Insights
Asset Stewardship

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Climate-Related Disclosures in the Technology Sector

The Current State and Opportunities for Improvement

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Key Takeaways

- Technology companies tend to include climate considerations in their business strategy, financial planning and/or operations, but could improve in communicating the business imperative for managing climate risks.

- Companies do not have a standard approach for identifying material risks to their businesses (e.g., publishing a company-specific materiality matrix versus reporting against the Task Force on Climate-related Financial Disclosures), making it difficult for investors to analyze sustainability efforts.

- There is dispersion within sectors in terms of quality of disclosure, governance and management of climate-related risks, with the strongest disclosures in the Hardware and Software & IT Services industries and the most room for improvement found in Internet Media & Services and E-Commerce.

- Directors should develop fluency in discussing climate-related risks and should be prepared to discuss the connection between a company's sustainability practices and its business strategy with investors.

- There are limited differences in disclosures across regions, suggesting the tech sector has a more uniform and global commitment to effective climate-related disclosures than other sectors we have analyzed.

Context

At State Street Global Advisors, we believe that climate change presents a material risk to all companies and that it should be disclosed and managed like any other business risk. This perspective, along with our fiduciary duty to act on behalf of our clients' long-term interests, informs our asset stewardship efforts.

In 2019, we published the first two papers in a series examining the state of climate-related risk disclosures in specific sectors: **"Climate-Related Disclosures in Oil and Gas, Mining, and Utilities"** and **"Effective Climate-Related Risk Disclosure in the Agricultural and Forestry Sectors."** Our intention is to equip Boards to more effectively respond to the threat of climate change. For the third paper in this series, we chose to expand our analysis beyond high-impact sectors and focus on technology companies.

Why Technology?

We decided to focus on this sector for three reasons:

- **Essential Role in the Economy** Technology plays an increasingly important role in the global economy and in State Street Global Advisors' portfolio — the 30 companies reviewed in this paper comprise over 12% of State Street Global Advisors' equity holdings.[1] The global health crisis has accelerated technology's role in our daily lives and has led to an outsized impact on the market. Given technology's increased visibility and relevance, investors should understand the climate risk disclosure and management practices of the sector.

- **Status as a Provider of Critical Infrastructure** Technology companies provide critical infrastructure for the world's governments and economies, making it particularly important for Boards (and subsequently stakeholders) to understand how well their companies are managing risks related to climate change, including physical risks such as flooding and extreme temperature.

- **Environmental Impact** With the rapid growth in the technology industry, the impact that these companies have on the environment is also increasing. For example, the Internet is expected to consume around 15% of the world's electricity by 2030.[2] Further, data centers currently use over 2% of the world's electricity and emit as much CO_2 as the airline industry.[3] As more sectors integrate information technology into their business strategies we anticipate data centers will increase their demand on the global grid.

Methodology

In selecting 30 companies for review, we sought to construct a representative sample of State Street Global Advisors' technology holdings considering geography and industries. We evaluated companies' disclosures through the lens of The Task Force on Climate-related Financial Disclosure (TCFD), a coalition of experts hosted by the Financial Stability Board (FSB) that has developed guidelines to help companies enhance their disclosure and management of climate-related financial risks. This transparent and commonly accepted framework informs State Street Global Advisors' stewardship efforts.[4]

Summary of Findings

- **Many technology companies include climate considerations in their business strategy, financial planning, and/or operations, but could further capitalize on the opportunity to tell investors about the business imperative for managing climate risks.** After evaluating the Oil & Gas, Mining, Utilities, Forestry and Agriculture sectors, we are encouraged to discover that 77% of companies (23 of 30) in the Technology sector are considering climate in their business strategy, operations or financial planning, up 20% from our 2019 analysis of the technology sector. Technology companies are inherently future-focused, which might make them inclined to adapt to the impending threat of climate change.

However, only two-thirds of companies incorporate climate considerations into both their business strategy and financial planning. Furthermore, only one-third of companies make the explicit link between their environmental efforts and the implications for their core business. Most companies position their environmental practices as the "right thing to do" in order to have a positive impact on the planet and on consumers. As investors, it is important for us to understand the financial materiality of a company's climate risk management efforts.

- **Nearly every company we examined has a bespoke approach to identifying material risks to the businesses, making it difficult for investors to appreciate the significance of companies' often robust environmental efforts.** Companies have disparate methods of analying and articulating the materiality of climate-related risk management practices. In our view, this dynamic is potentially informed by the outsized influence of non-investor stakeholders on companies' environmental efforts.

  Unlike the high-impact sectors we evaluated, technology companies are less likely to be pressured by investors to manage and disclose climate-related risks as the sector's environmental impact has been less scrutinized by regulators and other stakeholders because governance structures have historically limited shareholder influence. Instead, many tech companies' disclosures appear to be oriented toward stakeholders including regulators and consumers, offering an overview of environmental efforts without necessarily making the connection to the bottom line. More investor-friendly disclosure practices could help address this challenge.

- **There is dispersion within this sector in terms of quality of disclosure, governance and management of climate-related risks.** Some industries – especially Hardware and Software & IT Services companies — are more likely to approach climate risk management in a strategic, consistent and systematic manner, and in a way that allows investors to evaluate their efforts. Other industries — particularly Internet Media & Services and E-Commerce companies — tend to have the most opportunity for improvement, with many companies focusing primarily on the regulatory risks of climate change, and either not connecting their environmental efforts to the core business or not engaging in any climate-related risk management efforts.

  This contrast might be because the Hardware and Software & IT Services companies we analyzed are older and more familiar with being accountable and responsive to shareholders, while the Internet Media & Services and E-Commerce companies are younger and historically reliant on private capital, which often results in governance structures that discourage shareholder engagement.

- **Boards can help companies articulate the connection between sustainability activities and business strategy and should be prepared to discuss this integrated approach with investors.** Investors are increasingly interested in how companies across sectors are disclosing and managing climate-related risks and will likely engage technology companies on this topic. Directors can prepare for this increased scrutiny by understanding a company's approach to managing and disclosing climate-related risks and being ready to talk to investors about the relevance of environmental activities to mitigating risks to the business.

  In our engagements on this topic, we have observed that "climate-competent" boards that can constructively debate the issue are the most effective in integrating climate change into a company's long-term strategy. Only one quarter of the companies we analyzed prioritized nominating Directors with ESG experience, and many companies that integrate climate-related risks into their business strategy do not disclose board oversight of these risks, suggesting important gaps in expertise and awareness.

- **There are limited differences in disclosures across geographies.** Unlike other sectors where there are clear disparities across regions — for example, stronger disclosures in Europe versus the US in Oil & Gas — the tech sector has no meaningful differences in disclosures across regions. This uniformity might be because the sector has younger companies across the globe that are developing new approaches to sustainability and because the sector contains many consumer-facing brands that understand the reputational risk of not addressing environmental issues effectively. It could also be because technology companies are experiencing higher valuations than other sectors and thus have more resources to deploy in service of strengthening their climate-related disclosures.

Evaluating Disclosures Through the Lens of TCFD

The Task Force on Climate-related Financial Disclosure (TCFD) recommends the following practices. We evaluated companies' disclosures against this framework:

TCFD Thematic Area	Recommendation
Governance	Disclose the organization's governance of climate-related risks and opportunities.
Strategy	Disclose the actual and potential impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning where such information is material.
Risk Management	Disclose how the organization identifies, assesses and manages climate-related risks.
Metrics and Targets	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.

Of the 30 companies reviewed, only four are TCFD "Supporters" — Taiwan Semiconductor Manufacturing Co., Sony Corp, eBay and Rakuten. However, 15 companies either report against or mention TCFD in their disclosures — Samsung, Intel, Taiwan Semiconductor Manufacturing Co., Cisco, SAP, Oracle, Microsoft, Nokia, Alphabet, Sony, Hon Hai, Apple, Amazon, Rakuten, and IBM — twice as many as in our 2019 analysis.

The following sections offer insights into the sector's disclosure and management of climate-related risks through the lens of TCFD's four key pillars.

Governance

Insights

Companies evaluated are more likely to consider climate an issue for Management than an issue for Boards and have strong Management oversight of climate-related risks. Some companies are adapting their business strategies to address climate-related risks but do not have Board oversight of such efforts.

- **70%** of companies **(21 of 30)** disclose management oversight of climate-related risk, and **50% (15)** of those companies either have Executive roles dedicated to sustainability, or a relevant committee that reports into the C-Suite.

- **53%** of companies **(16 of 30)** disclose Board oversight of climate-related risk. Only **6** companies articulate specific committee oversight, and only **2** of those companies have sustainability-focused committees.

- Only **23%** of companies **(7 of 30)** have Directors with ESG experience or suggest that such a skillset is a priority when nominating new Directors.

- Of the **23** companies that have changed their business strategy to respond to climate-related risks, **9 (40%)** do not disclose Board oversight of climate-related risks and opportunities, suggesting a blind spot in governance of sustainability efforts.

Industry-Leading Examples

- HP's Board of Directors has a Nominating, Governance and Social Responsibility Committee, which oversees the company's climate-related risk management efforts.[5]
- eBay lists "sustainable business practices" as a desired skill for candidates for the Corporate Governance and Nominating Committee.[6]

Recommendations for Boards

- Develop fluency in how your company manages climate-related risks. Investors are increasingly interested in understanding a company's climate-related risk management and will expect Boards to connect existing environmental efforts to the long-term business strategy.
- Consider which governance structure makes the most sense for your firm in managing climate-related risks and move toward implementing that structure.
- Ensure that executive-level employees are effectively managing climate-related risks.

Strategy

Insights

More than half of the companies evaluated are incorporating climate-related risks into their business strategy and/or financial planning, and more than half consider climate readiness a business opportunity. However, only one-third of the companies explicitly articulate why managing climate-related risks and opportunities is relevant to their core business.

- Only **30%** of companies **(9 of 30)** explicitly state the business case for managing climate-related risks. Those companies articulate a variety of rationales, including: mitigating material risks, lowering costs, enhancing brand value, identifying new market opportunities and responding to shifting consumer, employee and investor expectations.
- **60%** of companies **(18 of 30)** describe how they changed some element of their business strategy to manage climate-related risks and how climate-related risks impact their financial planning.
  - — Companies describing how they have changed some element of their business strategy to respond to the reality of climate change focus on making products more environmentally-friendly through changing material sourcing practices, development and design, production and creating opportunities for recycling old products. Others are focused on improving operations — for example, by using less water to run data centers or switching to renewable energy to power facilities.
  - — Most companies that disclose how climate-related risks have an impact on financial planning and capital allocation are investing in climate-related R&D, renewable energy projects or energy conservation projects. Others are building new facilities (e.g., labs, e-waste recycling centers) or investing in water conservation projects. At least **4** companies have environmental accounting sections in their sustainability reports and at least **6** companies disclose specific costs and revenues associated with managing climate-related risks as part of the CDP questionnaire.

- **67%** of companies **(20 of 30)** articulate how managing climate risks provides a business opportunity for them or their customers. Companies that do discuss this opportunity focus on the ability to lower costs, enhance their brand image and help customers decrease their environmental footprint.

- Only **30%** of companies **(9 of 30)** disclose that they engage in climate-scenario planning.

Industry-Leading Examples

- Nokia visualizes the positive and negative financial value of their environmental impacts and activities.[7]

- SAP articulates ways in which various financial and non-financial indicators impact each other. For example, they state that "lowering SAP's carbon emissions could have a positive impact on SAP's revenue because customers increasingly ask their suppliers to act sustainably."[8]

Recommendations for Boards

- In disclosures and conversations with investors, clarify the link between environmental sustainability efforts and business strategy. This information empowers investors to incorporate climate-related risk management into their assessment of the company. For example, companies may consider disclosing how a company's assessment of climate change is having an impact on capital allocation decisions, investments in sustainable innovation and diversification of the supply chain.

- Encourage management to explore business opportunities associated with managing climate-related risks, such as reduced costs and enhanced brand value.

- *For guidance, see State Street Global Advisors'* **"Incorporating Sustainability Into Long-Term Strategy."**

Risk Management

Insights

The majority of companies disclose climate-related risks, but they are more likely to disclose Regulatory than Physical and Economic risks, and most companies take a unique approach to identifying material climate-related risks.

- **80%** of companies **(24 of 30)** disclose some climate-related risk. E-Commerce and Internet Media & Services companies are the least likely to disclose climate-related risks (**4 of 7** companies and **2 of 4** companies respectively). **70%** of companies **(21)** disclose the Regulatory risks of climate change, while only **67%** of companies **(20 of 30)** disclose the Physical risks of climate change, and only **63%** of companies (**19 of 30**) disclose the Economic risks.

The State Street Global Advisors Asset Stewardship team has identified three primary climate-related risks to businesses: Physical, Regulatory, and Economic. Some of the risks technology companies are managing on include:

- **Physical** Impact of extreme weather and rising sea levels on supply chain, operations, and infrastructure.
- **Regulatory** Changing energy efficiency standards for products; Carbon or energy taxes increasing cost of business.
- **Economic** Increased consumer demand for environmentally-efficient products; Potential damage to brand reputation.

- **70%** of companies **(21 of 30)** share their process for identifying climate-related risks. However, most companies create a materiality matrix based on input from a variety stakeholders.
  — While materiality matrices are useful for understanding the perspectives of a single company's stakeholders, they make it difficult to compare across companies. Investors as a stakeholder group generally prefer to see SASB-alignment in sustainability reporting. Furthermore, these proprietary matrices have large discrepancies within industries. There are few overlapping issues that are deemed material for companies within the same industry, and even those have different names (e.g., "waste from operations" vs. "non-hazardous waste management"), degrees of specificity (e.g., "climate and energy" vs. "product energy efficiency") and levels of priority (e.g., "climate and energy" might be highly material for one company but not for another). Hardware has the most alignment across materiality matrices, but there are outliers — only one company designates "biodiversity" as a material issue, for example.
- **67%** of companies **(20 of 30)** disclose their processes for managing climate-related risks.

Industry-Leading Examples

- Canon offers a chart with "Risks and Opportunities in Four Areas of Materiality" related to climate. Examples of risks include, "decreasing supply and price increase of printing paper due to dwindling forestry resources," and examples of opportunities include, "reduced energy costs through increased efficiency in production and transportation."[9]
- HP has a matrix that outlines the "Business processes for addressing climate-related risks and opportunities" with details on their approach to managing each risk and opportunity associated with climate change. For example, they manage the risk of "changing customer expectations and requirements" with their "Design for Sustainability" program.[10]

Recommendations for Boards

- Align process for identifying material climate-related risks to industry standards for investors, such as the SASB framework.
- Ensure management considers the full suite of climate-related risks: **Physical, Regulatory and Economic.**
- *For guidance, see State Street Global Advisors'* **"Climate Change Risk Oversight Framework For Directors."**

Metrics and Targets

Insights

Many companies disclose climate-related targets, but only half of them have goals connected to the overall business strategy.

- **73%** of companies **(22 of 30)** disclose climate-related targets or goals and **70%** of companies **(21 of 30)** disclose progress against those goals. Most targets are related to emissions and renewable energy.
- Of those **22** companies, **68% (15, or half of all companies)** explicitly connect their environmental goals to the overall business strategy.
- Of the **22** companies that disclose climate-related targets or goals, over **80%** have targets with timelines of 1–5 years.
- **23%** of companies **(7 of 30)** tie Executive Compensation to sustainability goals.

Industry-Leading Examples

- Throughout their corporate responsibility report, Intel provides detailed insights into their climate-related goals as well as a description of their progress toward meeting these targets.[11]
- TSMC provides their 10-year climate-related goals, their current progress toward meeting those goals and their short-term targets for the following year.[12]

Recommendations for Boards

- Ensure that climate-related metrics and targets advance efforts to manage risks to the core business.
- Set realistic target timelines for climate-related updates to business strategy.

Conclusion

Effective climate-related risk disclosure and management is an emerging issue and we expect investors to pay increased attention to this topic given the critical nature of the technology sector. We hope you find this guidance helpful, and we look forward to engaging your company on this issue going forward. Please do not hesitate to contact our Asset Stewardship team at **GovernanceTeam@SSGA.com** with any feedback.

Appendix: Methodology

In selecting 30 companies for review, we sought to construct a representative sample of State Street Global Advisors' technology holdings considering geography and industries. We focused on the top European, Asian, and US holdings in six relevant SICS industries:[13] Hardware, Semiconductors, Internet Media & Services, Electronic Manufacturing Services, Software & IT Services and E-Commerce. Our analysis is based on companies' SEC filings and sustainability reports. When made available on the company's website, we reviewed public CDP questionnaire responses. We evaluated these materials through the lens of the Task Force on Climate-related Financial Disclosure (TCFD). We selected this framework because it is transparent, standardized and commonly accepted by investors. Given the relatively small sample size, this paper does not purport to make firm generalizations about entire industries or the overall sector. Instead, it offers initial insights into the state of the sector's climate-related risk disclosure and management. The list of companies we analyzed for this paper is as follows:

Company Name	Region
Intel Corp	USA
Alphabet Inc	USA
HP Inc	USA
Taiwan Semiconductor Manufacturer	ASIA
Microsoft Corp	USA
International Business Machines Corporation (IBM)	USA
Oracle Corp	USA
Samsung Electronics Co Ltd	ASIA
Sony Corp	ASIA
Cisco Systems Inc	USA
Nokia OYJ	EUR
Hon Hai Precision Industry Co (Foxconn)	ASIA
eBay Inc	USA
SAP SE	EUR
Canon Inc	ASIA
Texas Instruments Inc	USA
Apple Inc	USA
Quanta Computer Inc	ASIA
Zalando SE	EUR
ASML Holding NV	EUR
Amazon.com Inc	USA
Tencent Holdings Ltd	ASIA
Broadcom Inc	USA
Facebook Inc	USA
Rakuten	ASIA
Baidu Inc	ASIA
Netflix Inc	USA
ZOZO Inc	ASIA
Alibaba Group Holding Ltd	ASIA
Twitter Inc	USA

Endnotes

1 As of November 2020.

2 https://wsj.com/articles/tech-executives-spearhead-green-initiatives-11561368600 or https://dxc.technology/cr/insights/145852-data_centers_play_key_role_in_reducing_ghg_emissions.

3 https://e360.yale.edu/features/energy-hogs-can-huge-data-centers-be-made-more-efficient.

4 See Appendix for a detailed explanation of our methodology.

5 https://h20195.www2.hp.com/v2/getpdf.aspx/c06040843.pdf, p. 15.

6 DEF 14A, p 21.

7 https://nokia.com/about-us/sustainability/our-approach/materiality-and-value-creation/.

8 https://sap.com/docs/download/investors/2019/sap-2019-integrated-report.pdf, p. 218.

9 https://global.canon/en/csr/report/pdf/canon-sus-2020-e.pdf, p. 16.

10 https://h20195.www2.hp.com/v2/getpdf.aspx/c06040843, pdf p 21.

11 http://csrreportbuilder.intel.com/pdfbuilder/pdfs/CSR-2019-20-Full-Report.pdf begins on p. 32

12 https://www.tsmc.com/download/csr/2018_tsmc_csr_report_published_May_2019/english/pdf/e_all.pdf, p. 95

13 SICS Industry Classification: The Sustainable Industry Classification System (SICS) was designed by the Sustainability Accounting Standards Board (SASB). SICS categorizes companies based on shared sustainability risks and opportunities. Companies are categorized under a single SICS industry.

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For four decades, State Street Global Advisors has served the world's governments, institutions and financial advisors. With a rigorous, risk-aware approach built on research, analysis and market-tested experience, we build from a breadth of active and index strategies to create cost-effective solutions. As stewards, we help portfolio companies see that what is fair for people and sustainable for the planet can deliver long-term performance. And, as pioneers in index, ETF, and ESG investing, we are always inventing new ways to invest. As a result, we have become the world's third-largest asset manager with US $3.47 trillion* under our care.

* This figure is presented as of December 31, 2020 and includes approximately $75.17 billion of assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Global Advisors are affiliated.

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