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Corporate Climate Responsibility Monitor 2025

TECH SECTOR DEEP DIVE

ASSESSING THE TRANSPARENCY, INTEGRITY, AND PROGRESS OF CORPORATE CLIMATE STRATEGIES

June 2025

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Acknowledgement

This document was prepared in collaboration with Carbon Market Watch.

Suggested citation

NewClimate Institute (2025) *Corporate Climate Responsibility Monitor 2025: Tech sector deep-dive.* Berlin and Cologne, Germany: NewClimate Institute.

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Tech sector deep dive (Chapter 4) of the Corporate Climate Responsibility Monitor 2025.

The full report or other sector-specific deep dives can be downloaded *here*.

About the Corporate Climate Responsibility Monitor

The *Corporate Climate Responsibility Monitor* evaluates the transparency and integrity of companies' climate strategies, with the objectives of **identifying good practices** and **highlighting areas for improvement in the corporate climate accountability system**.

Our guidance and assessment criteria focus on four main areas of corporate climate action: (1) tracking and disclosure of emissions; (2) setting emission reduction targets; (3) strategies for key transitions; and (4) taking responsibility for unabated and residual emissions.

This standalone chapter of the 2025 *Corporate Climate Responsibility Monitor* focuses on the tech sector. We focus on companies' GHG emission reduction targets and the key transitions that are necessary for decarbonising the tech sector, to understand the latest dynamics of climate strategy in the sector.

The full 2025 *Corporate Climate Responsibility Monitor* report analyses 20 companies from the automotive, tech, fashion and food and agriculture sectors, including a cross-sector analysis on the status quo of corporate climate responsibility.

This chapter on the tech sector features analysis based on detailed case studies of **Amazon**, **Apple**, **Google**, **Meta** and **Microsoft** *(see section 4-2 for detailed company case studies)* . These companies were selected as the largest five tech companies by revenue in 2023, excluding predominantly manufacturing companies.

→ *See the full 2025 Corporate Climate Responsibility Monitor (June 2025)*
→ *See also 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 tech sector has a climate strategy crisis

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

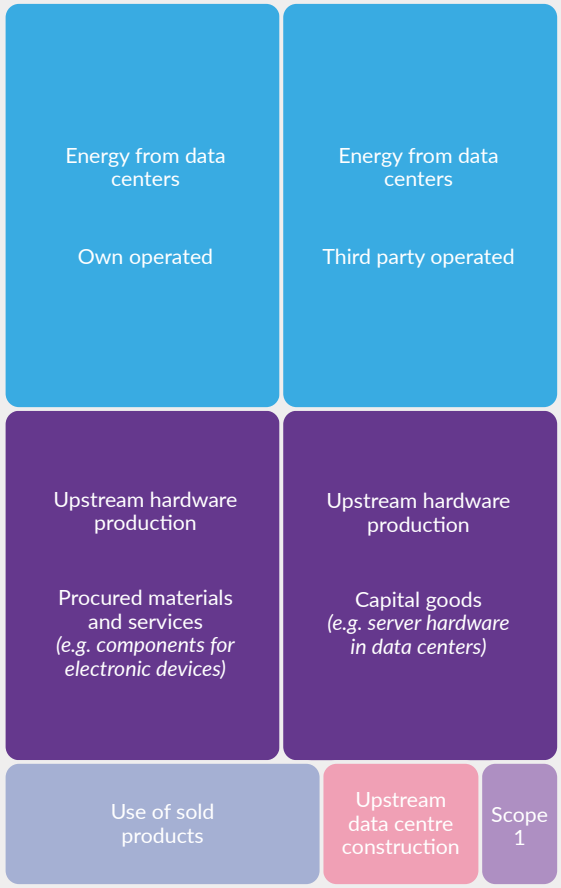
Climate strategy for the tech sector needs a rethink, to put the spotlight on the sector's key transitions, and to incentivise the replication of promising strategies.

- 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.

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

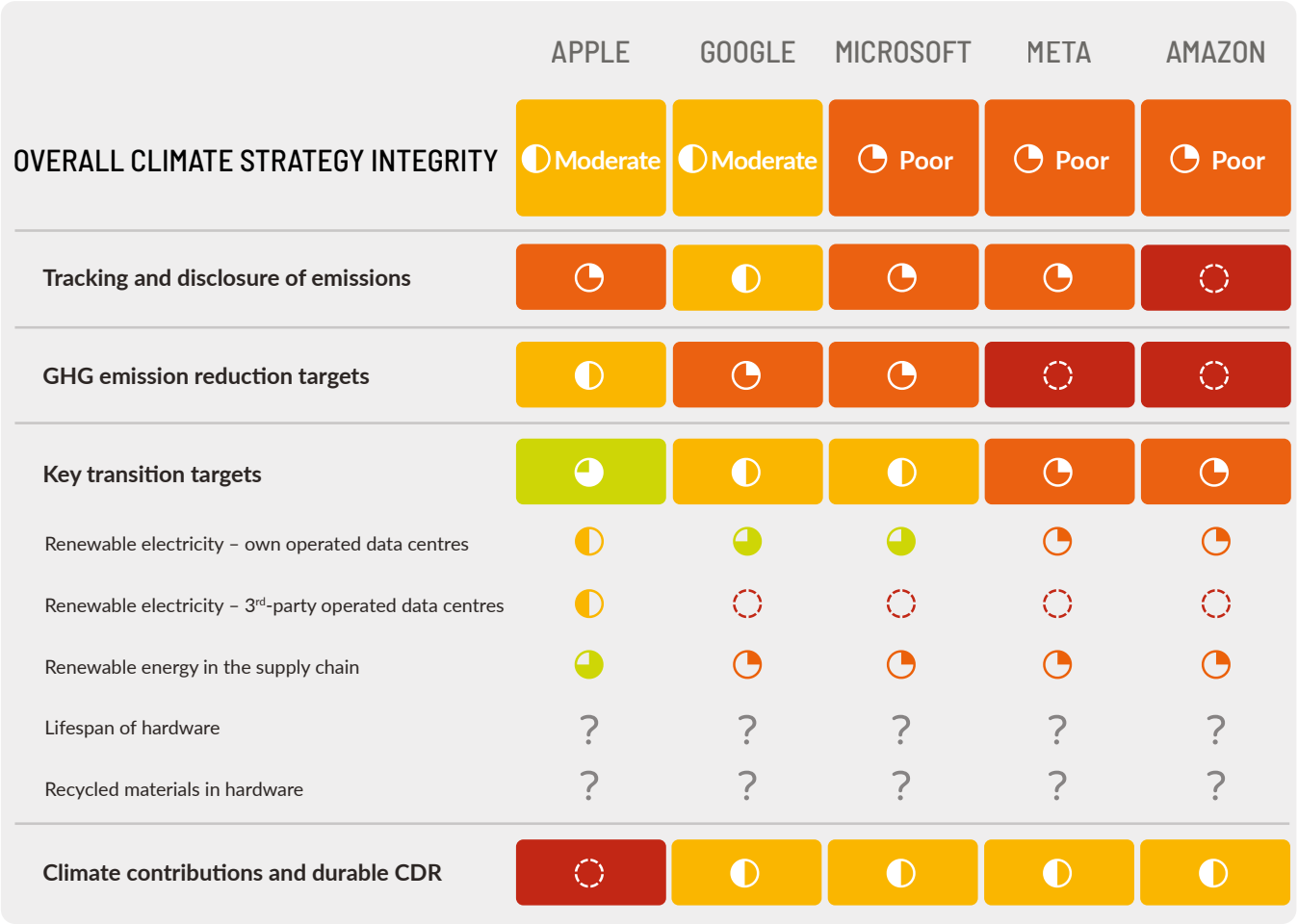
1	**Renewable electricity for own data centres** *(hourly matched)* *	Emissions from data centres are a key emissions source for tech companies. The magnitude of emissions from third-party owned data centres is unclear. Research suggests that half of tech companies' data centre capacity comes through 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

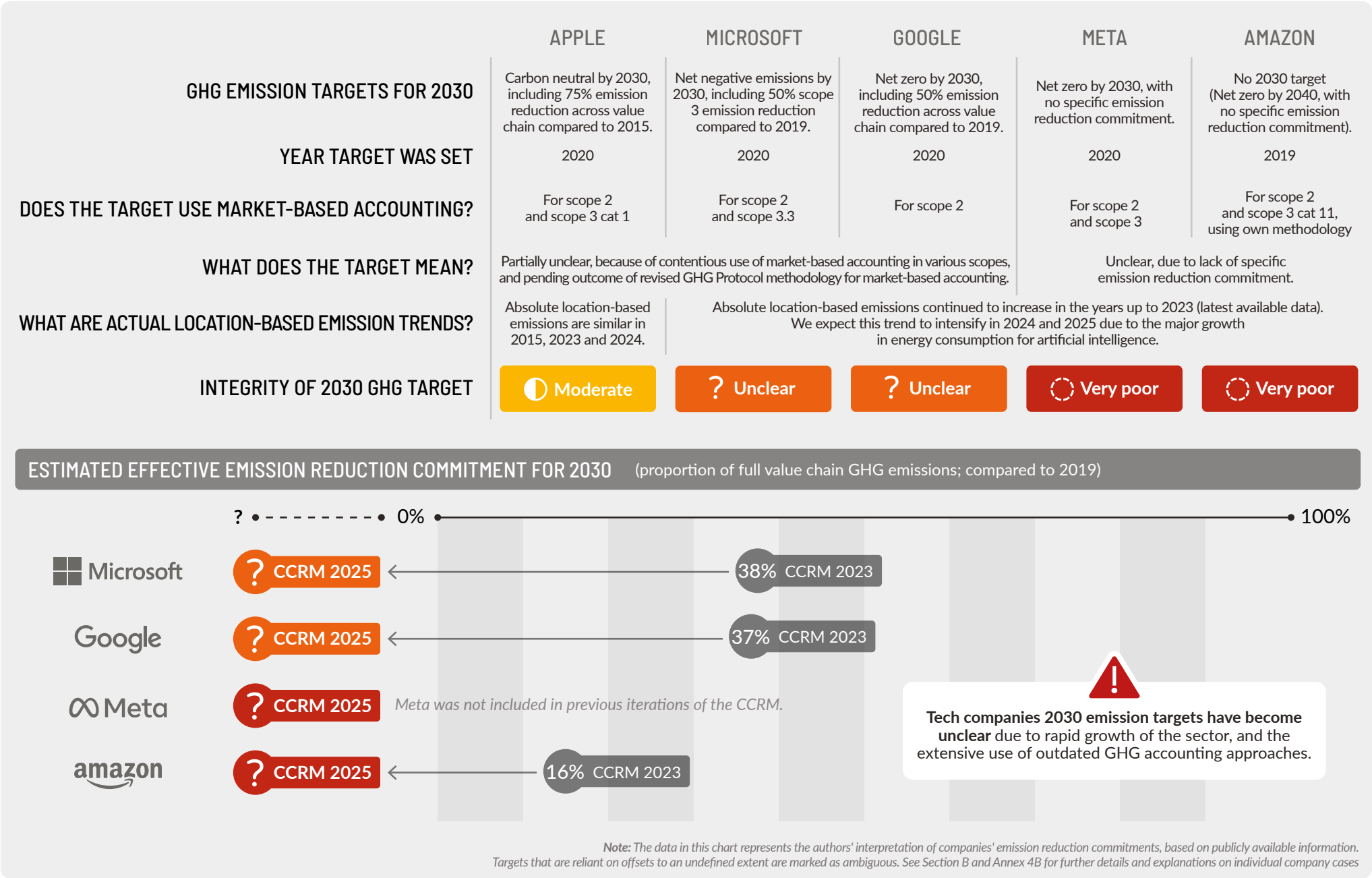
As AI becomes a central component in nearly all sectors, energy consumption of the tech sector is growing at an exponential rate, potentially undermining companies' climate pledges. Accordingly, curbing the unconstrained growth of electricity demand is a key transition for the sector to align with pathways 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 *(see full CCRM 2025 report, forthcoming)*.
- **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). The integrity of these measures is unclear: there remains uncertainty on the broader implications of using biochar, depending on the sustainability of the biomass source.

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 4 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.*

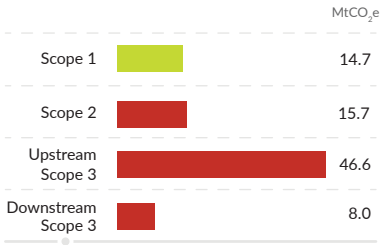
Amazon

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.*	◌	◌

EMISSION TRENDS

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

3 TRANSITION TARGETS

		TRANSPARENCY	INTEGRITY
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.*	◌	◌
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.*	◔	?
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.*	◐	◐

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.*

✔

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.*	◐	◐

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).

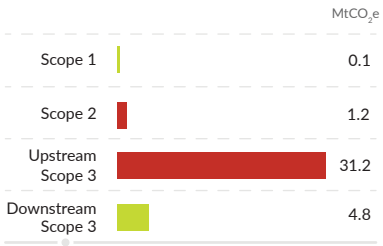
Apple

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.

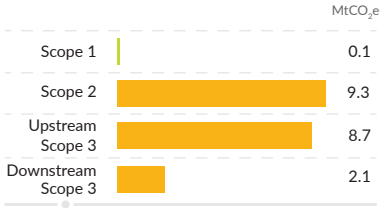
Google

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.*	Moderate	?
Medium term	N/A	*No medium-term GHG targets identified.*	Poor	Poor
Longer term	N/A	*No long-term GHG targets identified.*	Poor	Poor

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.

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.*	High	Reasonable
Renewable energy in 3rd-party operated data centres	*We could not identify measures related to third-party operated data centres.*	Poor	Poor
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.*	Moderate	Poor
Increase lifespan of products	*Google reports measures to improve product longevity. No benchmarking possible due to lack of available benchmarks.*	Moderate	?
Increase share of recycled materials	*Google sets several targets for use of recycled materials. No benchmarking possible due to lack of available benchmarks.*	Reasonable	?

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.*
- ?
- ?

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.*	Moderate	Poor
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.*	Reasonable	Reasonable

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)*.

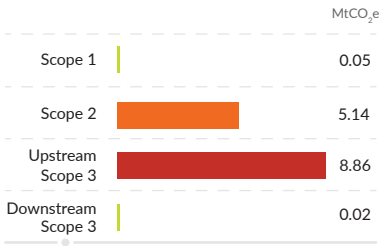
Meta

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

+

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? *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.

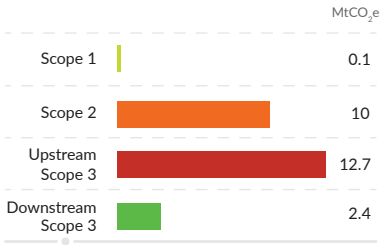
Microsoft

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

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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
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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, **including biochar projects, where the sustainability of the biomass source is unclear.** 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.

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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.

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.

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