No benchmarking possible (lack of available benchmarks)	No benchmarking possible (lack of available benchmarks)
Apple	Moderate	Moderate	Reasonable	N/A	N/A
	The 100% renewable electricity claim would be aligned with 1.5 °C benchmarks for the electricity sector but is somewhat undermined by annual matching.	The 100% renewable electricity claim would be aligned with 1.5 °C benchmarks for the electricity sector but is somewhat undermined by annual matching.	The 100% renewable electricity target for the supply chain would be aligned with 1.5 °C benchmarks for the electricity sector and Apple states that it plans for high quality procurement constructs such as PPAs in the supply chain. The target could be stronger if it would be expressed in terms of hourly matching..	No benchmarking possible (lack of available benchmarks)	No benchmarking possible (lack of available benchmarks)
Google	Reasonable	Very poor	Poor	N/A	N/A
	100% hourly matched renewable energy would be aligned with a 1.5°C-compatible trajectory, but the target being expressed in terms of "carbon-free energy" entails an undefined role for nuclear and CCS.	We could not identify measures related to third-party operated data centres.	The target is set in metrics that are not contextualised and cannot be evaluated, but the measures described indicate that some action is being taken.	No benchmarking possible (lack of available benchmarks)	No benchmarking possible (lack of available benchmarks)
Meta	Poor	Very poor	Poor	N/A	N/A
	Not commitment to 24/7 RE identified and lobbies for weaker accounting rules under the Emissions First Partnership.	No reference to third-party operated data centers identified.	Meta requires two-thirds of their suppliers to set "science-aligned" targets, and build capacity for renewable electricity procurement. No target identified.	No benchmarking possible (lack of available benchmarks)	No benchmarking possible (lack of available benchmarks)
Microsoft	Reasonable	Very poor	Poor	N/A	N/A
	100% hourly matched renewable energy would be aligned with a 1.5°C-compatible trajectory, but the target being expressed in terms of "carbon-free energy" entails an undefined role for nuclear and CCS.	We could not identify measures related to third-party operated data centres.	No target identified, but Microsoft recognises the need to support suppliers in decarbonising electricity consumption, and co-developed a portal that suppliers can use for RE procurement.	No benchmarking possible (lack of available benchmarks)	No benchmarking possible (lack of available benchmarks)

	Renewable energy in own operated data centres	Renewable energy in 3rd-party operated data centres	Renewable energy in the supply chain	Increase lifespan of products	Increase share of recycled materials
3 – What is the companies progress towards the sectoral transition?					
Amazon	**Well off track, but right direction**	**Unclear (insufficient data from company)**	**Unclear (insufficient data from company)**	**No benchmarking possible (lack of available benchmarks)**	**No benchmarking possible (lack of available benchmarks)**
	Amazon reports achieving its 100% carbon free energy target in 2023. Considerable investments have been made in RE, but Amazon's RE statistics are undermined by methodological issues.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.
Apple	**Off track, but right direction**	**Off track, but right direction**	**Off track, but right direction**	**No benchmarking possible (lack of available benchmarks)**	**No benchmarking possible (lack of available benchmarks)**
	Over 90% of Apple's own electricity consumption is matched on an annual basis with high quality procurement constructs, but it is not clear what this means in real (hourly matched) terms.	Over 90% of Apple's own electricity consumption is matched on an annual basis with high quality procurement constructs, but it is not clear what this means in real (hourly matched) terms.	Share of PPAs in the supply chain and suppliers' renewable electricity consumption are increasing, but it is not clear what this increase in renewable electricity consumption means in real (hourly) terms.	No progress indicators identified.	No progress indicators identified.
Google	**Off track, but right direction**	**Unclear (insufficient data from company)**	**Unclear (insufficient data from company)**	**No benchmarking possible (lack of available benchmarks)**	**No benchmarking possible (lack of available benchmarks)**
	Google reports 64% hourly matched carbon free energy in 2023. This may be aligned with a 1.5°C-compatible trajectory, although the undefined role of nuclear means that the renewable component is not entirely clear.	No progress indicators identified.	No progress indicators identified.	Google reported that 29% of its server inventory came from refurbished hardware in 2023; we cannot identify benchmarks from the scientific literature to evaluate this progress on the use of refurbished equipment.	Google reported that 29% of its server inventory came from refurbished hardware in 2023; we cannot identify benchmarks from the scientific literature to evaluate this progress on the use of refurbished equipment.
Meta	**Off track, but right direction**	**Unclear (insufficient data from company)**	**Unclear (insufficient data from company)**	**No benchmarking possible (lack of available benchmarks)**	**No benchmarking possible (lack of available benchmarks)**
	Most of Meta's own electricity consumption is matched on an annual basis with high quality procurement constructs, but it is not clear what this means in real (hourly matched) terms.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.
Microsoft	**Off track, but right direction**	**Unclear (insufficient data from company)**	**Unclear (insufficient data from company)**	**No benchmarking possible (lack of available benchmarks)**	**No benchmarking possible (lack of available benchmarks)**
	Microsoft is accelerating with the procurement of renewable electricity, but is also expanding the share of nuclear energy in its electricity procurement strategy. 78% annual PPAs by 2024 entails some commendable action, but uncertainty remains around what 50% means in real (hourly) terms.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.

Annex 5A – Comparison to other assessors and validators

The comparison of the Corporate Climate Responsibility Monitor's (CCRM) integrity assessments for short-, medium-, and long-term emission reduction targets with the Science Based Target initiative's validations and MSCI Net Zero Tracker target assessments reveal several key differences.

Table 5.1: Comparison between assessment for emission reduction targets by (1) the Corporate Climate Responsibility Monitor (CCRM) 2025, (2) the Science Based Targets initiative (SBTi), and (3) the MSCI Net Zero Tracker; all as of May 2025. Companies listed in alphabetical order for each sector.

COMPANY	CCRM 2025					SBTi	SBTi	MSCI*
	Overaerching	*GHG Targets*	*Short-term (by 2030)*	*Medium-term (2031-2040)*	*Long-term (beyond 2041)*	*Near-term*	*Net zero*	
adidas	*Moderate*	*Reasonable*	*High*	*Very poor*	*Reasonable*	*1.5°C*	*1.5°C*	*1.5°C*
H&M Group	*Moderate*	*High*	*High*	*Reasonable*	*N/A*	*1.5°C*	*1.5°C*	*1.9°C*
Inditex	*Moderate*	*High*	*High*	*Reasonable*	*N/A*	*1.5°C*	*1.5°C*	*1.8°C*
lululemon	*Poor*	*Poor*	*Poor*	*Very poor*	*Reasonable*	*1.5°C*	*1.5°C*	*1.7°C*
Shein	*Very poor*	*Poor*	*Very poor*	*Very poor*	*Moderate*	*1.5°C*	*1.5°C*	*N/A*

** The MSCI Net Zero Track discontinued the public disclosure on its website for single company evaluations in the first half of 2025. Evaluations presented date back to March 2025 before this change in policy.*

Key issues for difference with the Science Based Target initiative (SBTi) validations

The SBTi is currently in the process to revise its Corporate Net Zero Standard with a first draft published in March 2023 (SBTi, 2025). Some of the differences identified below might be addressed in the next version of the standards, which is intended for publication withing the next months

- **Base year choice:** SBTi allows companies to select target base years as late as 2023 and of comparatively high emissions, which lowers the overall mitigation ambition in the target year compared to companies with earlier base years. For example, **Shein**'s emission reduction targets for 2030 below a 2023 baseline would still allow its emissions to more than double compared to 2021 levels.
- **Profit-based emissions intensity target:** SBTI allows companies to set profit-based intensity targets instead of absolute emission reduction targets. We do not consider such intensity metrics as meaningful as fluctuations in profitability can obscure real emissions trends, for example for **lululemon.**

Key issues for difference with the MSCI Net Zero Tracker assessments

- **Lack of disclosure on method and underlying data:** The MSCI Net Zero Tracker does not disclose specific data and methodological approaches on emission reduction targets going into its temperature alignment assessments (MSCI ESG Research LLC, 2024). For this reason, we cannot understand any differences between MSCI's assessments for companies' short-, medium-, and long-term targets.

Annex 5B – Target Integrity assessments

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
1 – What are the targets and what do they mean in terms of emission reductions?			
H&M Group	By 2030, scope 1, 2 & 3: Reduce absolute GHG emissions by 56% compared to the 2019 baseline.	By 2040: Reach net-zero emissions By 2040, scope 1 & 2: Reduce absolute emissions by at least 90% compared to the 2019 baseline. By 2040, scope 3: Reduce absolute emissions by at least 90% compared to the 2019 baseline. Balance out any remaining emissions with permanent carbon removals.	No target identified.
Inditex	By 2030, scope 1 & 2: Reduce emissions by 95% compared to 2018 levels. By 2030, scope 3: Reduce emissions by 51% compared to 2018 levels.	By 2040: Reach net-zero emissions. By 2040, scope 1 & 2: Reduce emissions by 95% compared to 2018 levels. By 2040, scope 3: Reduce emissions by 90% compared to 2018 levels.	No target identified.
lululemon	By 2030, scope 1 & 2: Reduce emissions by 60% compared to 2018 levels. By 2030, scope 3: Reduce emissions intensity by 60% compared to 2018 levels.	No target identified.	By 2050: Reach net zero; reduce emissions across the entire value chain by 90% compared to 2018 levels.
Shein	By 2030, scope 1 & 2: Reduce emissions by 42% compared to 2023 levels By 2030: scope 3: Reduce emissions by 25% compared to 2023 levels	No target identified.	By 2050: Net-zero emissions, which includes a commitment to reduce scope 1, 2 and 3 emissions by 90% between 2023-2050
adidas	By 2030, scope 1 & 2: Reduce emissions by 70% compared to 2022 levels. By 2030, scope 3: Reduce emissions by 42% compared to 2022 levels. By 2025: Reduce carbon intensity per product by 9%.	No target identified.	By 2050: Net-zero GHG emissions

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
2 – What do the targets mean in terms of emission reductions?			
H&M Group	56% by 2030	90% by 2040	No target identified.
	The target appears to cover all emission sources and so is equal to a 56% reduction of 2019 emissions.	The target appears to cover all emission sources and so is equal to a 90% reduction of 2019 emissions.	N/A
Inditex	48-53% by 2030 (from 2018 levels)	83-88% by 2040	No target identified.
	Inditex's 2030 target to reduce 95% of its scope 1 and 2 emissions and 51% of its scope 3 emissions results in an overall reduction of 48-53% of its total 2018 emissions. The range depends on the accounting approach for scope 2 emissions.	Inditex's net zero target by 2040 results in an overall reduction of 83-88% of its total 2018 emissions, due to the exclusion of minor emission sources. The range depends on the accounting approach for scope 2 emissions.	N/A
lululemon	Unclear	No target identified.	90% by 2050
	We cannot independently quantify lululemon's interim intensity targets in terms of absolute emission reduction by 2030. The target to reduce scope 3 emissions translates to a 44% reduction per unit of gross profit by 2030 below 2018. The target could allow lululemon to increase emissions compared to 2018.	N/A	lululemon commits to an emissions reduction target of 90% by 2050 below 2018 levels across the entire value chain alongside its 2050 net-zero pledge. lululemon's 90% emission reduction target translates to roughly the same emission reductions below 2019.
Shein	108% by 2030 (from 2021 levels)	No target identified.	79% by 2050
	Shein's 2030 target translates to an increase of 108% between 2021 and 2030, and an estimated sevenfold increase compared to 2019.	N/A	Shein's 2050 net-zero target translates to a reduction of 79% across the value chain between 2021 and 2050.
adidas	42% by 2030 (from 2022 levels)	No target identified.	90% by 2050 (from 2022 levels)
	adidas's targets amount to a 42% emission reduction by 2030 below 2022 levels. Emission reductions below 2019 levels cannot be quantified due to adidas having divested from Reebok in early 2022. adidas has not published readjusted historical emissions.	N/A	adidas's target amounts to a 90% emission reduction by 2050 below 2022 levels. Emission reductions below 2019 levels cannot be quantified due to adidas having divested from Reebok in early 2022. adidas has not published readjusted historical emissions.

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
3 – Is this emission reduction commitment in line with 1.5°C-compatible trajectories or benchmarks for the sector? *Given that emissions in the fashion industry occur in various sectors, including agriculture and energy, we consider that fashion retailers should reduce their GHG and CO_2 emissions between 2019 and 2030 by 43% and 48%, respectively, in line with what is necessary at the global level.* *Teske (2022) considers that between 2019 and 2050, the textile and leather industry and the manufactured fibres and synthetic rubber industry should reduce their scope 1 GHG emissions by 100%, scope 2 by 100%, and scope 3 by 48%.*			
H&M Group	High	Reasonable	N/A
	Targeted emission reductions are in line with 1.5°C compatible benchmarks.	Targeted emission reductions are in line with 1.5°C compatible benchmarks, but the company does not set an interim target to guide the period between 2030 and 2040.	N/A
Inditex	High	Reasonable	N/A
	Targeted emission reductions are in line with 1.5°C compatible benchmarks.	Targeted emission reductions are in line with 1.5°C compatible benchmarks, but the company does not set an interim target to guide the period between 2030 and 2040.	N/A
lululemon	Poor	Very poor	Reasonable
	lululemon's 2030 short-term scope 1 and 2 targets meet 1.5°C Paris Agreement-aligned global milestones, however, we are unable to compare lululemon's short-term scope 3 target to sectoral 1.5°C-aligned benchmarks as lululemon has set an emission intensity target, measured as emissions per unit of gross profit.	No medium-term target (2031–2041) identified.	lululemon's 2050 90% emission reduction target seems to be aligned with 1.5°C-compatible sectoral benchmarks.
Shein	Very poor	Very poor	Moderate
	Shein's 2030 short-term targets do not meet 1.5°C Paris Agreement-aligned milestones for fashion retailers.	No medium-term target (2031–2041) identified.	The net zero target translates to a reduction of 79% below 2021 levels. This is misaligned with global benchmarks and does not result in deep emission reductions that the term 'net zero' implies.
adidas	High	Very poor	Reasonable
	A 42% emission reduction is almost in line with IPCC cross sector benchmarks for GHG emissions, which call for 43% emission reduction by 2030.	No medium-term target (2031–2041) identified.	adidas's 2050 90% emission reduction target seems to be aligned with 1.5°C-compatible sectoral benchmarks.

Annex 5C – Key transition integrity assessments

	Electrification of heat and manufacturing processes	Renewable energy in the supply chain	Reduce overproduction and slow growth in virgin product volumes	Source low-carbon fibres	Sustainable logistics and transport solutions	Procurement of renewable electricity for own operated factories
1 – What transition targets does the company set?						
H&M Group	H&M implements some measures to electrify key manufacturing processes in its supply chain but it does not commit to a specific target	By 2030, 100% renewable electricity for garment production supply chain, from spinning to a finished product in tier 1, 2 and 3. By 2026, phase out onsite coal from all garment suppliers in tier 1, 2 and 3.	No targets identified, but H&M's resell programmes have been scaled up to account for 0.6% of revenue in 2023.	Overarching goal: use 100% recycled or sustainably sourced materials in commercial products by 2030, by including at least 30% recycled material by 2025 and 50% recycled material by 2030 - Maintain 100% use of cotton that is recycled, organic, or sustainably sourced (e.g., Better Cotton, regenerative) and maintain 100% certified mohair (RMS or recycled) - Use 100% recycled polyester, certified RWS virgin wool, certified GCS virgin cashmere, recycled down, chrome-free, vegetable- or metal-free leather, virgin MMCF (FSC or PEFC certified)and virgin wood based materials (FSC certified) by 2025	H&M implements some measures to address transport emissions but does not commit to a specific target	
Inditex	Inditex acknowledges the need for electrification but we identified no targets or measures.	50% by 2030 and 100% by 2040 renewable electricity in supply chain manufacturing processes. No mentions of 24/7 matching.	Target to provide circularity services (repair, second-hand sales and donations) in key markets by 2025. We identified no targets or measures against overproduction.	100% preferred linen and polyester by 2025. 100% lower-impact textile raw materials by 2030. 40% of fibres from conventional recycling by 2030. 25% of the fibres from organic or regenerative agriculture by 2030	90% of alternative fuels in maritime transport by 2025	By 2027, 40% of Inditex's global electricity consumption will come from selfconsumption and other mechanisms like PPAs and VPPAs, and by 2030 reach 60%. Commits to tripling current self-consumption capacity of renewable electricity at own headquarters, offices and own distribution centres by 2027, corresponding to reaching 25% renewable electricity.
lululemon	No targets or measures specifically focused on electrification identified.	25% renewable electricity among core tier 1 and 2 suppliers by 2025, 50% by 2030	No targets or measures identified.	100% products procured containing preferred materials by 2030 75% of total preferred materials procured for products by 2025	No targets or measures identified.	
Shein	No targets or measures specifically focused on electrification identified.	No targets or measures identified.	No targets or measures identified.	31% recycled polyester by 2030 Reference to goals for man-made cellulosic fibres but target not disclosed	No targets or measures identified.	
adidas	No targets or measures specifically focused on electrification identified.	No targets or measures identified.	98% of waste from Tier 1 & 2 suppliers diverted from landfills by 2025	100% of polyester to be recycled polyester by 2024 10% of polyester to come from recycled textile waste by 2030 90% of articles to be sustainable by 2025 deforestatino and conversion free bovine leather supply chain by 2030 100% third-party certified cotton since 2018 100% third-party certified wool by 2024	No targets or measures identified.	

	Electrification of heat and manufacturing processes	Renewable energy in the supply chain	Reduce overproduction and slow growth in virgin product volumes	Source low-carbon fibres	Sustainable logistics and transport solutions	Procurement of renewable electricity for own operated factories
2 – Are the transition targets in line with 1.5°C-compatible trajectories or benchmarks for the sector?						
H&M Group	Poor	Moderate	Poor	?	Poor	
	H&M implements some measures to electrify key manufacturing processes in its supply chain but it does not commit to a specific target	H&M has set a target to have 100% of its suppliers source renewable electricity by 2030. The target is in line with 1.5C benchmarks for the sector, and covers tier 1, 2, and 3 suppliers. The target reflects a timely implementation of the transition, inlcuding short- and long-term action.	H&M Group outlines measures to reduce overproduction and waste (resale, repair, rental, reuse, recycling), but no target was identified.	There are no science-based decarbonisation benchmarks for this transition so no assessment is possible	H&M implements some measures to address transport emissions but does not commit to a specific target	
Inditex	Very poor	Moderate	Poor	?	Poor	Moderate
	Inditex acknowledges the need for electrification but we identified no targets or measures.	50% by 2030 and 100% by 2040 of renewable electricity in supply chain manufacturing processes. Aligned with 1.5°C, covers all activities, partially timely implementation. However: No clarity on Standalone RECs, no clarity on biomass use in supply chain, no mentions of 24/7 matching.	Inditex introduces some circularity measures, but no targets or measures against overproduction identified.	There are no science-based decarbonisation benchmarks for this transition so no assessment is possible.	90% of alternative fuels in maritime transport by 2025. Lack of any targets for other upstream or downstream transport emissions. No meaningful aviation goals despite a great share of emissions coming from the aviation sector.	Measures and target for own factories are partially in line with 1.5°C compatible trajectories, and reflect a timely implementation of the transition.
lululemon	Very poor	Moderate	Poor	?	Poor	
	lululemon does not set a target or implement significant measures to electrify key manufacturing processes in its supply chain.	lululemon has set a target to have 25% of its suppliers source renewable electricity by 2025 and 50% by 2030. The target is partially in line with 1.5C benchmarks for the sector, but covers only 75% of its tier and 2 suppliers, leaving out tier 3 suppliers. The target reflects a timely implementation of the transition, inlcuding short- and long-term action.	lululemon implements some circularity measures but does not set targets on circularity and overproduction.	There are no science-based decarbonisation benchmarks for this transition so no assessment is possible	lululemon implements some measures to address transport emissions but does not commit to a specific target.	
Shein	Very poor	Poor	Very poor	?	Poor	
	No targets or measures identified on increasing electrification in the supply chain.	Shein implements some measures to increase the share of renewable electricity in its supply chain but does not set targets.	Shein reports that its on-demand business model and online resale platform lead to less overproduction and more circulatiry. No targets or measures identified to move away from the ultra fast fashion business model.	There are no science-based decarbonisation benchmarks for this transition so no assessment is possible.	Shein reports some plans to reduce downstream emissions from transportation, but no targets identified.	
adidas	Very poor	Poor	Very poor	?	Poor	
	adidas implements some measures to address the transition, but it does not commit to a specific target on electrification of key manufacturing processes.	adidas implements some measures to address the transition, but it does not commit to a specific target on increasing renewable energy in the supply chain.	No targets or measures identified related to overproduction.	There are no science-based decarbonisation benchmarks for this transition so no assessment is possible	adidas implements some measures to address the transition, but it does not commit to a specific target on reducing air freight and decarbonising maritime and land transport.	

	Electrification of heat and manufacturing processes	Renewable energy in the supply chain	Reduce overproduction and slow growth in virgin product volumes	Source low-carbon fibres	Sustainable logistics and transport solutions	Procurement of renewable electricity for own operated factories
3 – What is the companies progress towards the sectoral transition?						
H&M Group	No progress identified or insufficient data	Right direction, on track	No progress identified or insufficient data	No benchmarking possible (lack of available benchmarks)	No progress identified or insufficient data	
	No progress indicators identified.	H&M presents some progress measures for circularity and overproduction but progress cannot be identified due to lack of benchmarks.	H&M presents some progress measures for circularity and overproduction but there is not sufficient data to assess progress.	H&M has set targets on increasing the share of preferred fibres however there are no benchmarks to assess progress.	No progress indicators identified.	
Inditex	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	No benchmarking possible (lack of available benchmarks)	No progress identified or insufficient data	Right direction, off track
	No progress indicators identified.	No progress indicators identified.	Inditex presents some measures to increase circularity while its production volumes increased between 2023 and 2024, but there is not sufficient data to assess progress.	There are no science-based decarbonisation benchmarks for this transition so no assessment is possible.	No progress indicators identified.	As of 2025, a virtual Power Purchasing Agreement for the coming 10-12 years will cover up to a third of Inditex's own energy consumption.
lululemon	No progress identified or insufficient data	Well off track	No progress identified or insufficient data	No benchmarking possible (lack of available benchmarks)	No progress identified or insufficient data	
	No progress indicators identified.	lululemon is increasing the share of renewable electricity sourced by its key suppliers, but only reached 14% renewable electricity in 2023 which remains lower than the grid RE mix in Vietnam, China and Sri Lanka.	lululemon presents some progress measures for circularity and overproduction but there is not sufficient data to assess progress.	lululemon is on track to reach its targets for prefered materials and fibres for 2025, however there are no benchmarks to evaluate this target.	lululemon states that it used less flights in 2024 but does not provide sufficient data to evaluate progress. Data on progress on other measures to decarbonise transport and freight is lacking.	
Shein	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	No benchmarking possible (lack of available benchmarks)	No progress identified or insufficient data	
	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	Shein sets a target to increase the share of textile-to-textile recycling and reports progress, however it is unclear what feedstock is being used. There are no benchmarks to assess progress against on this transition indicator.	No progress indicators identified.	
adidas	No progress identified or insufficient data	Well off track	No progress identified or insufficient data	No benchmarking possible (lack of available benchmarks)	No progress identified or insufficient data	
	No progress indicators identified.	adidas reports that the share of renewable electricity is increasing among some suppliers, however progress is not aligned with benchmarks.	adidas presents some progress measures for circularity and overproduction but there is not sufficient data to assess progress.	adidas sets targets on increasing the share of preferred materials but there are no benchmarks available to assess progress.	No progress indicators identified.	

Annex 6A – Comparison to other assessors and validators

The comparison of the *Corporate Climate Responsibility Monitor*'s (CCRM) integrity assessments for short-, medium-, and long-term emission reduction targets with the Science Based Target initiative's validations and assessments by the Transition Pathway Initiative, the MSCI Net Zero Tracker and the Transition Arc.

Table 6.3: Comparison between assessment for emission reduction targets by (1) the Corporate Climate Responsibility Monitor (CCRM) 2025, (2) the Science Based Targets initiative (SBTi), (3) the Transition Pathway Initiative, (4) the MSCI Net Zero Tracker and (5) Transition Arc; all as of July 2025. Companies listed in alphabetical order for each sector.

COMPANY	CCRM 2025					SBTi	SBTi	TPI	TPI	TPI	MSCI*	WBA** *via Transition Arc*	Planet Tracker
	Overaerching	*GHG Targets*	*Short-term (by 2030)*	*Medium-term (2031-2040)*	*Long-term (beyond 2041)*	*Near-term*	*Net zero*	*Carbon Performance Alignment 2027*	*Carbon Performance Alignment 2027*	*Carbon Performance Alignment 2027*		*Targets*	*Climate alignment*
Ford	*Poor*	*Very poor*	*Very poor*	*Very poor*	*Very poor*	*1.5°C/Well-below 2°C*	*Commitment removed*	*Not Aligned*	*National Pledges*	*1.5 Degrees*	*1,8°C*	*C*	
GM	*Poor*	*Very poor*	*Very poor*	*Very poor*	*N/A*	*1.5°C/Well-below 2°C*	*Commitment removed*	*National Pledges*	*National Pledges*	*1.5 Degrees*	*2,2°C*	*D*	
Stellantis	*Moderate*	*Moderate*	*Moderate*	*Reasonable*	*N/A*			*National Pledges*	*Below 2 Degrees*	*1.5 Degrees*	*1,6°C*	*E*	
Toyota	*Very poor*	*Very poor*	*Very poor*	*Very poor*	*Very poor*	*1.5°C/Well-below 2°C*		*National Pledges*	*Below 2 Degrees*	*1.5 Degrees*	*2,0°C*	*D*	
Volkswagen	*Poor*	*Poor*	*Poor*	*Very poor*	*Very poor*	*1.5°C/2°C*		*Not Aligned*	*National Pledges*	*1.5 Degrees*	*2,1°C*	*E*	

** The MSCI Net Zero Tracker discontinued the public disclosure on its website for single company evaluations in the first half of 2025. Evaluations presented date back to March 2025 before this change in policy.*

*** The Transition Arc assessments use analysis by the World Benchmarking Alliance (WBA) as a default option to assess the alignment of emissions targets. The user can further switch to use Transition Pathway Initiative's (TPI) assessments of 2027, 2035 and 2050.*

Key issues for difference with the Science Based Target initiative (SBTi) validations

The SBTi is currently in the process to revise its Corporate Net Zero Standard with a first draft published in March 2023 (SBTi, 2025b). Some of the differences identified below might be addressed in the next version of the standards, which is intended for publication within the next months.

- **Legacy issues:** The SBTi continues to list outdated validations on their website, which are subsequently and continuously used by companies in their sustainability reporting. In addition, SBTi list 'well-below 2°C' validations for the scope 3 emissions intensity targets for light duty-vehicles for automobile manufacturers such as **Volkswagen**, **Toyota**, **GM** and **Ford** despite indefinitely pausing the methodology's use due to its 1.5°C-incompatibility since March 2022 (SBTi, 2022). None of these companies have been validated under SBTi Land Transport guidance for automobile manufacturers (SBTi, 2024b), released in October 2024. This new guidance requires a "phase out of new ICE cars and vans by 2035 in leading markets and by 2040 globally" (SBTi, 2024b, p. 17). Our analysis for Volkswagen and Toyota, for example, shows that neither of the two companies sets ICE phase-out targets in line with these requirements.
- **Exclusion of upstream scope 3 emissions:** SBTi validations for automobile manufacturers currently exclude all upstream scope 3 emissions, including purchased materials such as steel and aluminium (scope 3 category 1).

Key issues for difference with the Transition Pathway Initiative (TPI)

- **Allowance of an undefined amount of carbon credits to meet longer-term net-zero and carbon neutrality targets:** TPI assumes longer-term net-zero and carbon neutrality targets to reach an emissions intensity leading to a (targeted) emissions intensity of zero in the respective target year. To the best of our understanding of the assessment and the assessment methodology (Dietz, Chiu and Sokol-Sachs, 2023), this is regardless of whether a company has specified (or not) to what degree it will actually reduce emissions within the respective target year. This is particularly relevant to explain the differences for the carbon neutrality and net-zero targets for **Volkswagen**, **Toyota**, and **Ford** (all by 2050) and **GM** (2040).

Key issues for difference with the MSCI Net Zero Tracker assessments

- **Lack of disclosure on method and underlying data:** The MSCI Net Zero Tracker does not disclose specific data and methodological approaches on emission reduction targets going into its temperature alignment assessments (MSCI ESG Research LLC, 2024). For this reason, we cannot understand any differences between MSCI's assessments for companies' short-, medium-, and long-term targets.

Key issues for difference with the Transition Arc (beta) assessments

- We currently cannot explain differences with the CCRM 2025 integrity assessments for targets due to the TransitionArc's beta version, for example stating that Stellantis has not set any public emissions targets as of 16th of June 2025. The Transition Arc (beta) assessments use analysis by the World Benchmarking Alliance (WBA) as a default option to assess the alignment of emissions targets (Climate Arc, 2025). The user can further switch to use Transition Pathway Initiative's (TPI) assessments of 2027, 2035 and 2050.

Annex 6B – Target Integrity assessments

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
1 – What are the targets and what do they mean in terms of emission reductions?			
Volkswagen	By 2030, compared to 2018 • scope 1+2: reduce production-related CO_2e emissions by 50.4% • scope 2: procure 100% of external electricity from carbon-neutral sources at all sites • scope 3: reduce CO_2e emissions in the use phase of passenger cars and light commercial vehicles (category 11) by 30%	By 2040, scope 1+2: global production sites are to achieve net carbon neutrality by reducing greenhouse gas emissions by 90% compared to 2018	By 2050, scope: 1+2+3: aim to be a net carbon-neutral company, with the intention to keep offsetting below 10% of emissions
Stellantis	By 2030, compared to 2021 • scope 1, 2 & 3: Reduce absolute GHG emissions by 30% • scope 1 & 2: Reduce absolute GHG emissions by 75% • scope 1, 2 & 3: Reduce GHG emissions intensity per vehicle by 50%	By 2038: Achieve carbon net zero, with less than 10% compensation for the remaining emissions.	No target identified.
GM	By the end of 2025, scope 2: source 100% renewable electricity for U.S. sites	By 2035, compared to 2018 • scope: 1+2: reduce GHG emissions from operations by 72% • scope: 2: source 100% renewable electricity globally • scope: 3: reduce GHG emissions from the use of sold products by 51% per vehicle kilometre • scope: 3: eliminate tailpipe emissions from new U.S. light-duty vehicles By 2040: Carbon neutrality in scope 1 & 2, and scope 3 category 11	No target identified.
Ford	By 2023, scope: 1+2: reduce absolute GHG emissions by 18% from all manufacturing locations compared to 2017; strategy to be extended in 2024	By 2035 • scope 1 & 2: Reduce emissions by 76% compared to 2017 levels. • scope 3: Reduce GHG emissions from category 11 (passenger vehicles) by 50% per vehicle compared to 2019 levels.	By 2050: Carbon neutrality group-wide and zero CO_2 emissions from corporate activities and production plants (scope 1).
Toyota	By 2030, compared to 2019 • scope 1, 2 & 3: Reduce vehicle life-cycle emissions intensity by 30% • scope 3: Reduce vehicle use-phase emissions intensity by 33.3% for light-duty vehicles (LDVs) and 11.6% for heavy-duty vehicles (HDVs)	By 2035 • scope 1 & 2: Reduce emissions by 68% compared to 2019 levels. • scope 1: Reduce emissions to carbon neutrality, with offsets allowed. • scope 3: Reduce vehicle use-phase emissions intensity by 50% compared to 2019 levels.	By 2050: Carbon neutrality group-wide and zero CO_2 emissions from corporate activities and production plants (scope 1).

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
2 – What do the targets mean in terms of emission reductions?			
Volkswagen	?	?	? (90% reduction below an undisclosed base year)
	We cannot independently quantify Volkswagen's 2030 intensity targets for scope 3 emissions in absolute terms. The 2030 absolute emissions reduction target for scope 1 and 2 is equivalent to a 3% emission reduction by 2030 below 2019 levels across the entire value chain	Volkswagen's 2040 absolute emissions reduction target for scope 1 and 2 is equivalent to less than 1% emission reduction below 2019 levels across the entire value chain.	While Volkswagen states its intention to keep offsetting below 10% of total emissions, it does not specify against which base year. For this reason, we cannot quantify the proposed reduction below a 2019 base year.
Stellantis	30% by 2030 (below 2021)	>90% intensity across all scopes by 2038 (below 2021)	N/A
	Following the recent merger, it is not possible to recalculate Stellantis' emission reduction targets using 2019 as the base year.	Following the recent merger, it is not possible to recalculate Stellantis' emission reduction targets using 2019 as the base year.	No target within the timeframe identified.
GM	?	?	N/A
	Scope 2 target of 100% renewable electricity by 2025 only applies to US sites and is therefore <1% of total emissions across the value chain. It is reported as achieved however, it is unclear whether it is met according to market-based or location-based accounting.	We cannot independently quantify GM's 51% reduction intensity targets for scope 3 emissions by 2035 in absolute terms.	No target within the timeframe identified.
Ford	?	?	?
	Ford's 2023 target to reduce absolute Scope 1 and 2 GHG emissions by 18% from all manufacturing locations by 2023, measured from a 2017 baseline represents only an ~0.2% reduction.	We cannot independently quantify Ford's 2035 intensity targets for scope 3 emissions in absolute terms. The 2035 absolute emissions reduction target for scope 1 and 2 is equivalent to less than 1% emission reduction below 2019 levels across the entire value chain	Ford does not commit to an emissions reduction target alongside its 2050 carbon neutrality pledge. For this reason, we cannot quantify potential emissions reductions.
Toyota	?	?	?
	We cannot independently quantify Toyota's interim intensity targets in terms of absolute emission reduction by 2030. Toyota has disclosed to CDP that its 2030 target for LDVs is equivalent to an estimated 23.1% reduction of absolute emissions from scope 3 category 11 and its 2030 target for HDVs is equivalent to an estimated 0.5% (Toyota, 2023c). This CDP disclosure is not publicly available and the assumptions that underpin the estimate are not clear (e.g., for sales volumes assumed in 2030).	We cannot independently quantify Toyota's interim intensity targets in terms of absolute emission reduction by 2035.	Toyota does not commit to a deep emissions reduction target alongside its 2050 carbon neutrality pledge and related scope-specific carbon neutrality pledges.

	Short term *(now-2030)*	**Medium term** *(2031-2040)*	**Long term** *(2041 and beyond)*
3 – Is this emission reduction commitment in line with 1.5°C-compatible trajectories or benchmarks for the sector?			
Volkswagen	Poor	Very poor	?
	Volkswagen's 2030 interim targets do not meet the 1.5°C Paris Agreement-aligned milestones for automobile manufacturers' scope 3 emissions from the use of light-duty vehicles (LDVs), as identified in existing literature.	No targets have been set that address scope 3 emissions which cover 98% of its total value chain emissions, is therefore not aligned with 1.5°C pathways.	Volkswagen aims to achieve carbon neutrality by 2050 and states its intention to keep offsetting below 10%. However, it does not communicate a 90% emissions reduction target against a base year. While this is a step in the right direction, it is not possible to assess the integrity of its 2050 carbon neutrality pledge against benchmarks without being able to calculate the emissions reductions.
Stellantis	Moderate	Reasonable	N/A
	Targeted emission reductions for most of the company's major emission sources are nearly in line with 1.5°C compatible trajectories or benchmarks for the sector: The EU target is in line with 1.5, but not the US and other country targets.	Targeted emission reductions for most of the company's major emission sources are nearly in line with 1.5°C compatible trajectories or benchmarks for the sector: The EU target is in line with 1.5, but not the US and other country targets.	No target within the timeframe identified.
GM	Very poor	Very poor	N/A
	No emissions reduction targets towards 2030, only regional scope 2 target to source 100% renewable electricity for U.S. sites by the end of 2025.	2040 carbon neutrality only covers global products and operations (scope 1 & 2, and scope 3 category 11) without an emissions reduction target. 2035 target to reduce scope 3 category 11 by 51% per vehicle km below 2018 levels, is not aligned with 1.5°C-compatible pathways.	No target within the timeframe identified.
Ford	Very poor	Very poor	Very poor
	Short-term target does not cover scope 3 emissions. Scope 1&2 reduction of 18% by 2023 vs 2017 is not sufficient to meet 1.5°C pathways.	Vehicle emissions intensity reduction targets of 50% by 2035 vs 2019 is not aligned with 1.5°C pathways.	No deep emission reduction commitment alongside carbon neutrality pledges by 2050 covers 95% of emissions.
Toyota	Very poor	Very poor	Very poor
	No 1.5°C-aligned phaseout dates for ICEs. Intensity targets for life cycle and use-phase emissions not quantifiable.	No 1.5°C-aligned phaseout dates for ICEs. Target for scope 1 & scope 2 equals a 1% reduction across the value chain. The target to reduce vehicle use-phase emissions intensity by 50% compared to 2019 levels is not aligned with 1.5°C pathways.	No emission reduction commitment alongside carbon neutrality pledge by 2050. No 1.5°C-aligned phaseout dates for ICEs.

Annex 6C – Key transition integrity assessments

	ZEV phase-in for LDVs	Procurement of near-zero emission steel	Procurement of near-zero emission aluminium	Low-carbon batteries	Efficiency of BEV's	ZEV phase-in for HDVs
1 – What transition targets does the company set?						
Volkswagen	No global ICE phase-out target identified. Regional targets for electric LDV sales to reach 70% in Europe by 2030 and at least 50% in China and the US.	No group-level target on near-zero steel procurement identified but MoUs signed with Thyssenkrupp, Salzgitter and Vulcan Green Steel. Subsidiary SCANIA targets 10% of low-carbon steel globally by 2030.	No group target on near-zero aluminium procurement identified. Subsidiary target of 100% green aluminium for Europe by 2030 (Scania) with little substantiation of "green". No forward-looking measures beyond small-scale pilots.	No group-level target on low-emission batteries identified. Some measures to reduce emissions from PowerCo's battery production and to mandate binding supplier targets.	No targets or measures identified.	No global ICE phase-out target for HDVs identified. Regional target of ~50% zero-emission vehicles in EU27+3, US, and Canada by 2030.
Stellantis	100% BEV passenger car sales in EU by 2030 50% BEV passenger car sales in US by 2030, 100% by 2038 (V206) '75 BEV models by 2030 Sale of 5 million BEV 100% of nameplates with BEV offering in the EU & US by 2030. Currently: 44% and 24% respectively	No targets or measures identified.	No targets or measures identified.	No targets or measures identified.	No targets or measures identified.	N/A
GM	GM is a signatory of the COP26 declaration, committing to only sell 50% EV sales in the US by 2030 and 100% globally by 2035	At least 10% of the crude steel used in manufacturing the sheet steel products that GM directly purchases for U.S., Canada and Mexico manufacturing facilities will be near-zero emissions by 2030, if prices are no more than 20% higher than current commercial prices and/or as approved by GM leadership.	At least 10% of the primary aluminium used in manufacturing the sheet aluminium products GM directly purchases for U.S., Canada and Mexico manufacturing facilities will be low carbon by 2030, if prices are no more than 20% higher than current commercial prices and/or as approved by GM leadership.	No targets or measures identified.	No targets or measures identified.	N/A
Ford	2030: Target 40-50% U.S. EV vehicle sales 2035: Work toward 100% zero-emissions cars and vans in leading markets (A2Z) 2040: Work toward 100% zero-emissions cars and vans globally (A2Z)	Ford has pledged to purchase at least 10% low-carbon aluminium and near-zero steel by 2030.	Ford has pledged to purchase at least 10% low-carbon aluminium and near-zero steel by 2030.	No targets or measures identified.	No targets or measures identified.	N/A
Toyota	Europe: 50% ZEV by 2030; UK only sell zero-emission vehicles by 2035	No targets or measures identified.	No targets or measures identified.	No targets or measures identified.	No targets or measures identified.	No targets or measures identified.

	ZEV phase-in for LDVs	Procurement of near-zero emission steel	Procurement of near-zero emission aluminium	Low-carbon batteries	Efficiency of BEV's	ZEV phase-in for HDVs
2 – Are the transition targets in line with 1.5°C-compatible trajectories or benchmarks for the sector?						
Volkswagen	Poor	Poor	Very poor	Poor	Very poor	Moderate
	Lack of global ICE phase-out target for LDVs is misaligned with 1.5°C benchmarks. Regional targets fall short of 1.5°C benchmarks for these markets.	Lack of group target on near-zero steel procurement is misaligned with 1.5°C-aligned measures. The subsidiary target and forward-looking measures indicate that some action is being taken.	Lack of group target and significant measures on near-zero aluminium procurement is misaligned with 1.5°C-aligned action.	Lack of group-level target on low-emission batteries is misaligned with 1.5°C-aligned action. Measures to reduce emissions of its battery-producing subsidiary PowerCo and to mandate binding supplier targets indicate that some action is being taken.	Lack of target or measures to reduce EV power consumption is misaligned with 1.5°C-aligned action.	Lack of global ICE phase-out target for HDVs is misaligned with 1.5°C benchmarks. Target of ~50% zero-emission HDV vehicles in EU27+3 region, US, and Canada by 2030 aligns with the 1.5°C-aligned milestones for these markets.
Stellantis	Moderate	Very poor	Very poor	Very poor	Very poor	
	Stellantis' EU EV target (100% by 2030) aligns with 1.5°C, but not its US EV target (50% by 2030, 100% by 2038). Stellantis' EV sales targets do not cover all its sales. Details on planned measures are missing.	The company sets no targets or significant measures for the key transition.	The company sets no targets or significant measures for the key transition.	The company sets no targets or significant measures for the key transition.	The company sets no targets or significant measures for the key transition.	
GM	Moderate	Moderate	Moderate	Very poor	Very poor	
	GM is a signatory of the COP26 declaration, committing to only sell 50% EV sales in the US by 2030 and 100% globally by 2035. It also has the goal to eliminate tailpipe emissions from new U.S. light-duty vehicles by 2035.	Target of 10% near-zero steel purchases in U.S., Canada and Mexico by 2030. While the target is below the necessary 1.5°C benchmarks, and dependent on price conditions, it signals a commitment to near-zero steel procurement.	Target of 10% near-zero aluminium purchases in U.S., Canada and Mexico by 2030. While the target is dependent on price conditions, it signals a commitment to near-zero aluminium procurement.	No target on low-carbon batteries identified. Partial recognition of its necessity.	No target on the efficiency of BEV's identified.	
Ford	Poor	Moderate	Moderate	Very poor	Very poor	
	Target of 40-50% US EV vehicle sales by 2030. Pledge to "work toward" 100% ZEVs in leading markets by 2035 and 100% globally by 2040. These targets fall short of regional and global 1.5°C-aligned benchmarks.	Target of 10% near-zero steel purchases aligns with 1.5°C-compatible benchmarks. Non-binding MoUs signed with Salzgitter Flachstahl, Tata Steel and ThyssenKrupp Steel in 2022.	Target of 10% low-carbon aluminium by 2030. The target signals a commitment, but timeline and volumes remain unclear.	No target on low-carbon batteries identified. Partial recognition of its necessity.	No target on the efficiency of BEV's identified. Partial recognition of its necessity.	
Toyota	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
	Significantly falls short of the global 1.5°C-aligned benchmarks for 2030. Target for 50% EV sales share by 2030 in the EU27 and GBR reflects the sector's BAU. development for Europe No market-specific phase-out dates for internal combustion engines.	No targets or measures identified.	No targets or measures identified.	No target on low-carbon batteries identified. Small measures towards battery recycling mentioned.	No targets or measures identified.	No ICE phase-out target for HDVs globally or in key markets. A lack of targets falls short of 1.5°C.

	ZEV phase-in for LDVs	Procurement of near-zero emission steel	Procurement of near-zero emission aluminium	Low-carbon batteries	Efficiency of BEV's	ZEV phase-in for HDVs
3 – What is the companies progress towards the sectoral transition?						
Volkswagen	Right direction, off track	Well off track	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	Wrong direction, critically off track
	Progress on LDV electrification is well off track with Volkswagen's 2024 BEV sales for LDVs remaining at 8% and not increasing compared to 2023.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	Progress towards electrified HDV is not headed in the right direction as sales made up only 0.5% of total Traton sales (excl. MAN TGE) and falling short of the pace required to mee 1.5°C-aligned milestones.
Stellantis	Right direction, off track	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	
	In 2024, 6% of Stellantis' global sales were EVs. In Europe, the share amounts to 11% (vs. 11.9% in 2023) and in the US, the share of low-emission vehicles amounts to 11% (vs. 11.2% in 2023). Sector benchmarks aligned with 1.5°C suggest that internal combustion engines need to be phased out by 2035-2040.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	
GM	Right direction, off track	Well off track	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	
	Progress on LDV electrification is well off track with GM's 2023 ZEV sales remaining at 10% and increasing slightly from 9% compared to 2022.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	
Ford	Well off track	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	
	Progress on LDV electrification is well off track with Ford's 2023 ZEV sales remaining at 3% and not increasing compared to 2022.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	
Toyota	Wrong direction, critically off track	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data	No progress identified or insufficient data
	Toyota's BEV sales were ~1% of total LDV sales in 2023, falling short of the pace required to meet 1.5°C-aligned milestones.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.	No progress indicators identified.

The rapid acceleration in the volume of corporate climate pledges, combined with the fragmentation of approaches and the general lack of regulation or oversight, means that it is more difficult than ever to distinguish between real climate leadership and unsubstantiated greenwashing.

The Corporate Climate Responsibility Monitor 2025 evaluates the climate strategies of 20 major corporations. It critically analyses the transparency and integrity of corporate pledges and claims to identify replicable good practice and areas for improvement.

NEW CLIMATE INSTITUTE

CARBON MARKET WATCH