Microsoft

Climate- and Water-Related Disclosures

In reference to the International Financial
Reporting Standards (IFRS) S2
Climate-related Disclosures standard

Reporting on our 2024 fiscal year

Published 31 December 2025

About this report

This report presents information on Microsoft's process for assessing and managing environmental risks, including our use of scenario analysis. In developing our report, we referred to the International Financial Reporting Standards (IFRS) S2 Climate-related Disclosures standard, as issued by the International Sustainability Standards Board (ISSB), which builds on the structure and principles of the Task Force on Climate-related Financial Disclosures (TCFD). We have taken extensive steps to address qualitative and quantitative requirements. Where confidentiality is necessary, we will maintain it while continuing to develop our disclosure processes in alignment with evolving best practices. Our aim is to provide a comprehensive overview of our approach to identifying, evaluating, and managing climate-related financial risks through a single materiality lens (per IFRS S2, information is material if omitting, misstating, or obscuring that information could reasonably be expected to influence decisions of primary users). This includes both physical and transition risks, as well as opportunities that may arise from the evolving climate landscape.

Please note that the inclusion of examples of risks and opportunities in this report does not imply their impact materiality, likelihood, or potential climate-related financial impact. These examples are illustrative and intended to support stakeholder understanding.

Contents

To our stakeholders:

In 2020, Microsoft set bold sustainability commitments: to become carbon negative, water positive, and zero waste and to protect more land than we use by 2030. These commitments continue to guide how we design and operate our business, from our facilities and datacenters to our global supply chain. We remain focused on embedding sustainability into our core strategy and decision-making processes.

This report builds on our Task Force on Climate-related Financial Disclosures (TCFD)–aligned reporting and outlines how we assess, manage, and disclose climate- and water-related risks. We will continue to strengthen our governance, expand our use of scenario analyses, and monitor climate in our enterprise risk management framework to meet evolving expectations.

As our CEO Satya Nadella has said, we must earn our permission to operate every day, in every country, in every community, and in every customer interaction. That's why we remain grounded in our mission: to empower every person and every organization on the planet to achieve more. Climate change is a global issue with broad implications for human welfare. As we strive to build a more sustainable future, we recognize the dual role of technology in climate progress. Generative AI and other innovations offer powerful tools to accelerate solutions, but they also introduce new environmental considerations. As we navigate this complexity, we remain committed to transparency, accountability, and collaboration—because meaningful progress requires all of us to move forward together.

To learn more about our work and progress against our carbon, water, waste, and ecosystems commitments, please see our 2025 Environmental Sustainability Report.

Melanie Nakagawa

Melanie Nakagawa
Chief Sustainability Officer

Governance

At Microsoft, we strive to conduct our business in ways that are principled, transparent, and accountable and that generate long-term value. Microsoft has made sustainability part of our business practices, including embedding it deeply into our governance structure. We focus our efforts where we can have the most positive impact on our business and society, including issues related to environmental sustainability.

Microsoft's Board of Directors and executive leadership recognize the critical link between strong corporate governance and effective responses to environmental and social challenges. To address these issues, we actively engage with investors to understand their perspectives and share our approach, while also learning from best practices across our industry, partners, customers, and the broader business community. We believe that our work in these areas is essential to Microsoft's long-term success. Our commitment is to develop and execute strategies that foster a healthy planet and advance an inclusive global economy, creating growth opportunities for all.

Board oversight

The Environmental, Social, and Public Policy (ESPP) Committee of Microsoft's Board of Directors provides oversight and guidance on Microsoft's environmental sustainability strategy and efforts (see Figure 1).

The ESPP Committee is chartered with assisting the Board of Directors in overseeing Microsoft's environmental strategy and "key non-financial regulatory risks that may have a material impact on the company and especially its ability to sustain trust with customers, employees, and the public." Specifically, the ESPP Committee charter identifies the following (among other topics) in its responsibilities: "review and provide guidance to the Board and management about key environmental and social matters such as climate change and environmental sustainability." Although the committee does not formally approve environmental decisions, it provides robust oversight through regular briefings and strategic guidance.

Microsoft's Board values a diverse mix of directors with complementary expertise to fulfill its oversight responsibilities. While the ESPP Committee currently includes members with energy sector experience that relates to the company's climate and energy targets, the Board engages all directors as experienced decision makers, rather than relying on any single expert.
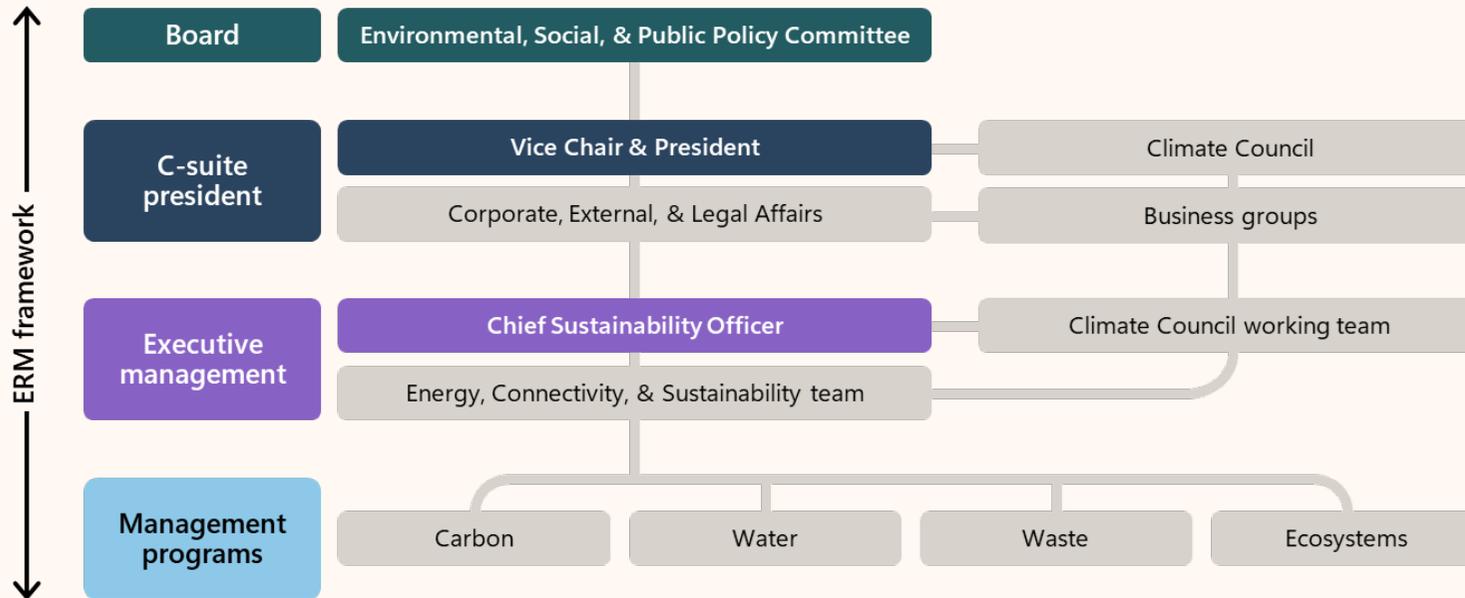
Figure 1. Microsoft's sustainability governance structure. Using the Microsoft Enterprise Risk Management (ERM) framework helps ensure that climate-related risks are integrated into broader governance processes.

The ESPP Committee meets at least three times a year. At least annually, and as needed, the Vice Chair & President and Chief Sustainability Officer brief the committee on the company's sustainability agenda, including our climate-related work, and

solicit high-level input on new and emerging initiatives. During the period of this report (fiscal year 2024 [FY24]),[1] our Chief Sustainability Officer briefed the ESPP Committee on global energy and sustainability policy trends and Microsoft's environmental sustainability strategy, including progress toward our 2030 commitments, carbon reduction roadmaps, and strategies to address Scope 3 emissions.

Management responsibilities

Our Vice Chair & President leads our Corporate, External, and Legal Affairs (CELA) group—the legal, public policy, and social responsibility arm of the company. One of this group's areas of focus is building and maintaining trust with Microsoft's customers, investors, and stakeholders, including in areas of environmental sustainability. Our Vice Chair & President's responsibilities include establishing the breadth, scope, and timing of public-facing sustainability commitments, including becoming by 2030 a carbon negative, water positive, zero waste company that protects ecosystems.

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[1] Microsoft's fiscal year runs from July 1 to June 30.

Our Vice Chair & President, together with the Chief Sustainability Officer, holds senior accountability for environmental risk management. Business teams implement risk mitigation across operations, while the Vice Chair & President tracks sustainability issues through regular reviews with the Chief Sustainability Officer and as needed in individual meetings.

The Chief Sustainability Officer reports directly to our Vice Chair & President and provides regular updates on our environmental sustainability strategy and progress. Our Chief Sustainability Officer and energy and carbon removal procurement teams also provide regular updates to leadership on our progress with carbon abatement (such as through purchases of carbon-free electricity [CFE] and carbon removal offsets) and strategic investments.

Our Chief Sustainability Officer leads Microsoft's Energy, Connectivity, & Sustainability team, which serves as the company's strategic engine for environmental sustainability. This includes setting the corporate sustainability vision, driving regulatory strategy and readiness, overseeing program execution, spearheading cross-functional initiatives that scale sustainable infrastructure, governance, and innovation across the business, and supporting our overall commitment to, and achievement of, our environmental sustainability targets.

The Energy, Connectivity, & Sustainability team also brings leaders from across Microsoft together to discuss relevant topics, such as energy efficiency, CFE procurement, sustainable AI, carbon removal, water stewardship, climate risk, regulatory readiness, community benefits, ecosystem protection, and circular economy. For guidance on globally changing dynamics, this team engages with experts around the world, including internal finance, regulatory/policy, technology, and environmental professionals. In addition, the team works with external resources to aid our understanding of the evolving sustainability landscape. Our approach includes partnerships with key academic institutions, nongovernmental organizations (NGOs), and industry associations that are leading research in sustainability topics. This robust network of internal and external resources helps our Energy, Connectivity, & Sustainability team and other management positions remain informed about sustainability-related issues.

The Energy, Connectivity, & Sustainability team also participates in our Enterprise Risk Management (ERM) process, which helps risk owners and subject matter experts (SMEs):

→ Identify, assess, and prioritize the company's most significant risks.

→ Through regular reporting and discussion, support Microsoft's senior management and the Board with governance and oversight of risk.

The Energy, Connectivity, & Sustainability team completes ongoing climate-related scenario analyses to help identify Microsoft's climate-related risks and opportunities. The results of these analyses feed into our companywide ERM process. More information on these analyses can be found in the Strategy section of this report.

Supporting roles

At the heart of our approach is an understanding that sustainability is not simply a set of isolated initiatives, but a fundamental principle that must be integrated into every aspect of our business.

Microsoft Climate Council

Our cross-company Climate Council brings together leaders from across Microsoft to drive innovation, accelerate progress, and identify and make decisions on ways to build sustainability into our operations, products, and partnerships. The Climate Council addresses Microsoft's four sustainability focus areas of carbon, water, waste, and ecosystems, advancing the company's role as a responsible environmental steward and a leading platform

provider for technology solutions to environmental challenges. The council works to track and accelerate progress, review new reduction measures, and help the company achieve our four environmental sustainability commitments.

This unique structure drives progress on our carbon reduction roadmap across all business groups. As part of the roadmap process, each business group assesses its emissions forecasts to 2030. From there, business groups evaluate existing and new reduction projects to drive down emissions against Microsoft's 2020 baseline, revise emission reduction projections, and share lessons learned with the Climate Council, highlighting where further investments and interventions are needed. This annual process drives accountability and progress throughout the company amid exciting new innovations and continued business growth. As part of this cross-company effort, we have unlocked new opportunities to reduce emissions and help us progress closer to our 2030 commitments.
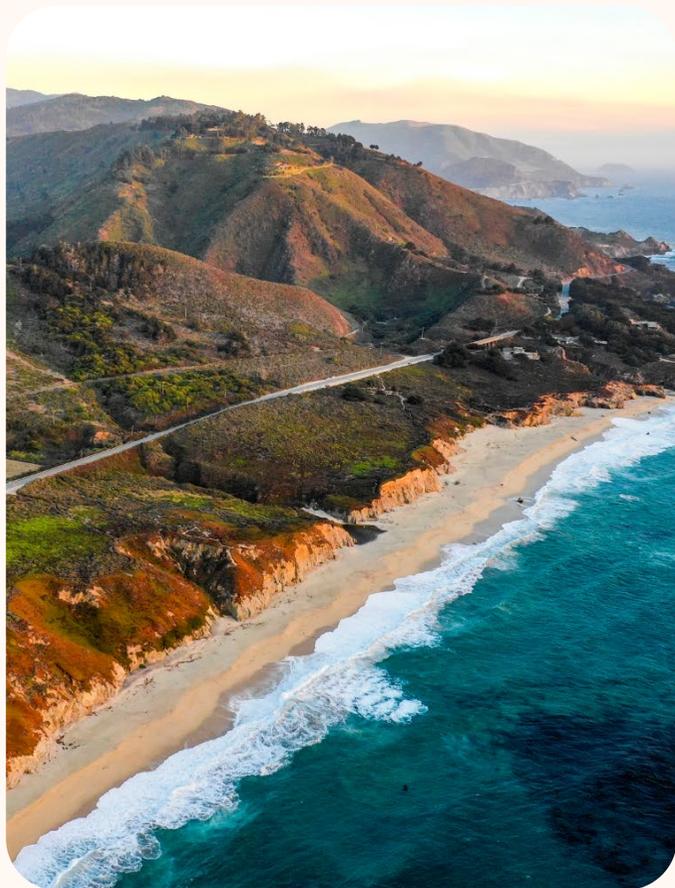
Microsoft sustainability teams

Our corporate Energy, Connectivity, & Sustainability team includes multiple sub-teams and key positions that support our sustainability initiatives. These sub-teams lead cross-company work on:

→ **Platform and governance**—Leading environmental data collection, actively supporting both mandatory and voluntary reporting, advocating for standards that encourage greater sustainability across industries, driving a centralized climate risk and resilience program, and guiding long-term environmental impact reduction through sustainability initiatives with the roadmap process.

→ **Sustainability strategy**—Driving progress on our carbon negative and zero waste commitments through strategic roadmaps and initiatives.

→ **Sustainable and connected communities**—Delivering integrated digital connectivity, clean energy, and sustainable water solutions to underserved communities worldwide and empowering people through inclusive, community-led development and strategic partnerships.

→ **Market development**—Accelerating market development by addressing procurement gaps to advance fuels and material decarbonization and by scaling technology innovations through the Climate Innovation Fund.

→ **Energy and sustainability policy**—Advancing policies that expand clean energy, build sustainability markets, and drive AI diffusion to meet our sustainability commitments.

→ **Sustainability science and innovation**—Leading strategy and partnerships on AI and sustainability, developing science-based insights and tools that help advance progress on Microsoft's sustainability commitments, and leading cross-company strategy on ecosystems and biodiversity.

Additionally, multiple sustainability teams in business segments across the enterprise support and implement our sustainability work.

Compensation and incentives tied to sustainability

Several positions across the company have sustainability performance targets aligned with annual performance plans. With senior management's focus on achieving Microsoft's ambitious carbon, water, waste, and ecosystems commitments, progress on sustainability is assessed as part of annual performance reviews for key leadership positions.

Microsoft's executive compensation includes a qualitative operational assessment component that considers sustainability performance. Specifically, the operational assessment component of the annual cash incentive under our Executive Incentive Plan may include an evaluation of execution on our sustainability commitments. While there is no pre-set quantitative metric tied to greenhouse gas (GHG) reductions, the proxy statement may reference Microsoft's progress toward carbon negative, water positive, zero waste, and ecosystem protection commitments as part of the rationale for bonus decisions. This allows flexibility while embedding climate

accountability into leadership performance reviews.[2] We continue to monitor changes and may consider adjustments to our compensation structure in the future.

Within our corporate Energy, Connectivity, & Sustainability team, our Chief Sustainability Officer role is dedicated to executing on our sustainability strategy. Business groups across our organization also have executive positions with direct incentives tied to sustainability performance.

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[2] Microsoft does not disclose a fixed percentage of executive remuneration tied solely to climate-related considerations. For the CEO, sustainability represents 10% of the total bonus calculation, within a broader 30% operational assessment. For other senior leaders, the operational assessment comprises 50% of the bonus structure; within this, sustainability is one of three key factors, alongside product strategy and customer engagement. This structure ensures that climate performance is consistently evaluated and considered.

Strategy

The significance that Microsoft places on climate change is reflected in the companywide decision to make it one of our company's strategic priorities, with a commitment by 2030 to be carbon negative and by 2050 to remove from the atmosphere an equivalent amount of all the carbon dioxide that our company has emitted either directly or by our electricity consumption since we were founded in 1975. Microsoft's climate strategy focuses on understanding, mitigating, and managing the operational, legal, and reputational risks from climate change that may affect our business and our ability to deliver services to our customers.

Water and water risk are likewise important topics for our company. Water is essential to life as well as a critical input to many businesses. As water challenges intensify globally, we are taking a multifaceted approach to mitigate our operational risks as well as the external impacts of our water use in the communities in which we operate. In 2020, Microsoft announced that our company would become water positive by 2030. For Microsoft, being water positive means that we (1) reduce our water use intensity across our direct operations, (2) replenish more water than we use across our operations, (3) increase access to water and sanitation services, (4) drive innovation to scale water solutions, and (5) advocate for effective and innovative water policy. We believe that Microsoft has an important role to play in helping to address water stress[3] in the areas where we have operations by investing in projects that help improve and protect freshwater resources and affected ecosystems and support local communities.

We recognize the urgent need to reduce waste and greenhouse gas (GHG) emissions associated with the life cycle of materials by prioritizing reduction and reuse as much as possible. As a company that manufactures devices, builds campuses and datacenters, and uses manufactured goods in our operations, we are pursuing initiatives to more responsibly design and source materials and are taking an increasingly circular approach to reach our commitment to be zero waste by 2030. This strategy, grounded in the prioritization of reduction and reuse, enables us to extend the life of the materials we use and reduce waste and GHG emissions as a result.

Similarly, we acknowledge that the future of ecosystems and the rich biodiversity that they support are increasingly at risk from human impacts. Healthy, functioning ecosystems in turn are essential life support for human populations and the foundation of the global economy, including company operations. They are critical to both mitigating the risks and adapting to the impacts from climate change. For these reasons, Microsoft sees protecting and restoring ecosystems as foundational to meeting our commitments to be carbon negative, water positive, and zero waste. In our 2025 Environmental Sustainability Report, we reported that we have contracted for the permanent protection of 15,849 acres of land (including through conservation easements and land trusts) and have exceeded our land protection target of 11,900 acres by more than 30%. We are now looking to continue that commitment and build on the good work to further protect nature.

The Strategy and Risk and opportunity management sections of this report cover both climate and water. For more information on our sustainability work, including with waste and circularity and ecosystems, please see our 2025 Environmental Sustainability Report.

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[3] According to the Pacific Institute, water stress refers to the ability, or lack thereof, to meet human and ecological demand for freshwater. Water stress is a more inclusive and broader concept than water scarcity; it accounts for both demand (like scarcity) and where supply is compromised from water quality impairment.

Climate-related risks and opportunities

As noted in the Microsoft FY24 annual Form 10-K filing, the long-term effects of climate change on the global economy and the IT industry in particular are unclear. Environmental regulations or changes in the supply, demand, or available sources of energy or other resources may affect the availability or cost of goods and services, including natural resources, necessary to run our business. Changes in climate where we operate may increase the costs of powering our operations. Microsoft primarily uses scenario analysis to identify and assess climate risks and opportunities to help determine their potential impact on our organization (see Figure 2).

Ensuring dynamic oversight and regular reviews:
• ERM integration
• Dynamic risk tracking
• Continuous scenario updates
• ESPP Committee of Microsoft's BOD
• Climate Council

Transparently reporting on sustainability:
• Metrics
• Targets
• Performance tracking

Planning and investing for climate risk and business resilience:
• Carbon reduction initiatives
• Water resilience planning
• Supplier engagement
• Community partnerships
• Cross-organizational collaboration

Monitoring

Data collection

Gathering sufficient data from across the company to support analysis:
• GHG inventories
• Energy consumption
• Water and waste metrics
• Asset inventory data
• Supply chain data

Disclosure & reporting

Climate risk & resilience process

Scenario analyses

Using the data to identify and assess physical and transition climate risks:
• High emissions scenarios
• 1.5°C alignment scenarios

Mitigation & adaptation strategies

Exposure modeling

Modeling exposure from climate models:
• Asset-level exposure analysis
• Supply chain disruptions

Materiality assessment

Assessing vulnerability and resilience:
• Vulnerability and impact
• Qualitative SME insights
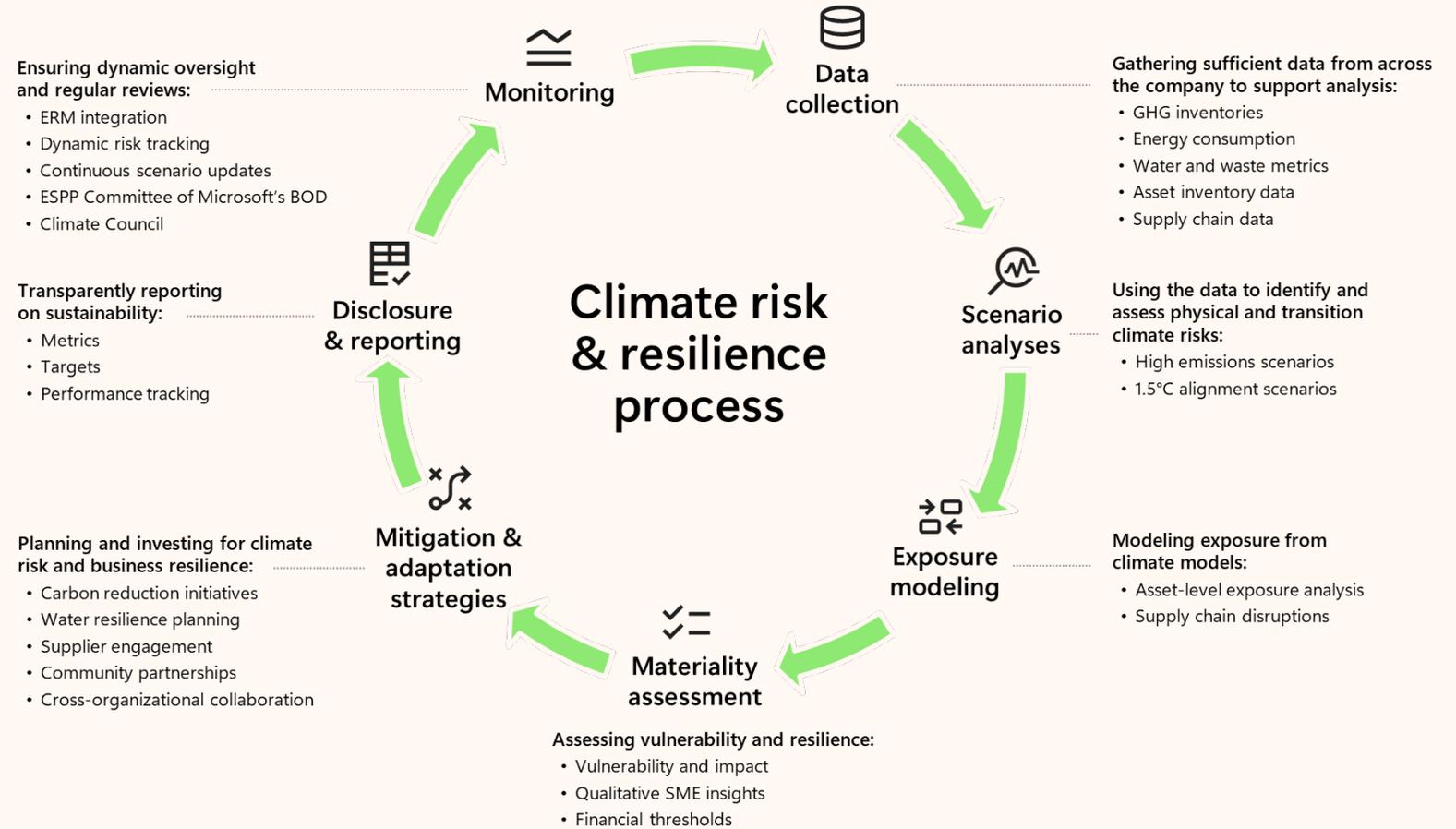• Financial thresholds

Figure 2. Microsoft's climate risk and resilience process. BOD = Board of Directors; ERM = enterprise risk management; ESPP = Environmental, Social, and Public Policy; GHG = greenhouse gas; SME = subject matter expert.

In our scenario analyses, we consider acute and chronic physical risks, such as those associated with temperature extremes, water stress, drought, wildfire, coastal and inland flooding, tropical cyclones, and damage from extreme weather events. We also consider a multitude of risks associated with a transition to a low-carbon economy (also known as transition risks), including current and emerging regulations and policy, market, new technology, and reputational risks. In addition to risks, we consider climate-related opportunities associated with resource efficiency (including energy, water, and materials), use of lower-emission sources of energy, and designing and developing new products and services that support the transition to a low-carbon economy. Specific areas of climate-related physical and transition risks and opportunities explored in our analyses are determined in part by the analyses' scope, boundaries, and focus.

We use the following forward-looking time horizons in our physical and transition risk and opportunity assessments and corresponding scenario analyses:

→ Short term: 0–3 years

→ Medium term: to 2030

→ Long term: to 2050

Microsoft's definition of "short term" aligns with our internal planning processes, while "medium term" and "long term" align with our sustainability targets and global net-zero emission target ambitions per the Paris Agreement.

We regularly enhance our climate-related risk assessment processes by refining methodologies and integrating scientifically credible approaches. This includes the adoption of updated models, use of higher resolution risk data, and alignment with analytical frameworks to improve the accuracy and relevance of risk evaluations. We typically update these assessments in accordance with significant changes to our portfolio and/or when scientific advancements and more refined models are released from the United Nations Intergovernmental Panel on Climate Change (IPCC).

Background: historical assessment

In 2020, we conducted an initial screening scenario analysis to assess climate-related physical and transition risks and opportunities for Microsoft's physical assets over the coming decades, using two representative concentration pathway (RCP) emission scenarios:[4]

1. **RCP8.5:** RCP8.5 represents a higher GHG emissions future, with increasing GHG emissions through 2100 and greater physical impacts from climate change. RCP8.5 is consistent with global warming of 4.3°C by 2100 (range 3.2–5.4°C). We selected this high-emissions, high-impact pathway to explore climate risks under extreme conditions.

2. **RCP4.5:** RCP4.5 represents a moderate emissions scenario with decreasing GHG emissions after mid-century and lesser physical impacts than RCP8.5. It is consistent with global warming of 2.4°C by 2100 (range 1.7–3.2°C). We selected this moderate mitigation scenario to align with global efforts in GHG emissions reduction.

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[4] RCP scenarios were developed for use in Intergovernmental Panel on Climate Change (IPCC) assessments. Van Vuuren, D.P., Edmonds, J., Kainuma, M., Riahi, K., Thomson, A., Hibbard, K., Hurtt, G.C., Kram, T., Krey, V., Lamarque, J.F. and Masui, T., 2011. The representative concentration pathways: an overview. *Climatic change, 109* (1), pp.5–31.

We analyzed approximately 400 Microsoft assets, selected for their high value and energy use. These assets included datacenters, retail stores, and offices. Our climate scenario analysis assessed potential risks and opportunities to help determine their impact on Microsoft, using global data spanning from the present to 2100. Findings from this 2020 analysis indicate that climate change may increasingly affect our operations, underscoring the need to strengthen our ability to adapt to changes, explore new opportunities, and enhance resilience for our enterprise and the communities we serve.

Following this scenario analysis, we conducted a qualitative assessment of adaptive capacity at 20 of our most exposed facilities. This review evaluated:

→ The structural and operational integrity of our facilities.

→ The resilience of employee health, safety, and mobility.

→ The adaptive capacity of surrounding host communities.

While community resilience is outside our direct control, understanding it is critical to enterprise resilience.

Identified gaps—whether at our facilities or within host communities—represent opportunities to improve adaptation and partner locally to protect operations, capital, and essential resources.

Additional scenario analyses

We continue to improve and build on these assessments to increase our scope and refine our methodology and to assess bigger ranges of impact on more diverse parts of our business (see Figure 3). This has translated into a better understanding of these potential areas of risk and opportunity.

In FY22 and FY23, we conducted additional scenario analyses focused on our:

→ **Operations**, including datacenters and other assets that support our cloud services.

→ **Upstream value chain**, including key upstream suppliers who are critical to support our growing cloud services and the supporting datacenter infrastructure.
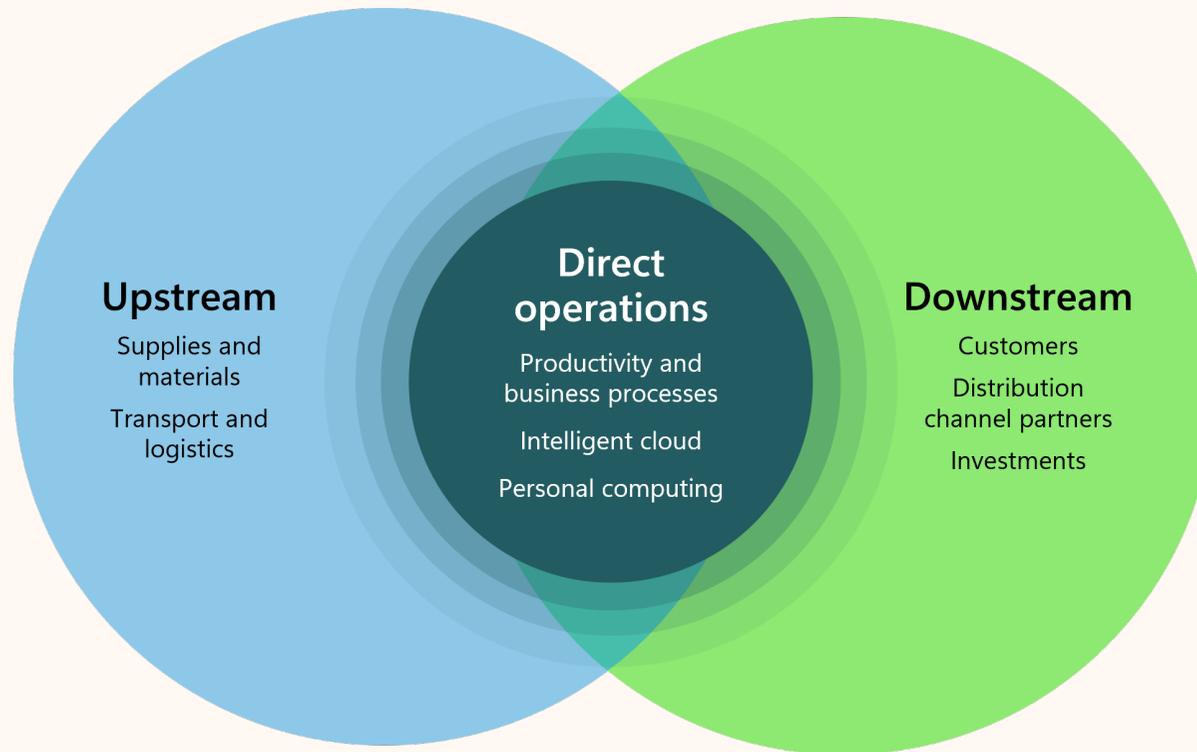
→ **Downstream value chain**, including key downstream customer segments for our cloud services.

These scenarios aimed to explore:

→ **Climate-related physical risks** in our own operations and in subsets of our upstream and downstream value chains. This work included evaluating climate-related hazards and how our assets and business activities may be sensitive to these hazards, considering at least one high-emissions scenario.

→ **Climate-related transition risks and opportunities** in our upstream and downstream value chains, which may have implications for our direct business operations, considering at least one climate scenario in line with limiting global warming to 1.5°C with no or limited overshoot.

These scenario analyses focused on our cloud services value chain; this is important to Microsoft because our Intelligent Cloud business segment was the top revenue-generating business segment in the Microsoft FY24 annual Form 10-K filing.[5]

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[5] In August 2024, we announced changes to the composition of our segments. These changes align our segments with how we currently manage our business, most notably bringing the commercial components of Microsoft 365 together in the Productivity and Business Processes segment.

Upstream
Supplies and materials
Transport and logistics

Direct operations
Productivity and business processes
Intelligent cloud
Personal computing

Downstream
Customers
Distribution channel partners
Investments

Figure 3. Assessing climate-related risks and opportunities is a continually occurring process. Microsoft climate-related risk and opportunity assessments began with a focus on direct operations and have expanded to include upstream and downstream risks and opportunities.

Climate-related physical risk assessments

For the physical climate-related risk analyses conducted in FY22 and FY23, we applied the same two RCP scenarios (RCP8.5 and RCP4.5) used in the initial screening to frame and guide the analyses and assess potential future exposure to physical climate change risks.

FY22 upstream cloud services supply chain physical risk assessment

A resilient and diverse supplier base is important for our future business success. In FY22, our Microsoft cloud sourcing team launched a climate risk and resilience assessment with a select group of our suppliers, to evaluate climate-related physical and transition risks and opportunities. We assessed future physical climate change hazards and associated risks to our cloud sourcing supply chain to understand where and how physical climate change hazards may disrupt our direct suppliers' ability to deliver critical products and services to Microsoft. Specifically, the analysis focused on how physical climate change hazards could potentially affect the volume of inventory at supplier facilities, delay product delivery to Microsoft cloud services datacenters, or diminish product quality.

The team identified critical cloud suppliers and conducted a quantitative physical risk assessment. The suppliers were grouped into general industry taxonomies for assessment purposes; these included semiconductor suppliers, networking hardware suppliers, and hard drive suppliers.

We evaluated both acute and chronic physical climate change hazards, including:

→ Extreme temperatures

→ Inland flooding

→ Coastal flooding

→ Tropical cyclones

→ Drought

→ Wildfires

→ Water stress

We evaluated climate hazard indicators to assess potential impacts on suppliers that could disrupt Microsoft's supply chain. For example, extreme temperature was measured using projected annual days above 95°F per year as a proxy for potential effects on facilities and workforce.

Suppliers' sites were assessed under RCP4.5 and RCP8.5 scenarios for present day, 2030, and 2050, considering exposure and sensitivity to hazards. The analysis focused on supplier employee productivity and business continuity

but did not account for suppliers' adaptive capacity, regional cascading events, or infrastructure disruptions.

Water stress, drought, fluvial flooding, and temperature extremes emerged as the most significant risks. Flash memory semiconductor manufacturers were projected to experience the greatest impacts.

Following the evaluation, we engaged the suppliers in an optional questionnaire that collected information about each site's exposure and adaptive capacity. The results of the questionnaire indicated limited historical impact from climate hazards, and respondents indicated a varying range of adaptive capacity.

As we expand our supplier engagement program, which supports suppliers in GHG emission reduction efforts, there is an opportunity to incorporate climate-related risk and resilience coordination to achieve mutually beneficial outcomes. Supply chain risk from climate change is an area that we will continue to explore.

FY23 Microsoft operational physical risk assessment

In FY23, we conducted qualitative and quantitative analyses of physical climate risk exposure across approximately 1,400 global assets, including datacenters supporting our cloud services, offices, warehouses, and

select network and fiberoptic sites in our value chain. The analyses quantified projected climate impacts on datacenters, factoring in their unique engineering specifications.

With support from third-party providers, we assessed exposure to both acute and chronic physical climate hazards, including:

→ Extreme heat and cold

→ Extreme humidity

→ Extreme precipitation

→ Coastal flooding

→ Fluvial flooding

→ Extreme wind

→ Drought

→ Wildfire weather

→ Sea-level rise

For the RCP4.5 and RCP8.5 scenarios, we assessed return periods across each decade through 2050. The analysis employed climate projections from CORDEX (Coordinated Regional Downscaling Experiment) used to downscale global climate models to regional scales. Additionally, given the locality-specific nature of flood risk, we used

flood projections from other peer-reviewed, credible sources to validate and modify exposure analyses. We coordinated with datacenter engineers to validate the engineered impact in our datacenter infrastructure.

Of note, from the future climate projections, the analysis found that:

→ Warmer and drier conditions are projected at many datacenter locations around the world.

→ Precipitation projections for many locations were uncertain across models; this remains an area that may require additional analysis in the future.

→ Fluvial and coastal flooding hazards may pose potential risk to a small number of locations.

When assessing how our datacenter designs may perform in these future climates, we found that the design criteria of our facilities are expected to be sufficient to accommodate extreme heat and humidity conditions for the scenarios assessed. For fluvial and coastal flooding hazards, we modeled the relationship between flood depth and datacenter asset sensitivity to estimate potential financial impacts. Under RCP8.5, projected impacts from fluvial and coastal flooding by 2050 across owned and leased datacenters were not significant.

Climate-related transition risk and opportunity assessments

We conducted two transition risk and opportunity analyses of our cloud services in FY22 and FY23: one of our upstream value chain and one of our downstream value chain.

FY22 upstream cloud services supply chain transition risk and opportunity assessment

In FY22, as part of our cloud services supply chain risk and resilience assessment, we performed a climate-related transition risk and opportunity analysis for a select group of critical suppliers to our cloud services. This analysis included an evaluation of future risks and opportunities stemming from our suppliers' transitions to a low-carbon economy. The suppliers represented a variety of manufacturing types—including semiconductor manufacturing, network manufacturing, and datacenter infrastructure manufacturing—that provide critical inputs to our cloud operations.

We used the following scenarios to help frame and guide the analysis:

→ International Energy Agency (IEA) World Energy Outlook (WEO) 2021 Sustainable Development Scenario (SDS) (1.6°C climate warming by 2100)

→ IEA WEO 2021 Stated Policies (STEPS) (2.6°C climate warming by 2100)

We developed the assessment methodology to reflect how specific risks and opportunities for our suppliers could manifest and affect our business—namely, through supply chain disruption or risk of service deterioration to Microsoft. Risks included, but were not limited to, legal and policy risks such as those from carbon pricing and other regulations, reputational risks from the use of high-carbon products, and market risks from difficulty sourcing raw materials.

FY23 downstream cloud services customer transition risk and opportunity assessment

In FY23, we conducted a quantitative analysis of transition risks and opportunities related to Microsoft cloud customers and their roles in a low-carbon economy. The assessment focused on key customer industries representing the majority of Microsoft Azure revenue, exploring how these sectors may evolve under different low-carbon scenarios and the potential impact on Azure revenue. The analysis was conducted at the industry level, with an emphasis on sectors most likely to be affected by

the transition. We used the following scenarios for this transition risk and opportunity analysis:

→ Network for Greening the Financial System (NGFS) Phase III Net Zero 2050 (1.5°C climate warming/Paris aligned)

→ NGFS Phase III Delayed Transition (1.6°C climate warming)

We used projections from integrated assessment models (IAMs) to estimate impacts and model uncertainty. We quantified impacts across the 2030 and 2050 time horizons for each scenario.

Our methodology to financially quantify transition-related revenue at risk is an emerging area. Our FY23 assessment provides a first step, and we aim to improve these methodologies in future scenario analyses. The FY23 assessment was based on key assumptions and design decisions:

→ Assumes static cloud services offerings across industries into the future.

→ Assumes that industries remain static and do not undergo changes under a low-carbon transition.

→ Does not model technological innovations that may accelerate the consumption of cloud services, such as the growing adoption of large language models.

→ Does not explore how sensitive cloud services uptake is to changing industry and larger socioeconomic conditions. Thus, it is assumed that a reduction in industry size has a direct impact on our cloud services revenue.

Our methodology focused on two different approaches to provide directional insights: one looks at sectors that may be affected by a transition to a low-carbon economy and the other focuses on sectors driven by economic change.

Data limitations and model sensitivity proved challenging during this work, but the scenario analysis provided directional insights to potential economic and market impacts. We found that IAMs can be useful, but they also have limitations that must be acknowledged.
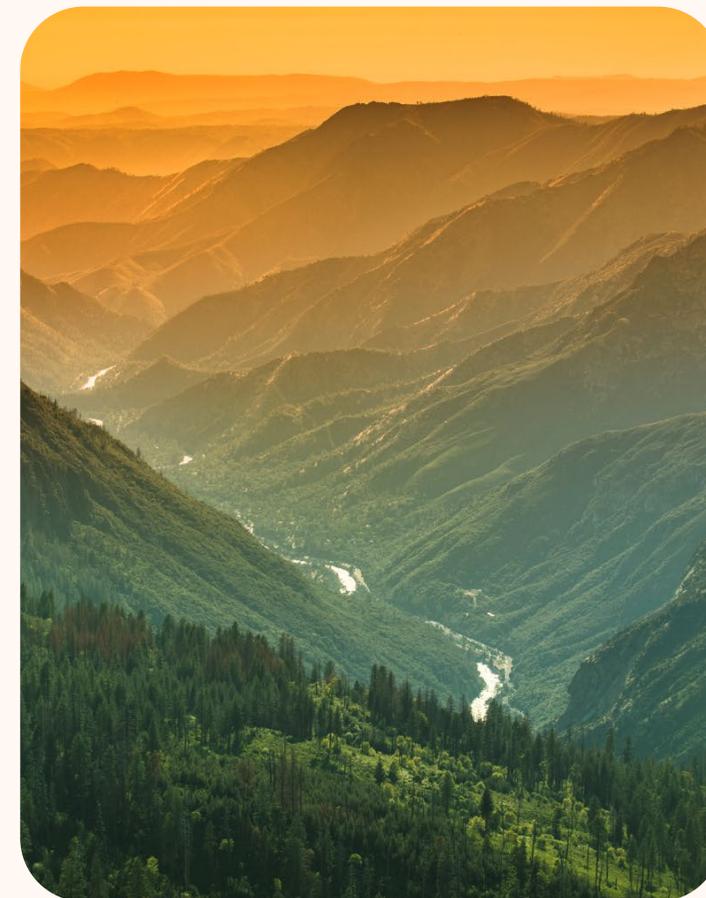
Models and assumptions

The macroeconomic assumptions in the document are grounded in the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) climate scenarios, which incorporate updated country-level commitments to net-zero emissions and reflect disruptions. These scenarios are modeled using integrated assessment models (IAMs) like REMIND-MAgPIE, GCAM, and MESSAGEix-GLOBIOM, alongside the NiGEM macroeconomic model. Each model captures interactions between energy, land, economy, and climate systems, allowing for diverse projections of economic impacts under varying climate policy and technology pathways. The scenarios explore how delayed or fragmented policy actions, technological shifts, and carbon pricing mechanisms may influence global economic conditions, including gross domestic product (GDP), energy investment, and income levels.

The methodology assumes that climate hazard projections—such as temperature variability, precipitation patterns, and extreme weather events—are regionally differentiated and derived from scientifically credible sources like Intergovernmental Panel on Climate Change (IPCC) Shared Socioeconomic Pathways (SSP) and hazard-specific datasets. It also presumes that local infrastructure interdependencies (for example, electricity, water, telecommunications), land use characteristics, and demographic resilience factors (for example, recovery capacity) can significantly influence asset vulnerability and are considered when data is available or supplemented through expert judgment.

The transition risk assessments assume that the energy transition will be shaped by varying regional capacities to adopt renewable energy sources, as modeled through the IAMs and the NGFS scenarios.

The NGFS Net Zero 2050 scenario assumes rapid and coordinated global technological change, including medium to high deployment of carbon dioxide removal technologies and energy efficiency investments.
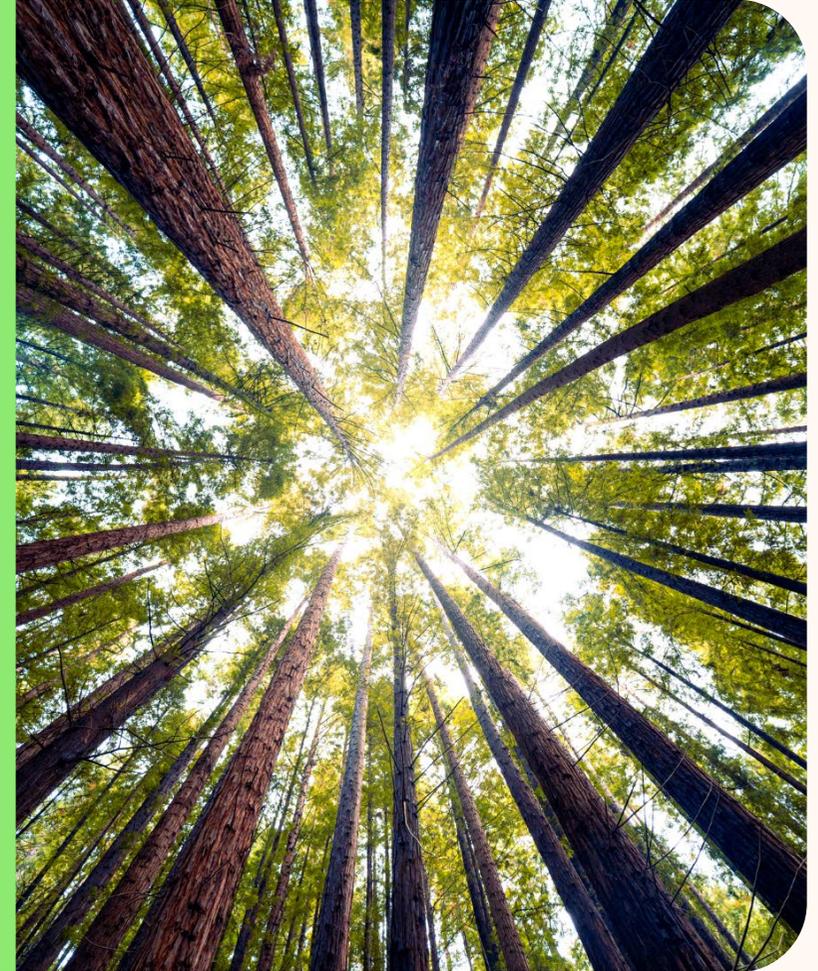
Materiality assessment

Following the various physical and transition risk assessments, Microsoft assessed the nature, likelihood, and magnitude of climate-related risks and opportunities using a combination of qualitative and quantitative criteria. Quantitative thresholds are applied to judge financial impacts, asset vulnerabilities, and GHG metrics. For risks or opportunities that are not reasonably measurable or where uncertainty is high, a qualitative analysis is performed. This incorporates factors such as subject matter expert insights, scenario analysis outputs, regulatory landscape, technology trends, and supply chain resilience.

We conducted a comprehensive materiality assessment to evaluate the relevance of climate-related risks and opportunities to our business operations, strategy, and financial performance. The assessment was conducted in accordance with relevant sustainability reporting standards and included a systematic evaluation of potential climate-related impacts across our operations and value chain. The assessment process included:

→ Identification of potential climate-related physical risks (both acute and chronic) that could affect our facilities, operations, and supply chain.

→ Analysis of transition risks related to policy changes, market shifts, technology developments, and reputational factors associated with the transition to a low-carbon economy.

→ Evaluation of potential climate-related opportunities across our business model.

→ Assessment of the likelihood and potential magnitude of identified risks and opportunities.

→ Consideration of different time horizons (short-term: 0–3 years, medium-term: to 2030, long-term: to 2050).

→ Engagement with relevant stakeholders to understand external perspectives on climate-related impacts.

We concluded that climate-related risks and opportunities are not currently financially material to Microsoft. This determination is based on our comprehensive risk management processes, the nature of our operations, our geographic footprint, and sector-specific exposure. At this time, our business model is not materially affected by climate transition policies, physical climate risks, or market shifts related to decarbonization.

We acknowledge that climate change may become material in the future. We will continue to monitor developments in climate science, regulations, and stakeholder expectations, and we remain committed to reassessing materiality on a regular basis. Should climate-related risks or opportunities become material, we will update our disclosures accordingly. Physical climate risks to Microsoft's datacenters are reassessed annually.

While climate-related risks and opportunities are not currently material, we support broader sustainability commitments and maintain internal practices that promote energy efficiency, responsible resource use, and environmental stewardship. These efforts are part of our commitment to long-term resilience and stakeholder trust. The remainder of this report includes examples of risks and opportunities that are illustrative and intended to support stakeholder understanding of our programs. They do not imply materiality, likelihood, or potential financial impact.

Please see Appendix A for a high-level view of components of our climate transition plan.
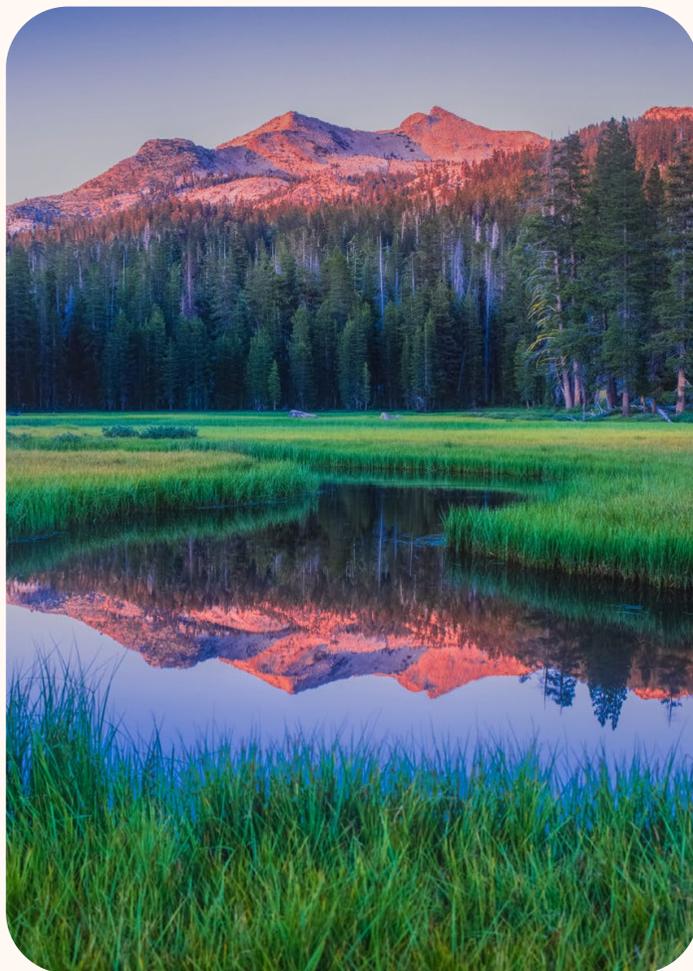
Approaches and policies that support climate change mitigation and adaptation

As a global company with a robust governance structure in place, we use sustainability-related company policies and, more broadly, principles to:

→ Formalize our position and establish guiding posts on relevant sustainability and other topics.

→ Define an end-state goal or objective that we aim to achieve through policy alignment.

→ Facilitate resource alignment in the execution of initiatives or actions in support of the policies.

As discussed fully in our Environmental Sustainability Report, Microsoft is working to become carbon negative by 2030 and by 2050 to remove from the atmosphere an equivalent amount of all the carbon dioxide that our company has emitted either directly or by our electricity consumption since we were founded in 1975. To achieve these ambitious commitments, we focus on three areas:

1. Reducing emissions

2. Expanding carbon-free electricity (CFE)

3. Removing the rest of our emissions

In addition, the following are examples of Microsoft policies and principles for our suppliers that support our sustainability commitments, as well as good business practices.

→ Microsoft Supplier Code of Conduct

→ LinkedIn Supplier Code of Conduct

→ Microsoft Responsible Sourcing of Raw Materials Policy

→ Microsoft Supplier Social and Environmental Accountability Manual

→ Microsoft Supply Chain Human Rights Policy Statement

As we continue our journey to understand and assess our environmental, social, and governance (ESG) risks, including climate- and water-related risks, we may develop additional policies.

Actions and resources that support climate-related policy and target implementation

Table 1 provides a summary of the actions and resources that we are dedicating to work toward our ambitious carbon negative commitment, organized by three focus areas.

Table 1. Microsoft climate-related actions

Focus area	Actions
Reducing emissions	**Operations:** Microsoft has a significant physical presence globally, with owned and leased facilities for datacenters, offices, and research and development, all of which depend on energy to operate. Measures taken to improve the energy efficiency of our facilities are expected to reduce our overall operating costs. • **Datacenter operations:** To accelerate decarbonization in our datacenter operations, Microsoft is dedicated to pursuing LEED Gold certification on all new datacenters. This certification requires advanced energy-saving technologies and practices to lower energy consumption and associated carbon emissions. We are continually working to ensure that energy is used as effectively as possible without compromising performance or reliability. One key initiative, power harvesting, maximizes the use of our available power by reallocating unused power from workloads that do not consume their full power allocation. Despite increased demands from AI workloads over the past year, Microsoft has doubled our rate of power savings, scaling this approach across our datacenters. In parallel, we are reducing server energy consumption through methods like low-power server states, which lowers energy usage on unallocated servers by up to 35%. This initiative has rapidly expanded from deployment on a few thousand servers in 2022 to nearly 2 million by the end of 2024. Microsoft is also increasing server utilization by selectively oversubscribing CPU cores for internal workloads with low utilization. This targeted approach has reduced datacenter hardware needs for the Microsoft Azure platform by approximately 1.5% since 2020—representing a threefold improvement compared with reductions achieved by 2022—while also cutting embodied carbon. • **Campus operations:** Across our global portfolio, we continue to implement energy efficiency measures. Our North American campuses optimized lighting, adjusted operational setpoints, and incorporated energy solutions like heat pumps to reduce energy consumption. Facilities in Bogotá and Medellín, Colombia; Quito, Ecuador; and Montevideo, Uruguay, optimized their heating, ventilation, and air conditioning (HVAC) systems, cutting year-over-year energy consumption for these systems by 20%. In Europe and the Middle East, lighting upgrades further reduced electricity usage. To guide future improvements, we are conducting comprehensive facility audits across our portfolio, prioritizing locations with the highest energy use, to discover areas where we can further enhance energy efficiency. In 2024, we opened the first seven buildings from the Puget Sound East Campus Modernization Project, all of which achieved LEED Platinum

Focus area	Actions

certification. These buildings are supported by Microsoft's Thermal Energy Center, a facility that takes advantage of geothermal energy to provide carbon-free heating and cooling. The Puget Sound East Campus Modernization Project serves as a proving ground for sustainable construction, facility design, and operations practices, reducing operational and embodied carbon while also minimizing water consumption.

Building construction: Since announcing our ambitious sustainability commitments in 2020, we have started to embed low-carbon materials and equipment requirements into supplier contracts, while also collaborating with industry leaders to scale sustainable construction practices. We are advancing the use of low-carbon building materials[6] at our datacenters. In 2024, we launched our first mass timber datacenters, using strong, ultra-lightweight wood in a hybrid construction model that incorporates cross-laminated timber (CLT), steel, and concrete. This approach is projected to reduce the embodied carbon footprint of these new datacenters by 35% compared with conventional steel construction and by 65% compared with typical precast concrete, by drastically reducing the reliance on traditional carbon-intensive materials. In addition, novel materials like polyethylene terephthalate (PET) film and fiber reinforced plastic (FRP) are being tested to reduce the weight and volume of hot aisle containment (HAC) panels and replace steel in support structures, cutting material mass by up to 75%, thereby reducing embodied carbon.

By integrating tools like environmental product declarations (EPDs) and Building Transparency's Embodied Carbon in Construction Calculator (EC3), Microsoft enables trade partners to quantify impacts, track progress, and make data-driven decisions. These efforts create a scalable model for low-carbon construction, setting a new standard for sustainability across the industry. In 2024, Microsoft used a version of the Impact Accounting Methodology for Building Construction to refine carbon accounting in two datacenter construction projects. These pilots demonstrated measurable reductions in embodied carbon, increased supplier awareness of EPDs, and enabled greater integration of low-carbon materials into construction workflows.

Supplier engagement: We continue to partner with suppliers to reduce emissions across our supply chain. The Microsoft Supplier Engagement Program uses in-depth analysis to identify the most impactful carbon reduction opportunities across Scope 1, 2, and 3 emissions. Since 2022, Microsoft's Devices Supplier Decarbonization program has built policies, procedures, data systems, and educational tools to align suppliers with our sustainability commitments; over the past three years, this program

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[6] Low-carbon building materials are those that have a reduced carbon footprint compared with traditional materials. This means they have lower emissions, specifically in terms of the GHG emissions generated by the manufacturing, transportation, installation, maintenance, and disposal of construction materials. Read more about our strategy: https://www.microsoft.com/en-us/microsoft-cloud/blog/2024/12/04/sustainable-by-design-advancing-low-carbon-materials.

Focus area	Actions
	has evolved to address the growing urgency of decarbonization. As of 2024, Microsoft contractually requires select, large-scale suppliers to transition to 100% CFE[7] for goods and services delivered to Microsoft by 2030. Progress has been significant. As of FY24, 89 devices manufacturing facilities transitioned to 100% CFE for Microsoft production, marking a more than tenfold increase over the previous year. These efforts expanded CFE use and avoided nearly 232,000 metric tons of carbon dioxide equivalent ($mtCO_2e$) in emissions. Recognizing that access to CFE and decarbonization solutions varies by region, Microsoft has launched several initiatives to support suppliers in overcoming these challenges, including providing suppliers with streamlined access and a guided experience to procure CFE and a sustainable aviation fuel (SAF) environmental attribute purchasing pilot through which, in 2024, Microsoft made SAF environmental attributes more accessible to our suppliers. **Transportation:** In transportation, Microsoft has adopted alternative fuels and electric vehicles to reduce emissions, collaborating with several leading logistics service providers (LSPs). Renewable diesel is now in use in Microsoft's road freight operations in Europe and California, cutting emissions by 50% for these shipments while keeping existing equipment in use. Through our LSPs, we've partnered with airlines and shipping lines to expand the use of SAF and sustainable marine fuels (SMF), a switch that reduces emissions by over 17,000 $mtCO_2e$ compared with conventional transportation fuels—equivalent to avoiding the combustion of nearly 40,000 barrels of oil.[8] We achieved new milestones for electrification of our global campus operations fleet in 2024. Microsoft India launched its first phase of electric vehicle adoption, while our Puget Sound headquarters continues to incorporate electric vehicles in its campus operations fleet. Fleet right-sizing efforts are further optimizing resources to better match demand. As the EV industry evolves, Microsoft is adopting emerging technologies with a focus on efficiency, safety, and sustainability. **Product design:** Our devices and gaming teams have roadmaps that cover the product life cycle: carbon-conscious design, reducing supply chain emissions, innovating energy-efficient hardware and software, and enabling product repairability, reusability, and recyclability. We have made significant progress towards lowering carbon emissions of our Surface devices during the manufacturing process and throughout the supply chain, using more recycled materials, and implementing energy efficiency features. We reduced the carbon footprints of our Spring 2024 Surface Pro and Surface Laptop products compared with previous models in those product lines while still delivering better performance for customers. Our new Copilot+ PCs deliver higher performance while using less energy; for example, our Surface Laptop (7th Edition) uses less energy than Surface Laptop 5 and is ENERGY STAR® certified, 71% better than the ENERGY STAR® limit. Through a combination of our use of recycled materials, more efficient manufacturing processes, and our suppliers' use of CFE, the life cycle carbon footprint of Surface Pro (11th Edition) was reduced by 27% and the life cycle

[7] Microsoft defines CFE technologies as including technologies with zero direct emissions and biogenic technologies with life cycle emissions equivalent to renewables. CFE technologies include wind; solar; geothermal; sustainable biomass; hydropower; nuclear; fossil with complete carbon capture, utilization, and sequestration; and storage charged with CFE generation. Microsoft acknowledges that CFE technologies have indirect carbon dioxide emissions and these are accounted for in our life cycle assessments (LCAs). CFE transition in the supply chain includes the onsite generation and purchase of verified energy attribute certificates (EACs) by suppliers that are allocated to Microsoft-specific production volumes.

[8] This estimate is calculated based on the U.S. Environmental Protection Agency (EPA) estimate of the typical passenger vehicle emitting 4.6 tons of carbon dioxide per year.

Focus area	Actions
	carbon footprint of Surface Laptop 15" (7th Edition) was reduced by 41% compared with baseline (no interventions).[9] In FY24, Surface reduced Scope 3 emissions by 29% from FY23. In addition, Xbox has made significant investments not only to reduce the environmental footprint associated with the production of our devices, accessories, and console packaging, but also to reduce the energy usage of the console itself, with tools that include an Xbox console with advanced carbon-saving settings, a shutdown (energy saving) power option, Active Hours (an energy setting update that allows players to adjust when their console is active), and new advancements in video content handling. In addition, the latest consoles now include an upgraded system on chip (the "brain" of the Xbox) designed with a TSMC 6-nanometer (nm) manufacturing process, which reduces the size of the tiny transistors inside the chip, reducing power consumption during gameplay without degrading visual quality.
	Investments: And finally, through our Climate Innovation Fund (CIF), we have made investments in companies positioned to directly affect our Scope 3 emissions. For example, Stegra is building the world's first commercial-scale near-zero-carbon steel plant with up to 95% reduced carbon emissions reduction compared with conventional steel. In addition, we invested in Twelve, a carbon transformation company that uses CO_2 as a feedstock for SAF and chemicals. CIF's investment in Twelve supported the scale-up of its Moses Lake, Washington, facility and led to SAF offtake for Microsoft; the offtake was structured to include book-and-claim accounting, enabling Microsoft to report lower emissions from SAF use without requiring physical delivery.
Expanding carbon-free electricity (CFE)	The ability of Microsoft and the technology sector to meet decarbonization goals is dependent on our collective ability to procure CFE. Microsoft continues to sign contracts that help bring more CFE onto the grids where we operate.[10]
	By FY24, our CFE program had grown eighteenfold since 2020, with contracted renewables increasing from 1.8 gigawatts (GW) to over 34 GW across 24 countries. In 2024, we contracted an additional 19 GW of new renewable energy across 16 countries, further diversifying our energy portfolio. Microsoft also expanded into nuclear energy with the signing of our first large-scale nuclear energy power purchase agreement (PPA) with Constellation's Crane Clean Energy Center in September 2024. This agreement will enable the restart of an 835-megawatt (MW) nuclear facility in Pennsylvania, retired in 2019, providing a significant supply of new, reliable, CFE to the PJM

[9] The baseline (no interventions) scenario models the same product without any sustainability interventions in the production phase of the device: (a) no additional renewable energy in the supply chain beyond what is already modeled in the regional grid mixes from Ecoinvent v3.9.1, (b) the carbon footprint of materials and manufacturing processes assuming no recycled content or additional eco-design interventions as of the date of Ecoprofile where the life cycle carbon footprint is published, and (c) the default US distribution, use, and end of life modeling assumptions of the specific product model.

[10] Microsoft criteria for accounting for CFE in our GHG accounting metrics is as follows: For any renewable electricity directly produced and generated on site, any EACs must be retained (that is, not sold) and retired or cancelled on behalf of Microsoft for Microsoft to claim them as renewable electricity. For renewable PPAs and green power products, the agreement must explicitly include and convey that EACs be retained or replaced and retired or cancelled on behalf of Microsoft for Microsoft to claim them as renewable electricity.

Focus area	Actions
	power grid—a critical energy region for Microsoft's datacenters. Microsoft is also leading efforts to integrate circular economy principles into renewable energy projects. In 2024, we signed four groundbreaking PPAs with ENGIE requiring that 100% of photovoltaic modules—from construction through end of life—will be reused or recycled. Microsoft is also supporting community development in energy procurement. In 2024, we announced our Datacenter Community Pledge, reinforcing our role as a responsible corporate citizen and ensuring that local communities experience meaningful benefits from clean energy projects including significant economic, social, and environmental benefits. Examples from the past year include the Pivot Energy agreement—a five-year framework agreement to develop a 500-MW portfolio of community-scale solar energy projects, enabling approximately 150 projects in 100 US communities between 2025 and 2029—and the ReNew agreement in India—a 437-MW hybrid wind and solar project in Maharashtra that includes a community benefit fund managed by the ReNew Foundation. The buildings within our Puget Sound East Campus Modernization Project are designed to be all-electric for daily operations (excluding emergency backup power generation). These buildings are supported by the Thermal Energy Center, a centralized system on the Redmond campus that takes advantage of geothermal energy for heating and cooling. At our LinkedIn campus in Omaha, Nebraska, we have been accessing direct renewable energy through our parking canopy solar installation since July 2022. In FY24, this provided approximately 18% of the facility's total electricity. In 2023, LinkedIn also installed a 360-kilowatt (kW) solar PV array on the parking garage attached to our new Mountain View, California, headquarters. In FY24, this installation directly supplied our facility with 500,000 kilowatt-hours (kWh) of renewable electricity.
Removing the rest of our emissions	Microsoft's carbon negative commitment relies on a stepped approach: first reducing emissions by more than 50% from the FY20 baseline and then applying carbon removal to the residual emissions. This approach is outlined in our carbon strategy, through which we are planning for a portfolio of more than 5 million metric tons of carbon removal per year by 2030. In FY24, Microsoft entered into long-term agreements to procure more carbon removal than all previous years combined—22 million metric tons.[11] We are building a portfolio that balances low-durability, nature-based solutions (for example, reforestation and improved forest management) with medium- and high-durability solutions (for example, bioenergy with carbon capture and storage), where low-durability options face qualitative challenges and high-durability opportunities need the greatest scaling. Our Criteria for High-Quality Carbon Dioxide Removal document outlines the principles we use to assess projects that generate carbon removal credits. These criteria emphasize quantitative factors like measurement and monitoring, durability, environmental harms and benefits, and scientific rigor. Before applying

[11] The reported carbon removal contracted total includes future tons that will be delivered prior to 2030 as suppliers ramp up operations as well as in the years following 2030 in service of annual carbon negative targets.

Focus area	Actions
	a credit to a specific year's emissions, we ensure it has been certified by an independent carbon registry[12] and meets other contractual quality requirements to ensure traceability and future accountability. This intentionality supports our long-term climate targets and ensures that credits remain valid over time. We continuously monitor developments in the carbon removal space and update our procurement criteria accordingly.
	While we are prioritizing projects that are optimized for 2030 deliveries, we are also investing in emerging technologies with high scaling potential to accelerate learning and technology development. By advancing new technologies and engaging the broader carbon removal ecosystem, we aim to create opportunities for buyers, investors, and project developers, while making sustainability progress at Microsoft and beyond. In 2024, we supported emerging carbon dioxide removal pathways such as enhanced rock weathering (ERW), soil organic carbon, carbon dioxide mineralization, and biochar, constructing tailored offtake agreements within promising pathways to advance scientific discovery and promote scalability.
	For further details on our carbon removal approach and procurement, please refer to the "Scaling carbon removal" section (p. 20) of our 2025 Environmental Sustainability Report and our 2023 white paper Microsoft Carbon Removal: Observations from Our Third Year.

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[12] We include a list of the third-party carbon registries that certify the credits in our California AB 1305 report, available from Microsoft's Reports Hub.

Our efforts in carbon reduction extend beyond our business operations to supporting our customers in reducing the emissions associated with their own operations. As a global technology provider, we offer products and services that can, for example:

→ **Help customers measure, manage, and report sustainability data.** Microsoft for Sustainability can help organizations gather the enterprise data needed for reporting under evolving regulations, gain insights, reduce costs, and strengthen business resilience. With centralized data and AI-powered insights, organizations can streamline ESG data collection, validation, and disclosure processes, setting a foundation to help them advance their sustainability goals. Microsoft Sustainability Manager and Microsoft Fabric empower customers to centralize emissions and ESG data across their value chain for use in auditable reporting and develop insights so customers can better inform business decisions around optimizing efficiency and performance.

→ **Deliver emissions insights to customers.** We make customer-specific emissions data attributable to Azure and Microsoft 365 cloud services available to customers through Azure Carbon Optimization and the Emissions Impact Dashboard, respectively. These tools can provide customers with increased visibility into their carbon emissions resulting from their cloud usage across all three scopes of emissions. In addition, customers can use our Microsoft Surface Emissions Estimator, a web-based tool, to evaluate the carbon footprint of Surface devices before making a purchase. After deployment, commercial customers can use the Surface Management Portal to access detailed carbon emissions data for their existing fleets of Surface devices. Together, these tools provide multiple ways to gain insight into the environmental impact of Surface devices, supporting informed decisions and sustainability reporting throughout the device life cycle.

→ **Deliver emissions insights to developers.** In 2023, Xbox became the first console platform to release dedicated energy consumption and carbon emissions measurement tools designed specifically for game creators. These tools, developed in collaboration with studios, provide dashboards, case studies, Certification lab analysis, and telemetry data to help developers understand the energy impact of their games and identify opportunities for improvement. In addition, since co-founding the Green Software Foundation (GSF) in 2021, Microsoft has built a trusted ecosystem of people, standards, tooling, and best practices for creating and building green software. As a steering member, Microsoft has collaborated extensively with other industry leaders and developers on open-source projects to make key advancements, from contributions to standards like the Real Time Energy and Carbon Standards for Cloud Providers, Sustainable Organisational Framework for Technology (SOFT), and the Software Carbon Efficiency Rating, to developing tools like the Impact Framework, Azure Importer, and Organizational Maturity Matrix. Microsoft also offers leadership within working groups like the Green AI Committee.

→ **Help customers reduce daily energy consumption.** Software is equally critical to device efficiency. Windows 11 PCs now come with ways to use less power and extend battery life. Windows 11 Energy Recommendations offer reductions in energy consumption from the adoption of more efficient screen, sleep, and power settings. Energy Saver offers a solution to extend a PC's battery life and reduce energy consumption without sacrificing performance.

→ **Help designers, developers, and operators reduce the impact of greater AI intelligence.** Microsoft is developing comprehensive best practices and guidelines for designers, developers, and operators to help AI applications be efficient and optimized throughout their life cycle. More information is

available at the Azure Well-Architected Framework for AI.

→ **Help customers track the embodied carbon of raw building materials.** We partnered with other industry leaders to support an open-source Azure-hosted tool called the Embodied Carbon in Construction Calculator (EC3).

→ **Help customers gain sustainability skills.** LinkedIn offers a learning platform with online courses and skills training available to its more than 1 billion members, enabling them to undertake online learning alternatives to in-person training. LinkedIn Learning has grown its sustainability course library to more than 200 offerings, covering topics such as ESG basics and sustainable business practices. LinkedIn also uses AI to curate Green Jobs Collections on the platform, highlighting roles that align with the unique green skills listed on each member's and customer's profile.

→ **Help organizations measure and manage the health of the planet's natural ecosystems.** By harnessing one of the largest repositories of open environmental data, the Planetary Computer empowers individuals and organizations to monitor, model, and identify opportunities that protect Earth's natural resources— bridging the gap between imagination and action.

Mechanisms for funding climate mitigation

Microsoft's climate-related financial strategy is supported by a diverse and flexible set of funding mechanisms that are strategically aligned with climate-related mitigation, adaptation, and resilience goals. These mechanisms include our internal carbon fee and our Climate Innovation Fund (CIF):

→ Our internal carbon fee mechanism funds climate mitigation strategies globally. This fee is charged to business groups across the company for their Scope 1, 2, and 3 emissions to support procurement of CFE, sustainable fuels, and carbon removal, amongst other mitigation actions. Our internal carbon pricing approach is intended to integrate the cost of GHG emissions into decision making and investment planning. While we do not disclose a specific dollar amount per metric ton, pricing is driven by the current market costs associated with the solutions we purchase, such as CFE, sustainable fuels, and carbon removal. In addition to funding these mechanisms, the fee provides business groups with an incentive to invest in emission reductions. As business groups reduce their emissions by promoting energy efficiency and designs that use low-carbon materials, their fee may also be reduced.

→ Through CIF, Microsoft is investing $1 billion to accelerate technology development and deployment of new climate innovations through equity and debt capital.[13] By the end of 2024, we had allocated over $793 million in capital in new climate technologies, expanding to 63 investments across CFE, sustainable fuels, carbon removal, and advanced building materials. Our current and planned investments are strategically aligned with climate-related mitigation, adaptation, and resilience goals. The CIF market development strategy is focused on helping accelerate supply, stimulate demand, and strengthen the enabling conditions essential for scaling a global supply chain of sustainable solutions. CIF has honed its

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[13] For our venture equity investments, CIF invests alongside a financial lead. The investments generally stay in place until the company is in a position to pursue a natural exit. For our debt investments via CIF, repayment with return is typical. CIF also invests indirectly via funds, which are time-bound commitments. At the end of life, the funds are repaid to Microsoft. Microsoft is open to, but not actively pursuing, early exits from performing investments.

"invest to procure" approach, prioritizing investments that directly support Microsoft's carbon negative, water positive, and zero waste commitments, such as decarbonizing supply chains, scaling carbon removal technologies, and expanding access to clean energy. This strategy helps to ensure that investments are not only financially sound but also operationally relevant, enabling us to invest in the sustainability solutions that Microsoft (and the world) needs to meet our 2030 commitments and beyond. For example, CIF investments in near-zero emissions steel and renewable energy infrastructure directly support Scope 3 emissions reductions and energy transition efforts. Allocation decisions are assessed for financial return potential and alignment to impact principles, among other requirements.

These mechanisms provide the flexibility to support a wide range of mitigation and adaptation efforts—from direct investments in startups to strategic partnerships with banks and suppliers. This flexibility is complemented by the ability of business groups to deploy capital and operating expenses toward internal climate initiatives, including datacenter efficiency upgrades, water stewardship programs, and supplier engagement on emissions and water risks. These independent investments by business groups in climate solutions that are aligned with their operational goals further enhance the agility of Microsoft's financial response to potential climate-related risks and opportunities.

Our investments through our internal carbon fee and CIF in carbon removal, electricity grid optimization, and novel low-carbon construction materials align with our carbon negative commitment and climate mitigation strategy as well as climate-related mitigation and adaptation opportunities more broadly.[14] Our funding of these climate-related mechanisms is expected to support long-term business resilience. These strategies foster deeper engagement with customers and develop market segments. We expect that these initiatives will contribute to sustained value creation. We anticipate broader business transformation efforts as we continue to mature our processes and determine how these plans will affect our financial position, as internal assessments are conducted to evaluate return on investments and strategic alignment.[15]

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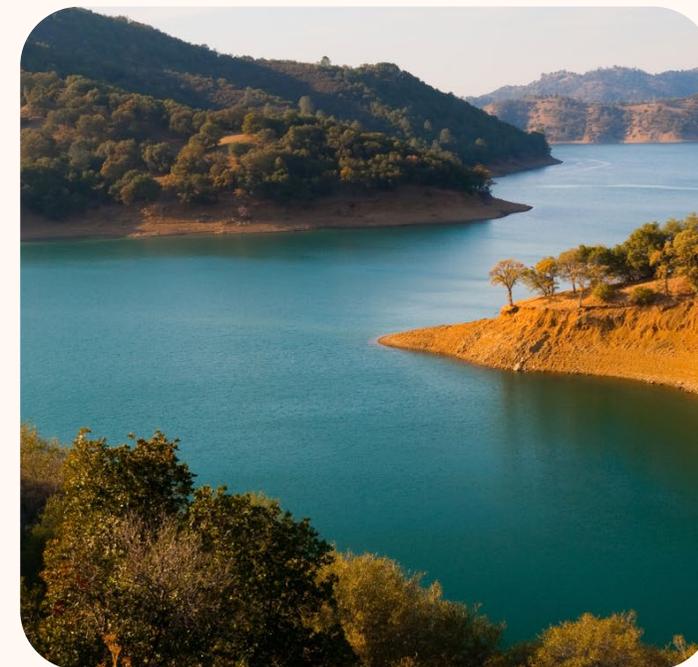
[14] Funding allocation decisions are made to support initiatives with potential regulatory, reputational, or operational benefits. Although Microsoft has not yet disclosed how these allocations influence financial outcomes across time horizons, we are committed to refining our approach as peer disclosures and audit requirements evolve.

[15] Investments and disposal plans related to capital strategy are managed within our various businesses and aimed at advancing our sustainability targets.

Water-related risks and opportunities

Microsoft evaluates water-related risks and opportunities across our business using both quantitative and qualitative scenario analyses, complemented by other risk assessment methods. The results from these analyses are assessed and validated through consultation with subject matter experts across the company and then used to inform Microsoft's formal enterprise risk assessment process facilitated by the Enterprise Risk Management (ERM) team.

Operational water-related risk assessments

The climate-related scenario analyses detailed earlier included specific water-related physical risks (such as water scarcity), climate-related water risks (such as sea level rise, flooding, and increasing severity of storms), and transition risks (such as reputational impacts, regulatory changes, and market changes) for our direct operations. For more information, refer to the Climate-related risks and opportunities section.

In 2020, our water management program began assessing water risks to support our water positive strategy, in collaboration with the World Resources Institute (WRI). Using WRI's Aqueduct Water Risk Atlas (version 3.0), the assessment evaluated water stress levels and operational water dependency across global facilities. This work identified approximately 40 priority basins for replenishment investments and countries to prioritize improving access to water and sanitation services.

Water issues shift over time, as do Microsoft locations. We recognize that our approach needs to be fluid, factoring in changing levels of water stress and operational demand. We use an ongoing water risk assessment process to validate that we have prioritized the right locations for our water replenishment strategy, and we make updates as needed. For example, we have updated our water risk assessment to reflect version 4.0 of the WRI Aqueduct Water Risk Atlas, which WRI released in August 2023.[16]

Furthermore, we have conducted detailed water risk assessments for each priority location to better understand the local context. These assessments consider the condition of the water sources that supply our assets, how water is discharged by local water utilities, and other shared water challenges related to quantity, quality, biodiversity, access to water and sanitation, water governance, and reputational risks. These assessments promote our goal of investing in locally relevant replenishment projects that offer appropriate social and environmental co-benefits.[17]

In addition, our datacenter site selection process pre-screens for a broad range of risks and includes capacity and infrastructure for water supply and discharge. We meet with key local representatives to determine the likelihood of future potential issues and site viability and to support our goal that Microsoft operations are not detrimental to surrounding communities. Access to water is critical for the operation of many of our current datacenters, but central to our cloud services design is geographic redundancy, which inherently reduces our vulnerability to water impacts (from excess water or drought). In 2024, Microsoft launched a new datacenter design that optimizes AI workloads and uses zero water for cooling.

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[16] Microsoft became one of the inaugural WRI Aqueduct Pro Sponsors, providing support for the most recent WRI Aqueduct tool, Aqueduct 4.0. This tool, which is free to the public and available online, helps companies, organizations, and investors across the globe understand risks, with new projections on water stress, demand, and supply.

[17] We share detailed information on our replenishment strategy and progress to date through our website and in our Water replenishment: Our learnings on the journey to water positive white paper.

To reduce our dependence on freshwater, particularly in high water stress regions, we prioritize the use of recycled or reclaimed water where available, unless potable water is required. For example, in Quincy, Washington, we partnered with the local municipality to build the Quincy Water Reuse Utility, recycling cooling water, reducing Microsoft's potable water use in the region by 97%, and providing 1.5 million cubic meters of water annually—the equivalent volume of 600 Olympic-size swimming pools[18]—for community drinking water needs. Ongoing business continuity and resilience strategies, such as monitoring identified risks and implementing business continuity and resilience measures, help promote continued reliability. We vet capacity and quality with utilities and put service agreements in place prior to construction. Our effort to replenish water in high water stress regions is expected to contribute to increasing water availability in key basins.

Supply chain water-related risk assessments

Water is an essential input to information and communications technology (ICT) manufacturing processes, particularly for the production of semiconductors, printed circuit boards (PCB), cables and connectors, and aluminum enclosures. At Microsoft, these materials are procured primarily to manufacture devices and cloud infrastructure.

We recognize that a large portion of Microsoft's water footprint lies in our supply chain, and we are working to improve our understanding of the scope and scale of water-related risks in our supply chain. One of the challenges we have faced in these initial analyses is securing local data at the basin level from indirect suppliers.

Annually, we request that our top directly contracted hardware manufacturing suppliers participate in the CDP Supply Chain water security program. We use their questionnaire responses to assess water-related risks across our supply chain. A significant portion of responding suppliers consistently report risks with the potential to affect operations, and many are able to quantify the potential financial implications. These disclosures inform Microsoft's broader understanding of water-related vulnerabilities and support ongoing efforts to improve supply chain resilience and stewardship.

Approaches and policies that support water and marine resources

Microsoft is working to become water positive by 2030. For Microsoft, being water positive means that we intend to:

→ Reduce our water use intensity across our direct operations.

→ Replenish more water than we use across our operations.

→ Increase access to water and sanitation services.

→ Drive innovation to scale water solutions.

→ Advocate for effective and innovative water policy.

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[18] Based on 2,500 cubic meters of water per Olympic-size swimming pool.

We recognize that reducing our water consumption alone is not sufficient to address the physical risk to watersheds in the areas in which we operate. In 2020, Microsoft co-founded the Water Resilience Coalition (WRC), an industry-driven, CEO-led coalition of the UN Global Compact's CEO Water Mandate to achieve Net Positive Water Impact (NPWI) in 150 water-stressed basins by 2050. The five pillars of our water positive commitment use the concept of NPWI, a core ambition onto which companies must sign when joining the WRC. NPWI contributes to reducing basin-level water stress across three dimensions—availability (quantity), quality, and accessibility—where a company's contributions exceed its impacts within the same watershed. As a founding member of the WRC, Microsoft has pledged to maintain a continuous focus on measurable watershed outcomes through collaboration and collective action. Our water positive pillars provide a framework for strengthening how we manage water within Microsoft while working to improve the way the world evaluates and manages water today and for future generations.

We have committed to assessing water risk to our direct operations and supply chain annually.

Actions and resources that support water-related policy and target implementation

Table 2 provides a summary of the actions and resources that we are dedicating to work toward our ambitious water positive commitment, organized by our five supporting pillars.

Table 2. Microsoft water-related actions

Focus area	Actions
Reducing our water use intensity across our direct operations	We remain focused on reducing the water intensity of our operations by increasing efficiency, recycling, and reuse (such as procuring reclaimed water and capturing rainwater) and investing in innovation. As our datacenter business continues to grow and we balance the need for power and water, Microsoft remains committed to reducing the intensity with which we withdraw resources, focusing on being as efficient as possible. Since our baseline year of 2022, operational datacenters have achieved an 18% reduction in water intensity progressing towards our 2030 target to reduce water use intensity by 40%. We will continue to design and innovate to minimize water use and help break the relationship between AI growth and resource consumption. Regular audits help identify inefficiencies, such as excess water use. In 2022, all Microsoft-owned datacenters that use water for cooling underwent an audit to assess whether operational values aligned with design expectations, with improvements surfaced in this audit eliminating 90% of such instances. Datacenter water withdrawal and discharge are closely tracked and used to monitor our water consumption. Additionally, we are developing advanced prediction models that anticipate water consumption based on real-time weather data. Comparing anticipated and actual consumption values helps quickly identify operational inefficiencies and provides the ability for advanced troubleshooting. In 2024, Microsoft launched a new datacenter design that optimizes AI workloads and uses zero water for cooling. This initiative aims to further reduce our global reliance on freshwater resources as AI compute demands increase.
Replenishing more water than we use across our operations	In 2023, Microsoft published a white paper to share our learnings as we developed our global corporate water replenishment program, including our use of the Volumetric Water Benefit Accounting (VWBA): A Method For Implementing and Valuing Water Stewardship Activities published by the World Resources Institute (WRI). In FY24, we significantly expanded our replenishment efforts, contracting 27 new projects and increasing our total portfolio by more than 50% to 76 projects. This represents a cumulative investment of more than $34 million, with 62% of these projects using nature-based solutions and 47% providing critical biodiversity co-benefits. For example, we are supporting a project with Conservation International to conserve and restore the Lake Xochimilco wetlands in Mexico City, Mexico. This wetland is home to 5% of Mexico's described species, including the critically endangered axolotl salamander. At Microsoft, water volumes are only counted toward our replenishment target if they are implemented beyond our operational needs and directly benefit the local community and environment.

Focus area	Actions
Increasing access to water and sanitation services	In 2023, having invested more than $3 million to support communities in Brazil, India, Indonesia, Mexico, and Chile, we achieved our target to provide more than 1.5 million people with access to water or sanitation services. Building on this accomplishment, we continue to expand our impact through replenishment projects that also improve access to safe water. In FY24, we added seven new projects, bringing our portfolio to 13 initiatives that when fully implemented will serve over 1.6 million people across Brazil, India, Indonesia, Mexico, Chile, the United States, Malaysia, Kenya, and Nigeria.
Driving innovation to scale water solutions	By integrating AI-powered solutions with innovative data tools, Microsoft is addressing the complexities of water management. These efforts empower communities and decision makers to sustainably manage water resources and adapt to growing environmental challenges. For example, in collaboration with the International Water Management Institute, Microsoft has supported the development of a cutting-edge AI-powered Water Copilot in southern Africa's Limpopo River Basin. This agentic solution integrates and interprets diverse data sources—regulatory documents, scientific reports, near real-time sensor data, and remote sensing workflows—to provide localized insights that support sustainable water management. Our Climate Innovation Fund (CIF) has invested $45 million in scaling innovative water solutions, including a $25 million anchor investment in WaterEquity's Water & Climate Resilience Fund. This fund will focus exclusively on investing in municipal-level climate-resilient water and sanitation infrastructure in the Global South.
Advocating for effective and innovative water policy	In 2024, we signed on as a founding member of the WateReuse Association's Coalition for Water Recycling, a group of companies looking to support the adoption and expansion of water reuse across the United States, and we are members of Water Europe, a multistakeholder organization conducting research, analysis, and advocacy on water in the European Commission.

Mechanisms for funding water-related action

In FY20, Microsoft developed an internal water fee, which plays a critical role in enabling progress against our water positive commitment. The fee is charged to business groups based on their water consumption projections and the average cost of replenishment and access projects. It is used to fund replenishment and access projects around the globe. Our objective with the fee is to incentivize business groups across Microsoft to take steps to reduce water use and to raise internal awareness of our water positive commitment. Our internal water fee continues to play a critical role in funding replenishment and access projects.

Organizational resilience

As a company, we acknowledge that sustainability issues are critical issues—not just for our own operations, but also for our suppliers, our partners, our customers and, more broadly, the planet.

Climate change impacts are evident around the globe, affecting every aspect of people's lives, and will continue for decades to come. Ecosystems and communities are at risk because of changes in land use, habitat loss, invasive species, water basin degradation, and growing demand for clean, accessible water sources. At Microsoft, we strive to mitigate our impact on the environment and inspire others to as well, as evidenced by our ambitious sustainability commitments.

Scenario analysis is one tool to explore the ways in which climate change may affect our business and help us understand our organizational resilience. As a global company with dynamic product and service offerings and countless stakeholders throughout our value chain, the process required to better understand our climate risks and opportunities is necessarily ever evolving and expanding. We continue to improve and build on each assessment to increase our scope, refine our methodology, and assess bigger ranges of impact on more diverse parts of our business. Exploring different facets of our organization through a climate risk lens allows for a better understanding of potential areas of risk and opportunity. As part of our comprehensive materiality assessment, we have evaluated the resiliency of Microsoft's business and operations, and the impact on potential revenue has not met internal materiality thresholds. However, our internal approach to business resiliency factors in physical climate-related hazards and continually monitors changes in physical and low-carbon transition situations to help ensure climate resilience.

We provide innovative technology solutions to our customers around the world and remain committed to advancing solutions that achieve sustainability-minded outcomes for ourselves as well as for our customers and society at large. Our ambitious sustainability commitments require a full company approach. In our efforts to achieve these commitments, we are ingraining sustainability not only into our business strategy, planning, and operations, but also, and more importantly, into our company culture. We believe that a carbon negative, water positive, zero waste company is a resilient company.

Risk and opportunity management

Risk and opportunity management is an important component of how we do business. Our Enterprise Risk Management (ERM) team facilitates the overall ERM process, in partnership with executive risk owners and with support from internal subject matter experts (SMEs). The ERM framework helps risk owners and SMEs identify, assess, and prioritize risks and, through regular reporting and discussion, support senior management and the Board with governance and oversight of risk. The Energy, Connectivity, & Sustainability team solicits input from SMEs across the company to support this reporting.

Identifying and assessing climate- and water-related risks and opportunities

Our Energy, Connectivity, & Sustainability team, led by the Chief Sustainability Officer, identifies and assesses climate- and water-related physical and transition risks to Microsoft's business across our business portfolio.[19] To do this, the team uses quantitative and qualitative scenario analyses and risk assessments validated by SMEs from datacenter, workplace, supplier, and economist teams. These insights are reviewed by executive risk owners and incorporated into the ERM team's semi-annual reporting cycle, with results detailed in the Strategy section of this report.

Risk and opportunity analyses inform a review process led by executive risk owners, guided by the ERM framework, which identifies, assesses the criticality of, and prioritizes any potential risks to Microsoft core business functions and operations (climate- and water-related risks included). Although we haven't yet identified a material climate-related risk or opportunity, we continue to monitor

developments and may adjust our response to address trade-offs between financial performance and climate risks.

Business groups also manage operational risk assessments to inform executive reviews. For example:

→ **Intelligent Cloud:** Datacenter infrastructure teams identify and assess risks in site selection and operations, including water and energy availability. Cloud hardware teams identify and monitor emissions impacts across design, sourcing, manufacturing, transportation, and end-of-life stages against globally accepted standards and reduction targets through its supply chain teams.

→ **Windows and Devices:** Risks and opportunities are evaluated through ISO 14001 and ISO 50001 certification processes for energy efficiency and environmental requirements at the global, national, regional, and local level for existing and planned Microsoft-branded hardware and related devices and packaging.

Microsoft subsidiaries manage localized processes based on regional regulations and conditions.

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[19] The Strategy and Risk and opportunity management sections of this report cover both climate and water. For more information on our sustainability work, including with waste and circularity and ecosystems, please see our 2025 Environmental Sustainability Report.

The Microsoft ERM process and framework

Microsoft's enterprise risk management (ERM) process facilitates the identification, assessment, and monitoring of potential climate-related risks across the organization. While the Energy, Connectivity, & Sustainability team leads scenario analyses and risk assessments, using the ERM framework helps ensure that these insights are integrated into broader governance processes.

This ERM framework is intended to be applied consistently across all risk categories—including climate-related risks. It outlines a process for identifying, assessing the criticality of, and prioritizing any potential risks to Microsoft core business functions and operations. Through regular reporting and discussion (at least twice a year), the ERM team partners with executive risk owners to support senior management and the Board in risk governance and oversight. The ERM framework provides guidance on categorizing risks according to their inherent impact in four categories—trust or reputational; operational scope; legal, compliance, or environmental; and enterprise value. The guidance advises that risks then be rated according to their inherent likelihood. These two ratings can be combined to produce an inherent risk score, which the guidance advises should then be adjusted based on a management action/control effectiveness rating to calculate a residual risk rating. This process can help inform whether any identified risks have the potential for financial, strategic, operational, or legal impact on the company. This standardized approach ensures that climate-related risks are evaluated and prioritized alongside other enterprise risks—not prioritized over other types of risk—using the same criteria and methodology.

The ERM framework primarily focuses on risks looking out up to approximately three years (short term), though its analysis timeframes vary from risk to risk, scenario by scenario; with longer range assessment data, such as is available in the sustainability risk category, the time horizon may be extended. The centralized climate risk and resilience program within the Energy, Connectivity, & Sustainability team assesses climate-related risks, such as regulatory changes, reputational exposure, and physical hazards, using this methodology and tracks them over short- and medium-term horizons.

In practice, key risk owners evaluate whether sustainability-related management action plans are on track or at risk. These determinations are made semi-annually and feed into the ERM's quadrant system (Improve, Monitor, Operate, Evaluate), which helps prioritize risks for board-level visibility. Riskier items would trigger deeper Board engagement. Sustainability risks are currently housed within the "Monitor" quadrant, meaning they are tracked on a regular basis. However, the ERM process allows for dynamic reclassification. If sustainability risks escalate, they can be elevated to "Improve," prompting detailed board-level reporting and strategic response. This integration ensures that climate-related risks are not siloed but are part of Microsoft's enterprise-wide risk governance.

Managing climate- and water-related risks

To make decisions on risk, we use our ERM risk prioritization criteria in the context of business continuity and service resilience, which include the scope of impact (for example, reputational, regulatory, cost), potential return on investment, and time and resources required to implement changes. The Energy, Connectivity, & Sustainability team brings leaders from across the company together to align on management decisions to mitigate, transfer, accept, or control identified risks. Microsoft also has a dedicated program to identify the baseline requirements for implementing business continuity, disaster recovery, and overall resilience at Microsoft to help strengthen our capability to prepare, recover, and perform in the event of a major or catastrophic business disruption that affects our ability to meet customer expectations.

Examples of areas of risk assessed using our ERM framework include the following:

→ **Policy and legal impacts.** Our risk assessments consider the impact of current and emerging environmental policies and regulations—for example,

the risk of increased device, cloud, and other digital technology energy efficiency and eco-design regulations in the European Union (EU), the United States, and other markets. Emerging regulations are uncertain and vary across the geographies in which we operate and conduct business. We include them in our risk assessments because any regulation that increases business costs or imposes restrictions on how we design, operate, construct, or manufacture our datacenters, devices, or technology could affect our business. Our device and cloud teams track these developments closely. Our Corporate, External, and Legal Affairs (CELA) group has global, national, and regional policy experts that monitor upcoming regulations and engage directly with policymakers to understand the likelihood and impacts of new policies. In particular, we have an energy and sustainability policy team that monitors emerging policies and regulations and works with government affairs teams to develop geographically relevant strategies to engage with policymakers. We've developed policy priorities to guide government engagement around our energy and sustainability objectives, published briefs to outline key carbon, electricity, circular economy, and AI policy principles, and successfully

advocated to support Microsoft's 2030 sustainability commitments. As part of this effort, we have informed, endorsed, and supported the implementation of landmark policies to expand carbon-free electricity (CFE), scale markets for carbon removal and low carbon materials, and enable robust interoperable reporting, including (1) in the United States, California carbon disclosure laws and regulatory efforts to improve interconnection to the grid and transmission expansion and (2) in the European Union, updates to the Renewable Energy Directive and the Energy Efficiency Directive and the Carbon Removal Certification Framework. As Microsoft's business grows, we are strengthening our policy engagement in the United States and European Union as well as with governments across Asia, Latin America, and Africa to expand CFE and grid infrastructure to support Microsoft and our suppliers. Another example of potential risk arising from emerging regulations is related to incomplete or unqualified claims about the environmental benefits of products or services. Our product groups, marketing teams, legal teams, and corporate Energy, Connectivity, & Sustainability team also work together to identify the appropriate green claim policies, review our methodologies and

substantiation, and work to provide product information and communications that give consumers clear, accurate, and consistent information regarding green claims.

→ **Technology risks.** As Microsoft is a technology company, we continually assess technology risks and opportunities. One example considered during our risk assessments is the environmental performance of Microsoft technologies and services, such as the energy efficiency of our devices and cloud infrastructure. Our aim is to develop best-in-class products and services that, generation over generation, reduce environmental impact. For example, the GPU server hardware that supports AI in datacenters can be heat intensive. Microsoft is transitioning from traditional air-cooled datacenters to chip-level liquid cooling designs at all owned datacenters. This cutting-edge technology supports significantly greater rack capacity, reducing the need for new datacenter construction—and the related embodied carbon emissions—while eliminating the need for evaporation to align with Microsoft's water positive by 2030 commitment. By comparing carbon emissions and water consumption across various technologies, life cycle assessment (LCA) enables informed decision making to optimize sustainable

technology choices for each location. Another example of how we address technology risks is our commitment to invest in new technologies through our Climate Innovation Fund (CIF)—thereby supporting the development of emerging sustainability-focused technologies that may offer scalability in the future. This program has allocated $793 million in capital through 2024 to bring new supply to market and accelerate adoption and cost reduction in key target technologies (for more information on CIF, please see the <u>Mechanisms for funding climate mitigation</u> section). CIF's $793 million in commitments has catalyzed over $3.3 billion in follow-on funding, achieving a multiplier effect greater than four times. Our annual CIF Summit is a convening designed to bring together innovators, investors, corporations, nongovernmental organizations (NGOs), and policymakers to accelerate collaboration and scale climate markets.

→ **Market risks.** Market demands are included in our risk assessments because businesses are increasingly looking to reduce their carbon footprint, including IT and operational emissions. In some cases, this demand is driven by our customers' own regulatory and compliance requirements. We need to ensure that our strategic direction can meet shifting customer

preferences in the transition to a low-carbon future, including increasing demand for products with innovative sustainable features and a low-carbon footprint. For example, when considering the downstream impacts of our devices, we focus on designing for longevity and repairability to extend product lifespans, raising energy efficiency, and reducing their overall carbon footprint. We carefully evaluate the environmental performance of our products, striving to improve generation over generation.

→ **Reputational risks.** Reputation amplifies enterprise risks. It is included in our risk assessments—including risks related to both our environmental impact and stewardship and the climate resilience of our services. A specific example of risk related to environmental impact and stewardship is the increasing weight given to a company's environmental performance by consumers, businesses, and institutional investors when making investment decisions. We are one of the largest technology companies in the world, and the perceived environmental impact of our products and services is heightened as a result. If our approach is not seen to be as strong or stronger than other companies, this could potentially have a negative impact on our reputation. To help foster effective

transparency, we publish our annual Environmental Sustainability Report to publicly track our progress toward our environmental targets. We use common global standards to report on environmental metrics, such as those from the Greenhouse Gas (GHG) Protocol and the Global Reporting Initiative (GRI) Standards. We also publish information on risks and opportunities related to environmental sustainability on a regular basis. Another example is the potential impact of our operations at the local level. For example, we support communities and help protect freshwater resources in high water stress locations where we operate datacenters by funding replenishment and water access and sanitation projects. We have also been incorporating community benefit principles into our CFE procurement. A specific example of risk related to climate resilience is the potential for damage to our reputation from any impact on the reliability of our cloud services. Microsoft has a reputation for reliable cloud services, increasingly powered by clean energy. A physical impact from climate change that compromised our reliability would be unacceptable to Microsoft and could adversely affect our service reputation. Therefore, we prioritize ongoing global business continuity and resilience by monitoring and assessing

risks and implementing measures to help with continued reliability.

→ **Acute and chronic physical risks.** Physical risks are included in our risk assessments because, as the physical impacts of climate change become more extreme, facilities in affected areas have the potential to experience operational impacts. This could lead to increased costs (such as to repair or relocate the facilities). To help promote the safety and reliability of our datacenters, Microsoft performs climate risk and vulnerability assessments as part of our ongoing datacenter risk process and implements risk mitigation measures. This begins with assessing all potential locations for current and future climate, environmental, and natural hazard risks prior to site selection. If risks are identified, they are further treated through the appropriate risk treatment option—acceptance, avoidance, transfer, or mitigation. Based on the selected treatment approach, the risk is then monitored for ongoing changes, progress, and effectiveness. We also conduct an annual threat, vulnerability, and risk assessment on every operational datacenter to update the risk profile and understand the effectiveness of existing mitigations, assessing the impacts that climate change may have on each site. We prioritize ongoing global business continuity and

resilience by monitoring and assessing risks, implementing business continuity measures, and using geographic redundancy to help provide continued reliability. In this way, we have adopted physical and non-physical adaptation solutions that we believe will help us to substantially reduce the impact of climate-related hazards on our datacenters. Furthermore, acute physical risks will affect not only Microsoft but also our suppliers. A significant disruption to our supply chain could incur significant costs for our business. We assess property risks annually to value the global property insurance program. To assess our exposure to supply chain disruptions, this assessment includes supplier mapping; the risk models identify natural hazard risks for any locations of identified vendors that support Microsoft (to the extent possible given the fluid nature with which suppliers assign workloads to any of multiple available production locations) and then model their probabilities. Our procurement processes also consider supplier risks and take appropriate measures to mitigate issues related to the supply of key services and products. We prioritize a resilient supplier base by engaging with suppliers on various sustainability initiatives and defining supplier expectations in documents including, but not limited to, the Microsoft Supplier Code of Conduct, LinkedIn Supplier Code of Conduct, Responsible Sourcing of

Raw Materials Policy, and Supplier Social and Environmental Accountability Manual.

Managing climate- and water-related opportunities

Our Energy, Connectivity, & Sustainability team brings leaders from across the company together to align on management decisions to realize opportunities. Examples of areas of opportunity considered include:

→ **Lower-emission sources of energy.** In the transition to a low-carbon economy, increasing our use of clean energy will help us both lower our greenhouse gas (GHG) emissions (and any associated carbon pricing costs) and meet our 100% direct renewable electricity target. We can also help increase global CFE capacity and decrease market costs by supporting the creation of new energy technologies, helping bring the benefit of CFE to communities of all sizes.

→ **Low-emission products and services.** As our customers seek to lower their own GHG emissions, we have an opportunity to support them by delivering

low-emission cloud services and digital technology. For example:

- With our cloud services, enterprises can reduce their own direct GHG emissions and take advantage of the higher efficiencies that large cloud service providers like Microsoft can achieve.

- We're taking an increasingly circular approach to materials management, to reduce waste and GHG emissions associated with our products and services. With our devices, we've made significant investments in design to reduce waste, move to more efficient manufacturing processes, and increase the use of recycled and repurposed materials.

- We continue to work to scale corporate clean energy purchases across our supply chain, including for our devices, and invest to help decarbonize hard-to-abate industries, including steel, concrete, and other building materials used in our datacenters. For example, increased use of documented renewable energy in the supply chain resulted in a reduction of approximately 13 kg CO_2 equivalent in the carbon footprint of each Surface

Laptop Studio 2 compared with the previous generation Surface Laptop Studio.[20]

→ **More efficient buildings.** Increasing energy and water use efficiency in our facilities will help us decrease our Scope 1 and Scope 2 emissions in support of our carbon negative commitment while decreasing our energy- and water-related costs:

- Addressing the resource intensity of our datacenters is critical in this new era of AI. At Microsoft, we are redefining datacenter construction and operations to meet the challenge. By integrating advanced building materials, renewable energy solutions, and innovative technologies such as power optimization, thermal efficiency, and waste heat recovery, we are creating more sustainable and resilient datacenters.

- At both our Microsoft and our LinkedIn campuses, we are dedicated to reducing our environmental impact and promoting sustainable practices among our employees. We're investing in energy efficiency in lighting and temperature control in our buildings and electrifying our campus cafes.

[20] The overall manufacturing carbon footprint of a product is influenced by energy and other auxiliaries used in manufacturing processes, technology, and materials production. The manufacturing carbon footprint varies by product configuration (such as processor, storage, memory). This statement is solely referring to the reduction seen in global warming potential from energy use in manufacturing processes.

- We are using AI-driven systems to revolutionize energy and water efficiency in buildings and datacenters. For example, we have developed reinforcement learning (RL)–powered systems to improve traditional heating, ventilation, and air conditioning (HVAC) controls, allowing autonomous, real-time energy-efficient decision making to optimize operations. Using offline RL, which trains on a static dataset to reduce reliance on continuous data acquisition, we achieved over 30% energy savings in one of our Redmond campus buildings while maintaining comfort. The application of RL extends to datacenters, where trials in a Phoenix (Arizona)–based facility demonstrated a 21% reduction in water consumption.

- Microsoft's datacenter operations present a unique opportunity to integrate direct air capture (DAC) technology into our infrastructure, using existing resources to support carbon removal. Waste heat recovery has emerged as a pivotal innovation in this effort, accelerating progress by utilizing excess heat generated by computing workloads. Traditional waste heat reuse requires a physically close heat consumer and could have economic, seasonal, and geographic constraints. Building on insights shared at the Open Compute Project (OCP) Global Summit, Microsoft showcased how excess heat from datacenters can be repurposed to power DAC systems. This approach has shown promise in not only enhancing the efficiency of DAC solutions but also offsetting the carbon footprint of AI workloads. The Microsoft DACinDC program integrates DAC technology directly into datacenter infrastructure, utilizing waste heat generated by computing workloads, and uses AI models to develop optimized materials that can improve performance and system efficiency. In 2024, the program advanced customized solutions to the prototype stage while exploring additional opportunities to reuse waste heat, airflow, and water from datacenters.

→ **Access to new and emerging markets.** As our customers increasingly need to record, report, and reduce their environmental footprints, we have an opportunity to develop new solutions that could quantifiably help them do this. We are focused on offering customers products and services that help them with their sustainability programs, including climate and water sustainability reporting and disclosure tools. For example, Microsoft for Sustainability provides tools to measure and manage emissions, water, and waste across operations, helping teams make data-driven decisions that align with sustainability goals. This enables a shift from reactive compliance to proactive impact reduction. For more information on the sustainability products and services we are developing and delivering for customers, please see the Actions and resources that support climate-related policy and target implementation section. We're also focused on enabling organizations to develop AI computing resources that help people, organizations, and governments anticipate, predict, and manage climate change impacts. For example, with one of the largest collections of openly accessible data about our planet, the Planetary Computer can play a critical role in empowering AI innovation. Nearly all of these datasets are API accessible and aligned to open standards, such as SpatioTemporal Asset Catalogs (STAC), enabling data scientists and machine learning engineers to train new AI models with this data at scale and unlock new, critical insights for sustainability.

→ **Climate resilience.** We have an opportunity to deliver technology and services that are resilient to the physical impacts of climate change and that are lower carbon than competitor options. To help provide continued reliability, we prioritize ongoing global business continuity by monitoring and assessing risks, implementing business continuity measures, and using geographic redundancy. We are also helping develop global climate resilience with AI. AI can be used to help better understand risks and inform the response to disasters when they strike, by improving early warnings, mapping population and risk, and helping guide disaster response. Our AI for Good Lab, sustainability science, and research teams collaborate globally to accelerate solutions and develop climate resilience with AI. For example, we have partnered with the United Nations to apply AI to climate challenges through programs like the Early Warnings for All initiative, which seeks to better understand which populations may be at risk of extreme weather events and other threats. By sharing our progress, tools, and learnings with the world, we aim to accelerate the pace of innovation, improve overall operational efficiency, reduce energy consumption, and find new solutions with long-term results.

Metrics and targets

We track a range of sustainability metrics that guide our environmental and business strategies. A full account—including annual greenhouse gas (GHG) emissions, year-over-year trends across Scopes 1, 2, and 3, and progress toward targets—is published annually in our Environmental Sustainability Report and Data Fact Sheet. These reports also detail performance against specific targets, such as carbon-free electricity (CFE) procurement and carbon removal.

Sustainability metrics

Microsoft's environmental data reporting covers global wholly owned and partially owned subsidiaries over which Microsoft has management and operational control, including Microsoft-owned and Microsoft-leased real estate facilities and datacenters.

GHG emissions metrics

Table 3 presents GHG emissions in accordance with the GHG Protocol[21] as of and for the fiscal year ended June 30, 2024 (FY24). We use an operational control approach for setting organizational boundaries and for corporate reporting of GHG emissions.

Our sustainability work starts with our operational footprint. We conduct life cycle assessments (LCAs) across our operations, assets, and products, from design to building, usage, and end of life. We continue to enhance our LCA tools to quantify environmental impacts across datacenter, device, and cloud infrastructure operations. Beyond datacenter insights, such as assessing carbon emissions versus water trade-offs in cooling technologies, LCAs facilitate informed decision making and help redistribute costs to prioritize regions most adversely affected.

For additional details on our GHG emissions calculation methodologies and methodological changes made in FY24, please see Appendix B.

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[21] The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) and The Greenhouse Gas Protocol: Corporate Value Chain (Scope 3) Accounting and Reporting Standard published by the World Resources Institute/World Business Council for Sustainable Development (collectively the "GHG Protocol").

Table 3. Microsoft FY24 GHG emissions by scope/category[22,23]

Scope/category	FY24 GHG emissions (mtCO$_2$e)
Scope 1	143,510
Scope 2	
Location based	9,955,368
Market based	259,090
Subtotal emissions (Scope 1 + 2 market based)	402,600
Scope 3[24,25]	
Category 1 – Purchased Goods and Services	5,057,000
Category 2 – Capital Goods	6,066,000
Category 3 – Fuel- and Energy-Related Activities	653,000
Category 4 – Upstream Transportation and Distribution	419,000
Category 5 – Waste Generated in Operations	8,000
Category 6 – Business Travel	260,000

[22] This table represents our emissions based on the GHG Protocol. Microsoft also calculates emissions for Scope 3 Category 4, Category 6, and Category 11 according to criteria selected or developed by management ("management's criteria"), which management believes provide an objective basis for measuring and reporting on the specified information. Please see our 2025 Environmental Sustainability Data Fact Sheet for more information.

[23] The Scope 1 and Scope 2 emissions reported in this table reflect our consolidated accounting group and do not include any other entities (such as associates, joint ventures, and unconsolidated subsidiaries), which are not applicable.

[24] Scope 3 categories identified as relevant to Microsoft. Category 8 – Upstream Leased Assets, Category 10 – Processing of Sold Products, Category 14 – Franchises, and Category 15 – Investments were not relevant to Microsoft in FY24.

[25] Values rounded to nearest thousand mtCO$_2$e.

Scope/category	FY24 GHG emissions (mtCO$_2$e)
Category 7 – Employee Commuting	208,000
Category 9 – Downstream Transportation and Distribution	43,000
Category 11 – Use of Sold Products	2,417,000
Category 12 – End-of-Life Treatment of Sold Products	3,000
Category 13 – Downstream Leased Assets	6,000
Subtotal emissions (Scope 3)	15,140,000
Total emissions (Scope 1 + 2 market based + 3)	15,543,000[26]

FY = fiscal year; GHG = greenhouse gas; mtCO$_2$e = metric tons of carbon dioxide equivalent.

Industry metrics

Microsoft tracks power usage effectiveness (PUE) and water usage effectiveness (WUE) across our datacenters as industry benchmarks for energy and water efficiency, respectively:

→ **PUE:** Our datacenters are designed to achieve a PUE close to 1.0, with current generation facilities delivering a design rating of 1.12.

→ **WUE:** Over time, we have improved operational water efficiency by constructing newer datacenters with more effective and targeted cooling infrastructure—such as our air-cooled CPU datacenters, which typically require water for cooling only during the hottest portions of the year. Our newest datacenter designs go even further by targeting cooling directly to the source of heat—the silicon itself. By adopting chip-level cooling solutions, we deliver precise temperature control without water evaporation, saving over 125,000 cubic meters of water annually per datacenter, based on our FY24 global average withdrawal WUE of 0.30 liters per kilowatt-hour (L/kWh). This represents a 39% improvement compared with the global average of 0.49 L/kWh in 2021.

These metrics are used to assess performance relative to industry standards and support our climate mitigation strategy.

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[26] Value rounded to nearest thousand mtCO2e.

Sustainability commitments and targets

We have set ambitious commitments for our four core sustainability focus areas—carbon, water, waste, and ecosystems—to monitor efficiencies in our operations and value chain. See Tables 4–7 for a summary of these commitments and interim supporting targets[27] (note

that this list extends beyond the climate and water focus of this report). In addition, Microsoft has an approved near-term science-based target aligned with a 1.5° Celsius pathway and the Paris Agreement; the target and methodology have been validated by the Science Based Targets initiative (SBTi).

Commitment: Carbon negative by 2030

Table 4. Microsoft interim supporting targets for our carbon negative commitment

FY24 interim supporting targets[28,29]	Progress in FY24
By 2025, reduce our Scope 1 and 2 emissions to near zero against a 2020 baseline by increasing energy efficiency, decarbonizing our operations, and reaching 100% direct renewable energy by 2025.	Our Scope 1 and 2 emissions decreased by 30% from the 2020 base year. This result is driven by our ongoing work to advance clean energy procurement and green tariff programs.
By 2030, reduce our Scope 3 emissions by more than half from a 2020 baseline.	Our value chain or Scope 3 emissions increased by 26% from our 2020 baseline. Microsoft continues to work to scale carbon-free electricity (CFE) markets across our supply chain and invest to decarbonize need-to-abate sectors, including steel, concrete, and other building materials used in our datacenters, as well as fuels.

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[27] An interim supporting target is a short-term to medium-term milestone that supports a company's progress toward achieving its long-term climate-related (or other sustainability) goals.

[28] Microsoft discloses both gross and net GHG emissions targets. Gross reductions are tracked against a 2020 baseline across Scope 1, 2, and 3 emissions. Net targets incorporate carbon removal strategies. We report these separately in our sustainability disclosures.

[29] The GHGs included in our carbon reduction targets are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).

FY24 interim supporting targets[28,29]	Progress in FY24
By 2030, match 100% of our electricity consumption with zero carbon electricity 100% of the time.	We contracted an additional 19 gigawatts (GW) of new renewable energy across 16 countries, further diversifying our energy portfolio. Microsoft also expanded into nuclear energy with the signing of our first large-scale nuclear energy power purchase agreement (PPA) with Constellation's Crane Clean Energy Center in September 2024. This agreement will enable the restart of an 835-megawatt (MW) nuclear facility in Pennsylvania, retired in 2019, providing a significant supply of new, reliable, CFE to the PJM power grid—a critical energy region for Microsoft's datacenters.
By 2030, remove more carbon than our company emits. By 2050, remove from the atmosphere an equivalent amount of all the carbon dioxide our company has emitted either directly or by our electricity consumption since we were founded in 1975.	We contracted an additional 2.8 million metric tons of carbon removal expected to be delivered toward FY30.[30] In addition, we contracted 17.4 million metric tons that we expect to apply toward carbon negative targets after 2030 and/or our 2050 target.

FY = fiscal year.

Please see our 2025 Environmental Sustainability Report for detailed information on actions we are taking in support of our carbon negative commitment.

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[30] In FY24, we contracted 2.8 million metric tons of carbon removal expected to be delivered toward FY30—in addition to 575,000 metric tons that we contracted in FY23—for a total amount of 3.4 million metric tons of contracted carbon removal to date.

Commitment: Water positive by 2030

Table 5. Microsoft interim supporting targets for our water positive commitment

FY24 interim supporting targets	Progress in FY24
By 2030, replenish more water than we consume across our global operations, with a focus on water-stressed regions where we work.	In FY24, we increased the number of projects we have funded by over 50%, funding 27 replenishment projects that are estimated to provide more than 50 million cubic meters in volumetric water benefit over the lifetime of these projects. Since the inception of this program, we have funded 76 projects that are estimated to provide more than 100 million cubic meters of replenishment volume over their lifetime.
By 2030, provide 1.5 million people with access to clean water and sanitation services.	We added seven new projects, bringing our portfolio to 13 initiatives that when fully implemented will serve over 1.6 million people across Brazil, India, Indonesia, Mexico, Chile, the United States, Malaysia, Kenya, and Nigeria.
By 2030, improve water use efficiency by 40% across our global, owned datacenter operations, from a 2022 baseline.	Since our baseline year of 2022, operational datacenters have achieved an 18% reduction in water intensity progressing toward our 2030 target to reduce water use intensity by 40%.

FY = fiscal year.

Please see our 2025 Environmental Sustainability Report for detailed information on actions we are taking in support of our water positive commitment.

Commitment: Zero waste by 2030

Table 6. Microsoft interim supporting targets for our zero waste commitment

FY24 interim supporting targets	Progress in FY24
By 2030, achieve 90% diversion of operational waste at owned datacenters and campuses.	We diverted 25,603 metric tons, or 88.1%, of operational waste from landfills and incinerators across our owned datacenters and campuses.
By 2030, achieve 75% diversion of waste for all construction and demolition projects.	We diverted 85.3% construction and demolition waste.
By 2025, reuse and recycle 90% of servers and components for all cloud hardware with support from our Circular Centers.	Our reuse and recycle rates of servers and components across all cloud hardware reached 90.9%.
By 2025, eliminate single-use plastics in all Microsoft primary product packaging.	We achieved a usage rate of 4.0% single-use plastics across Microsoft's product packaging portfolio.
By 2030, design all Microsoft product packaging to be 100% recyclable in OECD countries.	We have achieved a packaging recyclability rate of 94.8%.

FY = fiscal year; OECD = Organisation for Economic Co-operation and Development.

Please see our 2025 Environmental Sustainability Report for detailed information on actions we are taking in support of our zero waste commitment.

Commitment: Preserve and protect the biodiversity and health of ecosystems

Table 7. Microsoft interim supporting target for our ecosystems commitment

FY24 interim supporting target	Progress in FY24
By 2025, take responsibility for the ecosystem impacts of our direct operations by protecting more land than we use.	We have exceeded our land protection target of 11,900 acres by more than 30%. As of FY24, Microsoft has contracted to protect 17,439 acres of land, and 15,849 acres were designated as permanently protected.

FY = fiscal year.

Please see our 2025 Environmental Sustainability Report for detailed information on actions we are taking in support of our ecosystem protection commitment.

Performance against interim supporting targets

Microsoft publishes updates on our progress against our sustainability targets in our annual Environmental Sustainability Report.

In FY24, there was one area where Microsoft was not yet on track for achieving our targets: reducing our Scope 3, or indirect, emissions. The challenges are in part unique to our position as a leading cloud supplier that is expanding its datacenters. But even more, we reflect the challenges the world must overcome to develop and use greener concrete, steel, fuels, and chips. These are the biggest drivers of our Scope 3 challenges.

We are working across the company to identify and develop the added measures we'll need to reduce our Scope 3 emissions. We are intensively engaged in work to identify and pursue additional breakthroughs. Leaders in every area of the company have stepped up to sponsor and drive this work. So far, this has led to the development of dozens of discrete and significant measures to help us reduce these emissions—including contractually requiring select, large-scale suppliers to use 100% CFE for Microsoft-delivered goods and services by 2030.

Scope 3 represented over 97% of Microsoft's annual emissions in FY24. Our Scope 3 emissions result primarily from the operations of our broad supply chain (upstream) and the use of our products across millions of our customers (downstream). Tackling Scope 3 emissions requires decarbonizing industrial processes such as the production of steel, concrete, and other building materials used in Microsoft's campus and datacenter construction. It also involves reducing emissions from jet fuel used in business travel and logistics. In addition, Microsoft is investing in energy-efficient product design, expanding cloud-based sustainability tools for customers, and promoting supplier-specific emissions transparency to help customers better account for their own Scope 3 impacts. This is part of

a broader strategy to reduce emissions across the full value chain and support customers in achieving their climate goals.

These efforts reflect a shift from pilot programs to scaled implementation, supported by improved data transparency, supplier engagement, and design innovation. While challenges remain, Microsoft is intensifying its focus on operational discipline and cross-functional collaboration to accelerate progress.

A note on the role of AI

We remain pragmatically optimistic because of the promise of new sustainability technologies, innovations in AI, and emerging market solutions that can accelerate progress across challenging sectors like steel, concrete, and energy transitions. AI can enhance our ability to predict and optimize complex systems, accelerate the development and deployment of sustainable solutions, and empower the workforce to learn and achieve more for sustainability—equipping society with the means to drive sustainability progress at a speed and scale previously beyond reach. We have seen the potential of AI for sustainability in action, empowering the world with new tools for tackling the climate crisis and sustainability challenges more broadly. For example, AI's ability to analyze vast amounts of data, identify patterns, and make real-time predictions enables it to optimize complex systems that are central to sustainability, such as electricity grids and supply chains, while helping to transform understanding and management of biodiversity challenges and climate risks. AI is already accelerating the path to net-zero energy by helping to integrate renewable energy sources like solar and wind into electricity grids and overcome challenges in balancing variable supply with demand, as well as enhancing grid efficiency and resilience. (Read more about AI and sustainability in our _Accelerating Sustainability with AI: Innovations for a Better Future_ playbook.)

Appendix A: Components of Microsoft's climate transition plan

Reaching key milestones

We're driving sustainability across three key dimensions:

Our operations
Reducing emissions across our campuses, datacenters, devices, software, and value chain to improve environmental performance—and then sharing our learnings to scale solutions.

Customer empowerment
Helping organizations improve sustainability through Microsoft for Sustainability (including with AI-driven climate tech), greener software, improved device sustainability, and the Microsoft Planetary Computer.

Global impact
Helping shape market conditions, standards, and policies to support a net-zero economy by advancing climate tech, improving carbon accounting systems, expanding green workforce skills, and enabling a just energy transition.
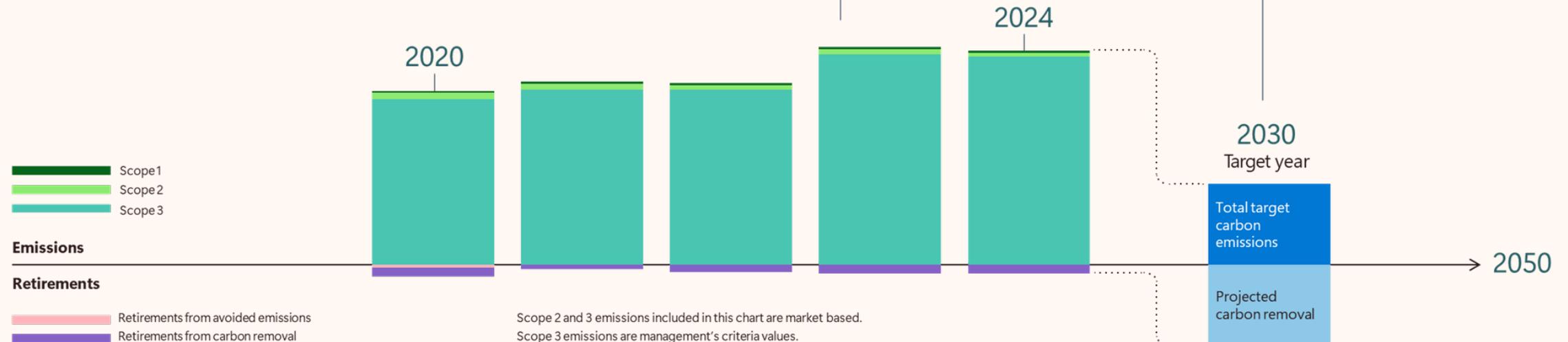
As of FY24:
- 34 gigawatts (GW) carbon-free electricity (CFE) contracted across 24 countries (an 18-fold increase since 2020)
- Datacenter innovations:
  - Saving 125 million cubic liters of water annually per facility with direct-to-chip cooling
  - Reducing embodied carbon by 65% with hybrid timber-steel construction
- 97% reduction in our potable water use in Quincy, WA, through the Quincy Water Reuse Utility
- Zero waste validation at five offices
- 85.3% of construction/demolition waste diverted
- 90.9% of servers/components reused or recycled through Circular Centers
- Exceeded 2025 target to protect more land than we use by 30%
- Nearly 22 million metric tons of carbon removal contracted

Accelerating progress to 2030

- Accelerating decarbonization of steel, concrete, and energy with AI and emerging technologies
- Embedding sustainability into our decision making with cross-company Climate Council
- Supporting emerging climate technologies and market mechanisms via our Climate Innovation Fund, including:
  - FlexiDAO for energy tracking and certification
  - Stegra (formerly H2 Green Steel) (Sweden) for near-zero emissions steel production
  - Heirloom Technologies for direct air capture (DAC) permanent carbon removal
  - EFM Fund IV for climate-smart forestry
- Advocating for policies to support CFE technologies, grid reform, and infrastructure development

Sustained momentum and future impact

Sustainability is not just a collection of isolated initiatives but a foundational principle that we must embed into every facet of our business. We remain resolute in our commitment to achieving our climate goals and empowering others with the technology and tools to build a more sustainable future.

Legend:
- Scope 1
- Scope 2
- Scope 3

Emissions

Retirements
- Retirements from avoided emissions
- Retirements from carbon removal

2020, 2024, 2030 Target year, 2050

Total target carbon emissions
Projected carbon removal

Scope 2 and 3 emissions included in this chart are market based.
Scope 3 emissions are management's criteria values.

Appendix B: GHG emissions calculation methodologies

Table 8 outlines Microsoft greenhouse gas (GHG) emissions calculation methodologies based on the criteria set out in the GHG Protocol. Microsoft also calculates emissions for Scope 3 Category 4, Category 6, and Category 11 according to criteria selected or developed by management ("management's criteria"), which management believes provide an objective and more precise basis for measuring and reporting on certain specified information. Please see our 2025 Environmental Sustainability Data Fact Sheet for more information.

Table 8. Microsoft FY24 greenhouse gas (GHG) emissions calculation methodologies based on the GHG Protocol

Scope/category	FY24 emissions calculation methodology
Scopes 1 and 2	We use primary data to calculate emissions for both Scope 1 and Scope 2 emissions. Where primary data is not available, we use estimates. Depending on the type of facility, our estimation methodology uses coefficients based on capacity (megawatts [MW]) or floorspace (square feet [ft^2]) to extrapolate emissions. Activity data is collected internally and stored in an internally developed data platform, which then applies the corresponding emission factors to calculate emissions. Microsoft uses the 100-year Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) for global warming potential values. See our 2025 Environmental Sustainability Data Fact Sheet for a list of emission factors sources.
	Additional note on Scope 2 indirect GHG emissions from purchased electricity, chilled water, and steam: The location-based method is based on average emission factors for the electricity grids that provide electricity to our datacenters, buildings, and campuses. The market-based method includes consideration of contractual arrangements under which Microsoft procures power from specific suppliers or sources, such as renewable energy. In the market-based method, we capture the impact of on-site renewable energy generation, power purchase agreements (PPAs), the purchase of unbundled energy attribute certificates (EACs), and the purchase of green power products. We use a zero-emission factor for procured renewable electricity. In the locations where Microsoft did not procure renewable electricity, utility-based and residual emission factors were mostly unavailable; therefore, we used average grid factors. The electricity consumption not covered by renewable electricity for the regions where residual emission factors were available was de minimis.

Scope/category	FY24 emissions calculation methodology
Scope 3	
Category 1 – Purchased Goods and Services	This category includes emissions from upstream purchasing of goods and services, including direct and indirect goods. Microsoft has been using an International Organization for Standardization (ISO) 14040/ISO 14044–compliant life cycle assessment (LCA) approach for many years to track the emissions associated with our devices. In FY23, Microsoft started using LCAs to calculate the emissions associated with the manufacture of devices that we sold during the reporting year, including Xbox devices and accessories (for example, controllers and headsets), Surface devices and accessories (for example, keyboards and mice), and HoloLens. Microsoft used Makersite, a cloud-based tool with AI and third-party datasets, and other internal software engineering systems to automate and scale the modeling of complex electronic products. To ensure a more supply chain–specific accounting process, the system analyzes the bill of materials and material composition from full material declarations collected from suppliers, resulting in LCA-based emissions data that has increased accuracy, transparency, and representativeness. In FY24, we improved our LCAs by integrating imec data when modeling the impact from semiconductors and increased the integration of supplier data into our assessments. Global warming potentials (GWPs) are from the IPCC AR4, 100-year average. For the rest of the emissions, Microsoft requests carbon emissions data from our suppliers and uses the latest available responses to determine Scope 1, Scope 2, and upstream Scope 3 emission factors (metric tons of carbon dioxide equivalent [$mtCO_2e$]/$ revenue). Microsoft estimates emissions for suppliers who submitted data by multiplying their response-derived factor by the annual spend with the supplier. All other spend is mapped to corresponding industry sectors and then multiplied by cradle-to-gate emission factors by sector from UK Department for Environment, Food and Rural Affairs (DEFRA)'s "UK DEFRA, Table 13 – Indirect emissions from the supply chain. March 2014"—updated per the latest inflation and currency conversion rates. Corporate-wide expense data for all company divisions is obtained from the finance department. Activities already included in Scope 1 and Scope 2 (such as electricity purchases) and other Scope 3 categories (such as capital goods) are removed to prevent double counting. GWP values are derived from the underlying supplier responses and DEFRA data sources.
Category 2 – Capital Goods	This category includes emissions from upstream purchasing of capital goods, including server equipment and other long-term assets. In FY24, Microsoft started using an LCA-based approach to quantify the cradle-to-gate emissions of cloud hardware (server equipment). The methodology uses Makersite, a cloud-based tool with AI and third-party datasets including Ecoinvent and imec data, to automate and scale LCAs based on the materials and design of the cloud hardware. To help ensure coverage, we perform a statistical analysis of representativeness to select cloud hardware to model with LCA. These results are then used for unmodeled parts and components present in the rest of the portfolio. GWPs are from the IPCC AR4, 100-year average. For the rest of the emissions, Microsoft requests carbon emissions data from our suppliers and uses the latest available responses to determine Scope 1, Scope 2, and upstream Scope 3 emission factors ($mtCO_2e$/$ revenue). Microsoft estimates emissions for suppliers who submitted data by multiplying their response-derived factor by the annual spend with the supplier. All other spend is mapped to

Scope/category	FY24 emissions calculation methodology
	corresponding industry sectors and then multiplied by cradle-to-gate emission factors by sector from UK DEFRA's "UK DEFRA, Table 13 – Indirect emissions from the supply chain. March 2014"—updated per the latest inflation and currency conversion rates. Corporate-wide expense data for all company divisions is obtained from the finance department. Activities already included in Scope 1 and Scope 2 (such as electricity purchases) and other Scope 3 categories (such as purchased goods and services) are removed to prevent double counting. GWP values are derived from the underlying supplier responses and DEFRA data sources.
Category 3 – Fuel- and Energy-Related Activities (not included in Scope 1 or 2)	Starting in FY23, Microsoft reports this category using a market-based approach only, which has been the approach used to track progress against our carbon negative commitment. Fuel- and energy-related activities (not included in Scope 1 or 2) include three emission sources. First, we calculate upstream emissions of purchased electricity by multiplying electricity use by emission factors from life cycle analysis tools for the United States and UK DEFRA 2015 Guidelines for non-US countries. When calculating the market-based approach and including the impact from purchased renewable electricity, the upstream emissions associated with fuel are zero. Second, we multiply fuel consumption by emission factors from the Greenhouse gases, Regulated Emissions and Energy in Transportation (GREET) and Ecoinvent life cycle analysis tools. And third, we calculate transmission and distribution (T&D) losses (by energy use type) by using loss percentage rates from the U.S. Environmental Protection Agency (EPA)'s eGRID2022 database for the United States and from the International Energy Agency (IEA) (2023) for other countries. GWPs are from the IPCC AR4, 100-year average.
Category 4 – Upstream Transportation and Distribution	This category includes emissions from upstream transportation and distribution of goods, including all transportation of goods that Microsoft finances. In FY23, Microsoft started calculating emissions for this category following the Global Logistics Emissions Council (GLEC) Framework for Logistics Emissions Accounting and Reporting Version 2.0 using data inputs from Microsoft's third-party logistics service provider, RMS. Our Devices business group applies this calculation, factoring in the shipment weight, distance traveled, and the corresponding well-to-wheel (WTW) fuel emission factor appropriate for each mode or vehicle type. In addition to these inputs, our Cloud business group uses the EcoTransIT tool, which identifies the mode of transportation on each leg by breaking down the route through milestones and incorporates more granular location data, equipment data, and WTW emissions factors. Starting in FY24, our Cloud business group started accounting for the impact of low-carbon fuels and electric vehicles as part of the fleets supporting this activity. For the rest of the emissions, Microsoft requests carbon emissions data from our suppliers and uses the latest available responses to determine Scope 1, Scope 2, and upstream Scope 3 emission factors (mtCO$_2$e/$ revenue). Microsoft estimates emissions for suppliers who submitted data by multiplying their response-derived factor by the annual spend with the supplier. All other spend is mapped to corresponding industry sectors and then multiplied by cradle-to-gate emission factors by sector from UK DEFRA's "UK DEFRA, Table 13 – Indirect emissions from the supply chain. March 2014"—updated per the latest inflation and currency conversion rates. Corporate-wide expense data for all company divisions is obtained from the

Scope/category	FY24 emissions calculation methodology
	finance department. Spend data associated with our upstream transportation and distribution activities is then isolated within the corporate spend report. GWP values are derived from the underlying supplier responses and DEFRA data sources.
Category 5 – Waste Generated in Operations	The waste figure represents emissions from waste disposed via landfilling, incineration, recycling, and compost. We calculate emissions from waste using methodologies and emission factors from the EPA's Waste Reduction Model (WARM), version 16. This model uses waste mass as the data input and bases its emissions calculations on a life cycle analysis, including emissions from the long-term decomposition of waste in landfills or from upstream sources/sinks. GWPs are from the IPCC AR4, 100-year average.
Category 6 – Business Travel	This category includes emissions from commercial air travel, hotel night stays, rail travel, reimbursed mileage, rental cars, and taxi/rideshares. For commercial air and rail travel, Microsoft Corporate Travel provides flight/ride-level airport codes and cabin class data. We use the airport/rail station codes to calculate distances to determine whether the flights/rides were short, medium, or long haul. Using the distance-based method, we use flight distances and cabin class to calculate carbon dioxide equivalent emissions, using the appropriate tank-to-wake emission factors from DEFRA's 2022 Government GHG Conversion Factors for Company Reporting. For hotel night stays, Microsoft's preferred hotel vendors provided emissions per hotel night stay coefficients. For other hotel chains, we estimated emissions based on nights stayed and the emission factors from the EPA's Greenhouse Gas Inventory Guidance: Indirect Emissions from Events and Conferences (Dec 2018). For rental cars, each rental car company provided mileage, fuel, and emission data. For taxi/rideshare and reimbursed mileage, we estimated emissions based on spend using emission factors from the EPA Emission Factor Hub. March 2018. GWPs are from the IPCC AR4, 100-year average.
Category 7 – Employee Commuting	This category captures emissions from commuting by all employees and contractors that work in Microsoft buildings. Microsoft conducted a survey in 2023 to capture detailed commuting habits from employees and vendors at our Puget Sound campus, representing about 38% of global Microsoft headcount. The survey is typically conducted annually. We scale the results based on employee attendance records to estimate global commuting emissions for Microsoft. Carbon dioxide emission rates for passenger vehicles (single occupancy vehicle [SOV] and carpool) are based on fuel consumption and miles travelled. We derived a weighted average fuel economy using the 2012 EPA Fuel Economy Trends Report 1975–2012, which provides combined fuel economy for cars and trucks by year, and a set of car and truck age fractions provided by the Puget Sound Regional Council. We used this data to develop a weighted average fuel economy for the Puget Sound area. Emission factors are derived from the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2010, Annex 2 (Methodology for estimating CO_2 emissions from fossil fuel combustion). Carbon dioxide rates per passenger mile are based on Federal Transit Administration, 2010 (Public Transportation's Role in Responding to Climate Change, US Department of Transportation, Federal Transit Administration, January 2010). GWPs are from the IPCC AR4, 100-year average.

Scope/category	FY24 emissions calculation methodology
	As nearly all Microsoft employees worked from home during the COVID-19 pandemic, FY20 was the first year to include emission impacts from telework, and we have continued to include them in the subsequent years. We assume telework energy consumption to include workstation/plug-load energy usage, additional lighting, and household cooling/heating consumption. We assume one laptop, two monitors, and three lightbulbs for each employee; other assumptions include 8 work hours/day and 250 days/year using the devices. We assume office/workspace floor area and cooling/heating intensity based on Energy Information Administration (EIA)'s 2015 Residential Energy Consumption Survey (RECS) data. From these assumptions, we calculate a carbon emission intensity per employee and then calculate total emissions by multiplying the intensity by number of employees working from home.
Category 8 – Upstream Leased Assets	Not relevant. Microsoft includes leased assets in our Scope 1 and Scope 2 emissions reporting boundary.
Category 9 – Downstream Transportation and Distribution	Included in this category are the emissions from transporting and warehousing of devices that Microsoft sold in the reporting year (including Xbox devices, Surface devices, HoloLens, keyboards, mice, and other peripherals) from retail distribution centers to retailers and between retail outlets and customers. Calculations are based on internal Microsoft sales data and use standard assumptions of distance between retailers and their distribution centers and warehouse floorspace from an MWPVL International analysis of Walmart's distribution center network. Assumptions about the energy intensity of warehouses come from the EIA's Commercial Buildings Energy Consumption Survey (2012). All transportation data is kept consistent with the GLEC Framework for Logistics Emissions Accounting and Reporting, Version 2.0. GWPs are from the IPCC AR4, 100-year average.
Category 10 – Processing of Sold Products	Not relevant. Microsoft did not have any physical intermediate products in the reported year.
Category 11 – Use of Sold Products	Included in this category is the lifetime electricity use of devices that Microsoft sold in the reporting year including Xbox devices and accessories (for example, controllers and headsets), Surface devices and accessories (for example, keyboards and mice), and HoloLens. We calculate lifetime electricity use per device based on standard product-use assumptions as included in our ISO 14040– and ISO 14044–compliant LCAs. Calculations include energy use assumptions that are derived from various guidance documents, studies, and telemetry data. We use assumptions about total lifetime expected use (years). We use the sales geography for the products

Scope/category	FY24 emissions calculation methodology
	sold to determine the electricity emission factor used to calculate emissions. Emissions from third-party devices running Microsoft software are currently outside of the scope of our carbon targets and therefore not included. GWPs are from the IPCC AR4, 100-year average.
Category 12 – End-of-Life Treatment of Sold Products	Included in this category is the end-of-life treatment of devices that Microsoft sold during the reporting year including Xbox devices and accessories (for example, controllers and headsets), Surface devices and accessories (for example, keyboards and mice), and HoloLens. Microsoft has been using an ISO 14040/ISO 14044–compliant LCA approach for many years to track the end-of-life emissions for our devices. To generate an estimate for this category, the model assumes that materials from devices are recycled, landfilled, or incinerated at the end of their useful life using material-specific European collection and disposition rates for electronic devices. In FY23, we revised our LCA process to use Makersite, a cloud-based tool with AI and third-party datasets, and other internal software engineering systems to automate and scale the modeling of complex electronic products. GWPs are from the IPCC AR4, 100-year average.
Category 13 – Downstream Leased Assets	Microsoft calculates emissions associated with sublets using the intensities derived from data collected for the primary leased space (for example, kilowatt-hours/square foot [kWh/ft^2]) and prorated for the square footage of the sublet space. In this way, it is assumed that the emissions intensities of the leased spaces are the same as the overall buildings in which they reside. We calculate emissions from refrigerants using the same methodology and intensity as used to calculate refrigerant intensities for assets occupied by Microsoft. Electricity emission factors used are those appropriate to each location, consistent with our Scope 1 and Scope 2 location-based inventory. GWPs are from the IPCC AR4, 100-year average.
Category 14 – Franchises	Not relevant. Microsoft did not operate franchises in the reported year.
Category 15 – Investments	Not relevant for the reported year.

Methodology changes in FY24

Methodology changes include changes in a calculation methodology or new activity types for greater data granularity and/or precision. In FY24, we made the following changes to update our emissions methodologies:

→ **Scope 3 Category 1 – Purchased Goods and Services and Category 2 – Capital Goods:** Reported emissions for these categories now incorporate emissions calculated using a life cycle assessment (LCA) approach for the portion associated with the purchase of cloud hardware. In FY24, Microsoft started using an LCA-based approach to quantify the cradle-to-gate emissions of cloud hardware (server equipment). The methodology uses Makersite, a cloud-based tool with AI and third-party datasets including Ecoinvent and imec data, to automate and scale LCAs based on the materials and design of the cloud hardware. To help ensure coverage, we perform a statistical analysis of representativeness to select cloud hardware to model with LCAs. These results are then used for unmodeled parts and components present in the rest of the portfolio. For Category 1, in FY24, we improved our devices LCAs by integrating imec data when modeling the impact from semiconductors and increased the integration of supplier data into our assessments.

→ **Scope 3 Category 4 – Upstream Transportation and Distribution:** Starting in FY24, our Cloud business group started accounting for the impact of low-carbon fuels and electric vehicles as part of the fleets supporting this activity.

→ **Scope 3 Category 4 – Upstream Transportation and Distribution, Category 9 – Downstream Transportation and Distribution, Category 11 – Use of Sold Products, and Category 12 – End-of-Life Treatment of Sold Products:** Starting in FY24, reported emissions for these categories no longer reflect emissions from PC accessories that are no longer sold by Microsoft.

Important notes about this report

This report includes estimates, projections, and other "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, section 27A of the Securities Act of 1933, and section 21E of the Securities Exchange Act of 1934. These forward-looking statements generally are identified by the words "believe," "project," "expect," "anticipate," "estimate," "intend," "strategy," "future," "opportunity," "plan," "may," "should," "will," "would," "will be," "will continue," "will likely result," "target," "efforts," "goal," "commitment," "committed to," and similar expressions. Forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties that may cause actual results to differ materially. We describe risks and uncertainties that could cause actual results and events to differ materially in our reports filed with the Securities and Exchange Commission, though there may be other unknown or unexpected risks that may also impact these results. We undertake no obligation to update or revise publicly any forward-looking statements, whether because of new information, future events, or otherwise.

Our environmental, social, and governance (ESG) reporting describes the topics we consider to be the most important to stakeholders when evaluating ESG issues at Microsoft. Therefore, "material" or "financial materiality" as used in this report does not directly correspond to the concept of materiality as used in securities law. Given the long timelines and uncertainty involved with these issues, materiality can be inherently hard to predict in advance. Additionally, certain information in this report relies on assumptions and projections of various scenarios that may not be representative of actual current or future risks.

As information and expectations on ESG matters continue to develop, our methodologies (including for the collection and interpretation of ESG data) may change in ways that impact our ESG strategy and goals. For example, our ESG priorities and reporting may evolve as a result of changes to frameworks and standards, data availability and quality, governmental or business policies, or other matters, which may not necessarily be in our control. Moreover, while we reference certain third-party standards and frameworks, we cannot guarantee, and any language of "alignment" or similar should not be taken to mean, strict adherence to any particular interpretation thereof.

We aim to present as transparent and comprehensive a picture of our work in this area as possible, aligning with the recommendations of the International Financial Reporting Standards (IFRS) S2 Climate-related Disclosures standard, as issued by the International Sustainability Standards Board (ISSB), as our guiding framework. We reserve the right to update, modify, amend, and withdraw this report, as deemed appropriate by our legal and regulatory consultants and advisors.

Microsoft