

EXCERPT

SUSTAINABILITY ACCOUNTING STANDARDS BOARD

# CLIMATE RISK

TECHNICAL BULLETIN



# CLIMATE RISK TECHNICAL BULLETIN

TB001-10182016

---

## ABOUT SASB

The Sustainability Accounting Standards Board (SASB) is an independent 501(c)(3) nonprofit organization. SASB's mission is to develop and disseminate sustainability accounting standards that help public corporations disclose material, decision-useful information to investors. That mission is accomplished through a rigorous process that includes evidence-based research and broad, balanced stakeholder participation. SASB standards are designed for the disclosure of material sustainability information in mandatory SEC filings, such as Form 10-K and 20-F. SASB develops and maintains sustainability accounting standards for 79 industries, focusing on the subset of industry-specific sustainability factors that are reasonably likely to have material impacts.

---

## ABOUT THIS BULLETIN

This technical bulletin highlights findings related to climate risk arising from research conducted by SASB as part of its standards-setting process. The bulletin provides an overview of where climate-related risk is likely to be present in a typical portfolio, and what types of risk are present, along with the financial implications. It also summarizes the quality of existing disclosure on climate-related risk by SEC registrants. Using this bulletin, investors may better understand the nature of their risk exposures in each industry, as well as in which industries that risk is likely to be uncompensated due to inadequate disclosure in mandatory SEC filings.



Sustainability Accounting Standards Board  
1045 Sansome Street, Suite 450  
San Francisco CA 94111

(415) 830-9220  
info@sasb.org

October 2016

SASB wishes to thank the 2,800 participants in its industry working groups during development of the provisional-phase standards and numerous outside reviewers for their contributions to this document. SASB accepts full responsibility for errors or omissions.

## CONTENTS

ii	About SASB
ii	About This Bulletin
v	Foreword
<b>1</b>	<b>Overview</b>
1	Background
2	Key Findings
3	The SASB Model
<b>4</b>	<b>Climate Risk and Approach to Materiality</b>
5	SASB Climate Risk Categories
<b>5</b>	<b>SASB Climate Risk Framework</b>
7	Financial Impact Channels
8	Specific Risk
8	Systematic Risk
<b>8</b>	<b>Climate Risk at Different Levels in Financial Systems</b>
9	Systemic Risk
10	Physical Effects
10	Transition to a Resilient, Low-Carbon Economy
<b>10</b>	<b>SASB Climate Risk Materiality Map</b>
11	Climate Regulation
<b>15</b>	<b>Financial Impacts of Climate Risk</b>
18	Quantitative Metrics
<b>18</b>	<b>Recommended Climate Risk Disclosures by Industry</b>
19	Qualitative Disclosures
19	Recommended Climate-Related Topics and Metrics in SASB's Industry-Specific Standards
85	Methodology
<b>85</b>	<b>Current State of Climate Risk Disclosure</b>
86	Findings
<b>101</b>	<b>Conclusion</b>
<b>102</b>	<b>Appendix A</b> Comparison of Selected Climate Frameworks
<b>105</b>	<b>Appendix B</b> SASB Industry Working Group Outcomes on Climate Risks

## FOREWORD

Climate change is the single biggest economic risk the world faces today. As a nation, we want to deal with this as effectively as possible, and many individuals and organizations are working hard on reducing the carbon emissions released into the atmosphere. But as this new report from SASB makes clear, no matter what actions we take tomorrow, there are real, material climate risks that have already been “baked in” to the economy. These and future material climate risks must be recognized by the corporate and investment communities.

As we recently noted in a letter to the Securities and Exchange Commission encouraging action requiring climate change disclosure, investors face the important question of how different sectors and companies are accounting for and measuring climate risks, and how prepared they are to build up resilience to those risks. The '34 Act requires that investors, and the broader American economy, are given answers to these questions.

As former Secretaries of the Treasury, we have deep experience with the importance of recognizing and accounting for material risks across the U.S. economy. We have continued to apply that experience as active members of the Risky Business Project (RBP), and in that capacity we have called for recognition and accounting of the specific economic risks climate change poses to the American economy. We are not alone: SASB is also pushing for better disclosure and accounting, and offering ideas on how to approach such disclosure.

Meaningful disclosure will likely vary by industry. The RBP research shows that while climate risks are significant across the entire U.S. economy, they manifest very differently across regions of the country and sectors of the economy. For example:

- **Agricultural companies:** Extreme weather events, heat, and humidity can materially affect the industry's production efficiency and supply chain.
- **Commercial and residential real estate:** Sea level rise and increased storms are expected to have significant consequences on coastal property and infrastructure.
- **Manufacturing industry:** Dangerous levels of extreme heat and rising seas may cause large disruptions in supply chain operations and labor productivity--especially as many manufacturing plants are located in high-risk areas such as the Southeast.

These are just three out of the many areas SASB has found to be vulnerable to climate risk. In fact, this Climate Risk Technical Bulletin identifies material financial impacts from climate change for companies in 72 out of 79 industries, representing \$27.5 trillion, or 93% of the U.S. equity market.

But even though the '34 Act requires disclosure of material climate risks, companies continue to disclose these risks poorly, if at all, using mostly boilerplate language that fails to inform or suit investors' needs. This language may in fact serve to minimize the importance of climate risk to the economy because of its lack of specificity. Due to this disparity across industries and geographic location, the only way to inform an accurate understanding of climate risk is to provide investors with industry-specific, comparable data.

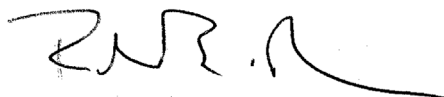
If investors are to effectively evaluate climate risk, they need a far better understanding of granular, industry-specific climate impacts, with industry-specific standards by which to evaluate corporate performance on these issues. By adopting a set of industry-based market standards for disclosure, especially in SEC filings, investors will be able to accurately compare and contrast companies. This latest SASB bulletin is a good next step toward this goal, and offers for the first time a comprehensive guide to understand and measure the unique climate impacts across all industries of the economy.

We share SASB's belief that the capital markets can affect the course of climate change for the better. We must continue to provide resources like this bulletin that outline what is likely to be material for companies in a given industry and region, and suggest disclosure standards for information in a manner that can be compared and benchmarked. Implementing a set of standards could significantly increase the quality of information available to investors as they begin to navigate the landscape of climate risk.

Sincerely,



**Henry M. Paulson**  
74th Secretary of the Treasury  
Co-Chair, Risky Business Project



**Robert E. Rubin**  
70th Secretary of the Treasury  
Member, Risky Business Project

## OVERVIEW

*SASB's Climate Risk Framework helps investors better understand their exposure to climate risk and how it can be more effectively disclosed for consideration in investment decisions.*

From the earliest trade across windswept oceans and arid deserts, our markets and the climate in which they operate have always been interconnected. In today's world, however, concerns about climate have heightened, creating new and substantial long-term threats to the financial stability of those markets, the security of diversified investment portfolios, and the viability of much business enterprise. Investors, as providers of the financial capital that is the lifeblood of our markets, have increasingly recognized the importance of measuring and managing their exposure to material climate-related risks.

As this report shows, such risks are now present in 72 of the 79 industries that comprise equities as an asset class. Because of this ubiquity, investors cannot diversify away from climate risk; instead they must focus on managing it—and on encouraging portfolio companies to manage it—in all its forms. Twenty-first century businesses and their investors face a variety of significant climate-related risks, which are covered in detail in this report. Each of these risks, depending on how they are managed, can have a positive or negative impact on a company's financial condition or operating performance—and therefore on an investment portfolio's risk-return profile. Among these risks are the physical effects of climate change due to the increasing frequency and severity of weather-related events; liabilities related to a shifting regulatory landscape; and the challenge of navigating the transition to a resilient, low-carbon economy. An example of this is seen with the Paris climate accord crossing the threshold required to enter into force, which further drives the need for transitions in carbon-intensive industries and amplifies regulatory pressure.<sup>1</sup>

This report is intended to assist investors' efforts to more effectively manage climate risk in several ways. First, it presents for the first time a comprehensive view of where climate risk is present across a diversified portfolio, mapping that risk to corresponding financial impacts, to provide investors with a greater understanding of their exposures and value at risk. Second, it offers an industry-specific analysis of existing climate-risk disclosure, enabling investors to gain insight on where uncompensated risk may be hiding, thereby undermining optimal risk-return targets. Finally, the report shares recommendations on how material, industry-specific climate risk can be more effectively managed and disclosed at the issuer level,

empowering more effective communication between investors and their portfolio companies.

## BACKGROUND

As climate-related uncertainty has increased, investors have not been sitting by idly. To lead the charge toward improved climate risk management, they have formed the Investor Network on Climate Risk (INCR), a group of 120 institutional investors with total assets under management of over \$14 trillion.<sup>2</sup> They have also recognized that achieving climate-related risk-management goals will require greater transparency around corporate performance. To this end, 45 investors representing \$1.1 trillion in assets under management—including the nation's largest public pension fund, CalPERS—submitted a letter to the U.S. Securities and Exchange Commission (SEC) in July, 2016, calling for improved climate risk disclosure.<sup>3</sup>

The SEC, which is responsible for enforcing federal securities laws in the U.S., has acknowledged that climate-related risk can have significant effects on business. In 2010, responding to calls from more than 100 institutional investors representing \$7 trillion, the Commission issued interpretive guidance clarifying that, when climate-related impacts are material, corporate issuers are compelled to disclose relevant information in accordance with the existing disclosure requirements contained in Regulation S-K.<sup>4</sup> Nevertheless, although climate-related disclosure has increased, it has thus far consisted largely of vague or boilerplate statements, which investors have not found particularly useful.<sup>5 6</sup>

In the absence of meaningful disclosure, investors have been challenged to adequately understand and manage their exposure to climate-related risks. As a result, the SEC has given thoughtful consideration to sustainability disclosures—such as those related to climate risk—in its ongoing review of disclosure effectiveness under Regulation S-K.<sup>7</sup> As part of this project, in April of 2016, the SEC issued a concept release on disclosure reform, which invited feedback on a broad range of issues related to Regulation

<sup>1</sup> Ceres website, accessed October 5, 2016, at <http://www.ceres.org/press/press-releases/ceres2019-mindy-lubber-statement-on-paris-climate-agreements-entry-into-force>

<sup>2</sup> INCR website, accessed Sept. 29, 2016, at <http://www.ceres.org/investor-network/incr/>

<sup>3</sup> Letter to SEC, Re: File Number S7-06-16: Business and Financial Disclosure Required by Regulation S-K, July 20, 2016; [https://www.ceres.org/files/sec-concept-release-letter/at\\_download/file](https://www.ceres.org/files/sec-concept-release-letter/at_download/file)

<sup>4</sup> Securities and Exchange Commission, FR-82, Commission Guidance Regarding Disclosure Related to Climate Change, p. 3 (Feb. 2, 2010), <https://www.sec.gov/rules/interp/2010/33-9106.pdf>.

<sup>5</sup> "Cool Response: The SEC and Corporate Climate Change Reporting," Ceres, February 2014; <https://www.ceres.org/resources/reports/cool-response-the-sec-corporate-climate-change-reporting/>

<sup>6</sup> Letter to SEC, Re: Investor Concern About Poor Climate Risk Disclosure and Request for SEC Action, June 22, 2016; [https://www.ceres.org/files/incr-letter-to-sec/at\\_download/file](https://www.ceres.org/files/incr-letter-to-sec/at_download/file)

<sup>7</sup> Securities and Exchange Commission, Business and Financial Disclosure Required by Regulation S-K, April 15, 2016; <http://www.sec.gov/rules/concept/2016/33-10064.pdf>

S-K. A preliminary analysis of results indicates that 51 percent of all sustainability-related (non-form) comment letters from respondents (37 percent of whom were investors) called for improved disclosure related to climate change.<sup>8</sup>

Meanwhile, the Financial Stability Board (FSB), at the request of G20 leaders, has launched a Task Force on Climate-Related Financial Disclosures (TCFD) aimed at helping companies better understand what financial markets need from disclosure in order to measure and manage climate risk. With this mission, the TCFD seeks to design a set of recommendations for voluntary company financial disclosures that promotes alignment across existing regimes, clarifies what may constitute material and relevant climate-related risks, and is responsive to the needs of lenders, insurers, investors, and other users of disclosures.

These developments represent significant steps in recognizing the risk that climate change may pose to financial markets. However, more work remains to be done.

Since 2012, SASB has conducted extensive analysis of the material risks associated with climate change and other sustainability factors. SASB's standardized disclosure framework aligns with the initiatives of both the SEC and the FSB. Its standards are designed to comport with U.S. securities laws and regulations,<sup>9</sup> and its process follows the principles of effective disclosure as defined by the TCFD (i.e., "achieving transparent, high quality disclosures that enable users to understand the impact of climate change on a company's strategy, risk, opportunities, and financial performance, in an integrated manner").<sup>10</sup>

Although SASB's research and standard-setting have addressed a range of sustainability issues—from resource scarcity to product safety to human rights—this report details, for the first time, its findings related to a single issue: climate risk, as it manifests itself in each of 79 industries, along with the recommended disclosures for investors to be able to understand, compare, and price that risk.

## KEY FINDINGS

Climate risk is ubiquitous. SASB research demonstrates that 72 out of 79 Sustainable Industry Classification System (SICS™)<sup>11</sup> industries are significantly affected in some way by climate risk. This equates to \$27.5 trillion, or 93 percent of U.S. equities by market capitalization. This represents a systematic risk that cannot be diversified away. As a result, investors must employ other strategies to manage climate risk, such as balancing exposures through sector allocation, focusing exposures on best-in-class securities, and actively engaging with portfolio companies on key climate-related factors to encourage improved performance.

Climate risk is diverse. Although climate risk is virtually omnipresent, cutting across every sector, it manifests itself differently from one industry to the next. For example, agricultural concerns must manage water as an increasingly stressed resource, oil and gas companies need to properly value reserves in a carbon-constrained world and be prudent about capital expenditures, and commercial banks have to effectively manage the carbon embedded in their loan portfolios. Using SASB's Climate Risk Framework, introduced in this report, these industry-specific impacts can be grouped into three primary types of risk to a company and its investors: physical risk, transition risk, and/or regulatory risk.

To understand its relevance to investors, these risks must be viewed through the lens of materiality. SASB has conducted a detailed mapping of the types of climate risk likely to be material in each industry (*see Table 1*) so that investors can understand the nature of the risk they are exposed to depending on the holdings in their portfolio.

### Understanding climate risk requires specialized disclosures.

Investors need specific information to fully understand their exposure and how well companies are positioned to manage the three types of climate risk. It's not as simple as all companies disclosing their carbon footprint or data on greenhouse gas (GHG) emissions. In fact, GHG emissions is likely to be a material disclosure in only 23 of 79 industries and, indeed, data from CDP indicates that only seven industries account for 85 percent of reported Scope 1 GHG emissions.<sup>12</sup> In health care, investors need to understand extreme weather events that can affect both business continuity and demand for services. In real estate, they need information on the energy efficiency of buildings and the vulnerability of building stock due to geographic location. In

8 All Comments to the SEC in Response to Concept Release: Business and Financial Disclosure Required by Regulation S-K: <https://www.sec.gov/comments/s7-06-16/s70616.htm>

9 Letter to SEC, Re: Concept Release on Business and Financial Disclosure Required by Regulation S-K, July 1, 2016, pp. 39-40; <https://www.sec.gov/comments/s7-06-16/s70616-25.pdf>

10 Phase I Report of the Task Force on Climate-Related Financial Disclosures, March 31, 2016; accessed September 29, 2016 at [https://www.fsb-tcfd.org/wp-content/uploads/2016/03/Phase\\_I\\_Report\\_v15.pdf](https://www.fsb-tcfd.org/wp-content/uploads/2016/03/Phase_I_Report_v15.pdf)

11 SASB groups companies into industries and sectors based on their resource intensity and shared sustainability risks and opportunities. The seven industries for which SASB standards include no climate-related topics are: Consumer Finance, Education, Professional Services, Advertising & Marketing, Media Production & Distribution, Tobacco, and Toys & Sporting Goods. For more information on SICS, see <http://www.sasb.org/sics/>.

12 Based on SASB analysis using CDP data pulled from the Bloomberg Professional Service in June, 2016, for calendar year 2014 and organized by SICS industry. High-impact industries include Airlines, Chemicals, Construction Materials, Iron & Steel Producers, Metals & Mining, Oil & Gas Exploration & Production, and Electric Utilities. Note that not all companies in every industry report data on GHG emissions to CDP.

automobiles, they need to be able to track progress on developing alternative-fuel vehicles that curb use-phase emissions and capitalize on changing consumer preferences.

An industry-specific approach is essential, because macroeconomic risks can only be understood and managed in terms of their microeconomic implications.<sup>13</sup> SASB standards provide industry-by-industry guidance for issuers to measure, manage, and report performance on critical dimensions of climate risk that are material to investors. (See *Table 2.*)

**Climate risk is not adequately disclosed.** Despite increasing awareness and investor demand, U.S.-listed companies have not provided the capital markets with adequate disclosure on climate risk. (See *Table 3.*) Although 75 percent of SASB's climate-related disclosure topics are already being addressed in SEC filings, they are not being reported in a decision-useful way. Of those disclosures, more than 40 percent use boilerplate language, while only 17 percent use metrics. (Even those disclosures using metrics are not comparable because they lack standardization.) If climate risk is not disclosed in a meaningful way, investors cannot benchmark and compare performance, and the market cannot efficiently price the risk.

Climate risk has financial implications that are tangible and identifiable. SASB's standards-development process focuses on only those sustainability issues for which it can establish appreciable—not anecdotal—evidence of financial impact. In doing so, SASB maps each of its industry-specific topics, including those related to climate risk, to one or more of several types of financial impact commonly evaluated by financial analysts and investors—namely those that would affect a company's revenues and operating costs, its asset value, and its financing costs. For example, an energy-intensive firm might be overexposed to volatile energy prices, vulnerable to certain risks if overly reliant on the grid, and/or incur indirect costs from internalization of carbon prices, while investments in self-generation, energy efficiency, and renewables may require R&D. For the first time, this report identifies the financial impacts associated with each type of climate risk in each industry (see *Table 4*), and further detail on each is provided in the SASB Industry Research Briefs.

---

## THE SASB MODEL

Using the information contained in this report, investors are likely to enhance their ability to effectively manage climate-related risk. However, much of this risk can only be managed effectively at the corporate level. In addition to the key findings outlined above, the report also makes recommendations for more effective corporate disclosure on industry-specific climate risks, based on the metrics contained in the SASB standards.

Investors can use the SASB Standards and accompanying Industry Research Briefs, as a playbook for engaging companies on the issues that matter most and to encourage improved sustainability disclosure. With this in mind, investors may want to consider certain features of the standards and how they are developed.

SASB standards are designed by the market, for the market. With participation from more than 2,800 investors and corporate professionals, representing more than \$23 trillion in assets under management and more than \$11 trillion in market capitalization, SASB's approach has been developed with the needs of issuers and investors at the forefront. More than 75 percent of participants in SASB's rigorous 18-month standards-setting process (for each sector) concluded that the climate-risk issues included in SASB's standards were likely to be material to a reasonable investor. (See Appendix B.) This consensus was made possible by SASB's painstaking research, which presented compelling evidence that performance on these issues was reasonably likely to materially affect the financial condition or operating performance of companies in an industry. As SASB transitions to codifying and maintaining the standards in 2016 and beyond, it has entered a period of deep consultation with issuers and investors on the provisional standards.

SASB is designed to provide disclosure that is both decision-useful and cost-effective. By continuing to engage the marketplace in its standard-setting process, SASB is able to produce sustainability accounting standards that strike a delicate balance: they are decision-useful for investors while still being cost-effective for issuers. SASB achieves cost-effectiveness in part by aligning with other standards, definitions, and concepts already in use by issuers, governments, industry associations, and others. For example, SASB's climate-risk metrics are closely aligned with those of CDP and many other climate-related organizations. (See *Appendix A.*) Furthermore, by focusing on only those impacts that are likely to be material to investors, SASB has limited its climate-related disclosures to an average of just two topics and four metrics per industry, easing the reporting burden on issuers.

In summary, SASB standards provide a comprehensive view of climate risk across the entire spectrum of public equities as an asset class. Using the SASB Climate Risk Framework and the information contained in this report, investors can gain a deeper understanding of the types of climate risk to which they are exposed, where those exposures lie, where they are likely to be uncompensated, and what financial impacts they are likely to have. Using the SASB recommended disclosures, companies can describe (in a cost-effective and decision-useful way) how they are managing climate-related risk and how they are positioned to outperform as the competitive landscape evolves. Finally, once the standards are implemented and the capital markets are equipped with the information they yield, both companies and investors will be able to benchmark climate-related performance, creating a race to the top.

---

<sup>13</sup> Rosenberg, B. and V. Marathe, 1976, "Common Factors in Security Returns: Microeconomic Determinants and Macroeconomic Correlates," working paper, No. 44 Research Program in Finance, Institute of Business and Economic Research, Berkeley, University of California.

EXCERPT

---

## **FINANCIAL IMPACTS OF CLIMATE RISK**

Although the three types of risk identified in Table 1 are helpful in terms of thinking about how climate-related impacts affect different industries, business models, or specific companies, financial analysts require an understanding of how those climate risks impact companies in a financial sense, including effects on a company's valuation, outlook, or its risk profile. The financial implications of sustainability issues, including climate risk, can be conveniently grouped into the following general categories: Revenue Impacts and Operating Costs, Asset Value, and Financing Costs.

The following tables illustrate the exposure of each of the 79 SICs industries to climate-related impacts through each of these channels of financial impact. The financial impacts of specific climate-related topics are described at a more granular level in the SASB Industry Research Briefs, which can be found at [sasb.org/approach/our-process/industry-briefs](https://sasb.org/approach/our-process/industry-briefs).

---



**Table 2. Financial Impacts of Climate Risk**

SECTOR	INDUSTRIES	REVENUE IMPACTS	OPERATING COSTS	ASSET VALUE	FINANCING COSTS
<b>Health Care</b>	Biotechnology				
	Pharmaceuticals				
	Medical Equipment & Supplies				
	Healthcare Delivery				
	Healthcare Distribution				
	Managed Care				
<b>Financials</b>	Commercial Banks				
	Investment Banking				
	Asset Management				
	Consumer Finance				
	Mortgage Finance				
	Security & Commodity Exchanges				
	Insurance				
<b>Technology &amp; Communications</b>	Hardware				
	EMS & ODM				
	Semiconductors				
	Software & IT Services				
	Internet & Media Services				
	Telecommunications				
<b>Non-Renewable Resources</b>	Oil & Gas - Exploration & Production				
	Oil & Gas - Midstream				
	Oil & Gas - Refining & Marketing				
	Oil & Gas - Services				
	Coal Operations				
	Iron & Steel Producers				
	Metals & Mining				
	Construction Materials				
<b>Transportation</b>	Automobiles				
	Auto Parts				
	Car Rental & Leasing				
	Airlines				
	Air Freight & Logistics				
	Marine Transportation				
	Rail Transportation				
	Road Transportation				
<b>Resource Transformation</b>	Chemicals				
	Aerospace & Defense				
	Electric & Electronic Equipment				
	Industrial Machinery & Goods				
	Containers & Packaging				

**Table 2. Financial Impacts of Climate Risk (cont.)**

SECTOR	INDUSTRIES	REVENUE IMPACTS	OPERATING COSTS	ASSET VALUE	FINANCING COSTS
<b>Services</b>	Education				
	Professional Services				
	Hotels & Lodging				
	Casinos & Gaming				
	Restaurants				
	Leisure Facilities				
	Cruise Lines				
	Advertising & Marketing				
	Media Production & Distribution				
	Cable & Satellite				
	<b>Consumption I</b>	Agricultural Products			
Meat, Poultry & Dairy					
Processed Foods					
Non-Alcoholic Beverages					
Alcoholic Beverages					
Tobacco					
Household & Personal Products					
<b>Consumption II</b>	Food Retailers & Distributors				
	Drug Retailers & Convenience Stores				
	Multiline and Specialty Retailers & Distributors				
	E-Commerce				
	Apparel, Accessories & Footwear				
	Appliance Manufacturing				
	Building Products & Furnishings				
	Toys & Sporting Goods				
<b>Renewable Resources</b>	Biofuels				
	Solar Energy				
	Wind Energy				
	Fuel Cells & Industrial Batteries				
	Pulp & Paper Products				
	Forestry & Logging				
<b>Infrastructure</b>	Electric Utilities				
	Gas Utilities				
	Water Utilities				
	Waste Management				
	Engineering & Construction Services				
	Home Builders				
	Real Estate Owners, Developers & Investment Trusts				
	Real Estate Services				

## RECOMMENDED CLIMATE RISK DISCLOSURES BY INDUSTRY

SASB's climate risk metrics are designed to capture a company's performance and exposure to risks and opportunities across each of the three types of climate-related impact categories—physical effects, transition to a low-carbon, resilient economy, and climate regulation. In conjunction with the financial impacts likely for each topic (detailed in Table 2), performance data on these climate-related metrics provide a useful way for investors to characterize and benchmark performance.

SASB standards contain both quantitative metrics and qualitative disclosures. In order to support analysts and investors who need comparable data for peer companies to support fundamental analysis, 78 percent of metrics are quantitative.

---

### QUANTITATIVE METRICS

The following points highlight key components to SASB's approach to identifying metrics that characterize a company's exposure to climate risk.

- **Criteria for metrics:** SASB evaluates potential metrics against key criteria to identify those that present a fair representation and are useful, applicable, comparable, complete, verifiable, aligned with current practices, neutral, and distributive.
- **Commonly used metrics:** SASB standards include quantitative metrics that have been commonly used by companies to describe performance on greenhouse gas emissions, water resource usage, energy use and "mix," and more. SASB incorporates the relevant metrics by reference in the technical protocols for its standards, thereby maintaining the cost-effectiveness of the standards for companies. SASB leverages the longstanding technical work of organizations such as the World Resources Institute, the World Business Council on Sustainable Development, CDP, the Climate Disclosure Standards Board, and many others. Some commonly referenced metrics are on delineated in the metric tables.
- **Industry-specific metrics:** Where industries face unique risks and opportunities related to climate risk, SASB's standards include industry-specific metrics to capture company performance in those areas. SASB's standards for the Oil & Gas – Exploration & Production and Coal Product industries, for

example, include quantitative metrics related to the carbon content of their hydrocarbon reserves and the sensitivity of these reserves to future price projection scenarios that account for a price on carbon emissions. As another example, SASB's standards for the Investment Banking industry include metrics related to how environmental, social, and governance (ESG) factors are integrated into underwriting activities. And SASB's Automobiles industry standard includes metrics related to fuel economy of vehicle fleets and sales of low-emission vehicles.

- **Approach to greenhouse gas emissions:** Unlike other approaches, SASB does not recommend disclosure of direct (i.e., Scope 1) greenhouse gas emissions for all issuers. As stated in a recent article from ESG Magazine, "there is a long list of things that people use carbon footprinting for, but there is actually a weak relationship between the environmental risks and opportunities investors should be interested in and carbon intensity." This is why SASB typically identifies a greenhouse gas emissions metric only for industries that are significant emitters of direct GHG emissions because our conceptual approach has determined these are the industries likely to face material impacts directly related to their emissions. (See Figure 3.) These impacts may manifest as regulatory risks and shifts in consumer demand, which in turn affect costs and revenues. Generally speaking, the less directly carbon-intensive an industry, the less likely these types of impacts are to directly affect those companies' cash flows.

For industries that indirectly contribute to greenhouse gas emissions through their use of purchased electricity, SASB does not recommend disclosure of Scope 2 emissions. Instead SASB recommends metrics related to understanding the amount, type (i.e., conventional or renewable), and source (i.e., if it is self-generated or purchased) of energy. SASB research and engagement has concluded that these measures provide a better understanding of potential material risks related to indirect emissions than a Scope 2 emissions figure does.

For industries that indirectly contribute to greenhouse gas emission upstream (e.g., from purchased materials processing and transportation), downstream (e.g., from distribution and usage sold products), or in other ways (e.g., from employee commuting and business travel), SASB does not recommend

disclosure of Scope 3 emissions. Instead, where these emissions areas are likely to material, SASB recommends metrics directly related to performance in those areas.

---

## QUALITATIVE DISCLOSURES

In addition to quantitative metrics, SASB standards include qualitative “discussion and analysis” disclosures. These guide issuers on making relevant, industry-specific disclosures of risks to the business from climate-related impacts and of how related factors are integrated into key business activities such as lending, investment analysis, product strategy, or supply chain management. Qualitative disclosures are an essential element of meaningful communication on climate and other sustainability topics. They allow management to communicate to investors factors necessary for the accurate understanding of climate risks and opportunities such as regulatory positioning, regional and local considerations, business structure (e.g., degree of vertical integration), and relevant acquisitions and divestitures.

---

## RECOMMENDED CLIMATE-RELATED TOPICS AND METRICS IN SASB'S INDUSTRY-SPECIFIC STANDARDS

Taken together, the quantitative greenhouse gas emissions metrics, other climate impact metrics, industry-specific metrics, and qualitative disclosures in SASB's standards provide investors with a comprehensive view of corporate issuers' climate-related risks and opportunities.

The following metric tables list the climate-related topics and metrics included in SASB's industry-specific standards. Because of SASB's materiality focus, the standards provide corporate issuers with guidance on the small handful of climate-related metrics (four per industry, on average) that are likely to be decision-useful both internally for management and externally for investors. As is evident from the tables, SASB metrics are closely aligned with major climate-risk disclosure initiatives, including the CDP.

Note: In the following table, Alignment indicates metrics from other organizations or regulations that have a high degree of overlap with the SASB metric, but are not necessarily directly linked or cited in the SASB standard. Issuers will be able to utilize some or most the information they have prepared for these other purposes for disclosure to the SASB standard. Also, in the following table Source Documents include select references that underlie the SASB metric including other frameworks, standards, regulations and other resources. Issuers will find these useful reference points as they compile and prepared disclose to the SASB standard.

**Table 3a: Consumption I**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Agricultural Products**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Greenhouse Gas Emissions Management ■ ■	Gross global Scope 1 emissions, percentage covered under a regulatory program	Quantitative	Metric tons CO <sub>2</sub> -e, Percentage (%)	CDP Climate Change Information Request CC8.2 Emissions Data, CC8.5 Data Accuracy CDSB Framework REQ-04 Sources of environmental impacts Climate Change Reporting Framework 4.19.1, 4.29 GRI G4 Aspect: Emissions (EN15) <b>Additional Source(s):</b> WRI/WBCSD Greenhouse Gas Protocol (definitions and calculation methodology)
	Biogenic carbon dioxide (CO <sub>2</sub> ) emissions Note—Disclosure should include discussion of whether the registrant’s biogenic CO <sub>2</sub> emissions are carbon neutral.	Quantitative	Metric tons (t) CO <sub>2</sub> -e	CDP Climate Change Information Request Food, Beverage and Tobacco FBT 1.5 GRI G4 Aspect: Emissions (EN15) <b>Additional Source(s):</b> U.S. EPA Framework for Assessing Biogenic CO <sub>2</sub> Emissions from Stationary Sources
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	CDP Climate Change Information Request CC3. Targets and Initiatives CDSB Framework REQ-01 Management’s environmental policies, strategy and targets, REQ-05 Performance and comparative analysis Climate Change Reporting Framework 4.12 GRI G4 Aspect: Emissions (EN19) SEC Guidance Regarding Disclosure on Climate Change
Water Withdrawal ■ ■	(1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic Meters (m <sup>3</sup> ), Percentage (%)	CDP Water Information Request W1.2a, 1.2b, 1.2c CDSB Framework REQ-04 Sources of environmental impacts GRI G4 Aspect: Water (EN8, EN9, and EN10) WBCSD Global Water Tool (GWT) CEO Water Mandate – Section 3 Company Water Profile <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Discussion of water withdrawal risks and description of management strategies and practices to mitigate those risks	Discussion and Analysis	n/a	CDP Water Information Request W3 Water risks, W8 Targets and Initiatives CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets CEO Water Mandate – Section 5 Detailed Disclosure <b>Additional Source(s):</b> Alliance for Water Stewardship Standard Version 1.0

**Table 3a: Consumption I**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Agricultural Products (cont.)**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Energy & Fleet Fuel Management ■	Operational energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules, Percentage (%)	CDP Climate Change Information Request CC11.2, CC11.3, CC3.1d  Climate Change Reporting Framework 4.31.f  GRI G4 Aspect: Energy (EN3)  <b>Additional Source(s):</b> Green-e Energy National Standard Version 2.5
	Fleet fuel consumed, percentage renewable	Quantitative	Gigajoules, Percentage (%)	CDP Climate Change Information Request CC11.3  GRI G4 Aspect: Energy (EN3)  <b>Additional Source(s):</b> U.S. EPA’s Renewable Fuel Standard
Land Use & Ecological Impacts ■ ■	Description of strategies to manage land use and ecological impacts	Qualitative	n/a	CDP Water Information Request W1.1, W3.2; CDP Forest Information Request F4.1a, F7, F9.1; CDP Climate Change Information Request Food, Beverage and Tobacco FBT1.4  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets  GRI G4 Food Processing Sector Aspect: Biodiversity (EN11 and EN12)  <b>Additional Source(s):</b> The Sustainable Agriculture Initiative; Sysco Sustainable/IPM Program; International Finance Corporation Performance Standard 6
Climate Change Impacts on Crop Yields ■	Amount of crop losses, percentage offset through financial mechanisms	Quantitative	U.S. Dollars (\$), Percentage (%)	CDP Climate Change Information Request CC5 Climate Change Risks  Climate Change Reporting Framework 4.3, 4.4, 4.5, 4.7, 4.11  GRI G4 Aspect: Economic Performance (EC2)  <b>Additional Source(s):</b> USDA Risk Management Agency Federal Crop Insurance Procedures
	Average crop yield and five-year standard deviation per major crop type by major operating region	Quantitative	Metric tons (t)	CDP Forests Information Request F1.3a and F3.1a  <b>Additional Source(s):</b> USDA Risk Management Agency Federal Crop Insurance Procedures
	Identification of principal crops and discussion of risks and opportunities presented by climate change	Discussion & Analysis	n/a	CDP Climate Change Information Request Food, Beverage and Tobacco FBT 1.7; CDP Climate Change Information Request CC5 Climate Change Risks and CC6 Climate Change Opportunities; CDP Forests Information Request F1.3a and F3.1a Climate Change Reporting Framework 4.3, 4.4-4.11  GRI G4 Aspect: Economic Performance (EC2)  SEC Guidance Regarding Disclosure on Climate Change

**Table 3a: Consumption I**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Agricultural Products (cont.)**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Environmental & Social Impacts of Ingredient Supply Chains ■ ■	Percentage of agricultural raw materials sourced from regions with High or Extremely High Baseline Water Stress	Quantitative	Percentage (%) by spend	CDP Water Information Request W3.2d CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets n/a WBCSD Global Water Tool (GWT) CEO Water Mandate – Section 5 Detailed Disclosure <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Description of management strategy for environmental and social risks arising from contract growing and commodity sourcing	Discussion & Analysis	n/a	CDP Water Information Request W1.3, W3.2; CDP Forest Information Request F4.1a, F7, F9.2, F10.3, CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (DMA), GRI G4 Aspect: Supplier Environmental Assessment (EN33)
	Percentage of agricultural raw materials that are certified to a third-party environmental and/or social standard	Quantitative	Percentage (%) by spend	CDP Forest Information Request F9.4 Standards and Targets GRI G4, GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (FP2) <b>Additional Source(s):</b> Roundtable on Sustainable Palm Oil (RSPO); Roundtable on Responsible Soy (RTRS); Rainforest Alliance; Bon Sucro; USDA Organic
Management of Legal & Regulatory Environment ■	Discussion of positions on the regulatory and political environment related to environmental and social factors and description of efforts to manage risks and opportunities presented	Qualitative	n/a	CDP Climate Change Information Request CC2.3 Engagement with Policy Makers; CDP Forest Information Request F1.3a and F10.5 CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets GRI G4, GRI G4 Food Processing Sector Aspect: Public Policy (G4-DMA) <b>Additional Source(s):</b> The Lobbying Disclosure Act of 1995

**Table 3a: Consumption I**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Meat, Poultry & Dairy**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Greenhouse Gas Emissions Management ■ ■	Gross global Scope 1 emissions, percentage covered under a regulatory program	Quantitative	Metric tons CO <sub>2</sub> -e, Percentage (%)	CDP Climate Change Information Request CC8.2 Emissions Data, CC8.5 Data Accuracy  CDSB Framework REQ-04 Sources of environmental impacts  Climate Change Reporting Framework 4.19.1, 4.29  GRI G4 Aspect: Emissions (EN15)  <b>Additional Source(s):</b> WRI/WBCSD Greenhouse Gas Protocol (definitions and calculation methodology) CDP Climate Change Information Request CC3. Targets and Initiatives  CDSB Framework REQ-01 Management’s environmental policies, strategy and targets, REQ-05 Performance and comparative analysis  Climate Change Reporting Framework 4.12  GRI G4 Aspect: Emissions (EN19)  SEC Guidance Regarding Disclosure on Climate Change
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	
Water Withdrawal ■ ■	(1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic Meters (m <sup>3</sup> ), Percentage (%)	CDP Water Information Request W1.2a, 1.2b, 1.2c  CDSB Framework REQ-04 Sources of environmental impacts  GRI G4 Aspect: Water (EN8, EN9, and EN10) WBCSD Global Water Tool (GWT)  CEO Water Mandate – Section 3 Company Water Profile  <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Discussion of water withdrawal risks and description of management strategies and practices to mitigate those risks	Discussion and Analysis	n/a	CDP Water Information Request W3 Water risks, W8 Targets and Initiatives  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets  CEO Water Mandate – Section 5 Detailed Disclosure  <b>Additional Source(s):</b> Alliance for Water Stewardship Standard Version 1.0
Energy Management ■	Operational energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules, Percentage (%)	CDP Climate Change Information Request CC11.2, CC11.3, CC3.1d  Climate Change Reporting Framework 4.31f  GRI G4 Aspect: Energy (EN3)



**Table 3a: Consumption I**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Meat, Poultry & Dairy (cont.)**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Land Use & Ecological Impacts ■ ■	Amount of animal litter and manure generated, percentage managed according to a nutrient management plan	Quantitative	Metric tons (t), Percentage (%)	CDP Climate Change Information Request Food, Beverage and Tobacco FBT1.4 Own Farm(s) pathway; CDP Forests Information Request F8.4, F9.1, F9.6  <b>Additional Source(s):</b> Natural Resources Conservation Service (NRCS) Comprehensive Nutrient Management Plan (CNMP)
	Percentage of pasture and grazing land managed to NRCS Conservation Plan criteria	Quantitative	Percentage by hectares (%)	CDP Climate Change Information Request Food, Beverage and Tobacco FBT1.4 Own farm(s) pathway; CDP Forests Information Request F8.2a, F8.4, F9.1, F9.6  <b>Additional Source(s):</b> Natural Resources Conservation Service (NRCS) Comprehensive Nutrient Management Plan (CNMP)
Environmental & Social Impacts of Animal Supply Chains ■	Percentage of contract producers in regions with High or Extremely High Baseline Water Stress	Quantitative	Percentage by contract value (%)	CDP Water Information Request W3.2d  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets  WBCSD Global Water Tool (GWT)  CEO Water Mandate – Section 5 Detailed Disclosure  <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Discussion of strategy to manage opportunities and risks to livestock supply presented by climate change	Discussion & Analysis	n/a	CDP Climate Change Information Request CC2 Strategy, CC5 Climate Change Risks, CC6 Climate Change Opportunities; CDP Forest Information Request F1.3a and F8.1; CDP Climate Change Information Request Food, Beverage and Tobacco FBT 1.7  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets  GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (DMA), GRI G4 Aspect: Supplier Environmental Assessment (EN33)

**Table 3a: Consumption I**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Meat, Poultry & Dairy (cont.)**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Environmental Risks in Animal Feed Supply Chains ■	Percentage of feed sourced from regions with High or Extremely High Baseline Water Stress	Quantitative	Percentage (%) by spend	CDP Water Information Request W3.2d  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets  WBCSD Global Water Tool (GWT)  CEO Water Mandate – Section 5 Detailed Disclosure  <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Discussion of strategy to manage opportunities and risks to feed sourcing presented by climate change	Discussion & Analysis	n/a	CDP Supply Chain Climate Change Information Request CC2 Strategy, CC5 Climate Change Risks, CC6 Climate Change Opportunities; CDP Forest Information Request F1.3a and F8.1; CDP Climate Change Information Request Food, Beverage and Tobacco FBT 1.7  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets  GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (DMA), GRI G4 Aspect: Supplier Environmental Assessment (EN33)

**Processed Foods**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Water Management ■ ■	(1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic Meters (m <sup>3</sup> ), Percentage (%)	CDP Water Information Request W1.2a, 1.2b, 1.2c  CDSB Framework REQ-04 Sources of environmental impacts  GRI G4 Aspect: Water (EN8, EN9, and EN10)  WBCSD Global Water Tool (GWT)  CEO Water Mandate – Section 3 Company Water Profile  <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Discussion of water management risks and description of management strategies and practices to mitigate those risks	Discussion and Analysis	n/a	CDP Water Information Request W3 Water risks, W8 Targets and Initiatives  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets  CEO Water Mandate – Section 5 Detailed Disclosure  <b>Additional Source(s):</b> Alliance for Water Stewardship Standard Version 1.0
Energy & Fleet Fuel Management ■	Operational energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules, Percentage (%)	CDP Climate Change Information Request CC11.2, CC11.3, CC3.1d  Climate Change Reporting Framework 4.31f  GRI G4 Aspect: Energy (EN3)  <b>Additional Source(s):</b> Green-e Energy National Standard Version 2.5
	Fleet fuel consumed, percentage renewable	Quantitative	Gigajoules, Percentage (%)	CDP Climate Change Information Request CC11.3  GRI G4 Aspect: Energy (EN3)  <b>Additional Source(s):</b> U.S. EPA’s Renewable Fuel Standard

**Table 3a: Consumption I**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Processed Foods (cont.)**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Environmental & Social Impacts of Ingredient Supply Chains ■ ■	Percentage of food ingredients sourced from regions with High or Extremely High Baseline Water Stress	Quantitative	Percentage (%) by spend	CDP Water Information Request W3.2d CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets WBCSD Global Water Tool (GWT) CEO Water Mandate – Section 5 Detailed Disclosure <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Percentage of food ingredients sourced that are certified to third-party environmental and/or social standards, by certification scheme	Quantitative	Percentage (%) by spend	CDP Forest Information Request F9.4 GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (FP2) <b>Additional Source(s):</b> Roundtable on Sustainable Palm Oil (RSPO); Roundtable on Responsible Soy (RTRS); Rainforest Alliance; Bon Sucro; USDA Organic
	List of priority food ingredients and discussion of sourcing risks due to environmental and social considerations	Discussion & Analysis	n/a	CDP Climate Change Information Request CC2 Strategy and CC5 Climate Change Risks; CDP Forests Information Requests 1.3a, F2. Risk assessment, F3 Risks, F8 Policies, F10 Engagement CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (DMA), GRI G4 Aspect: Supplier Environmental Assessment (EN33)

**Non-Alcoholic Beverages**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Water Management ■ ■	(1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic Meters (m <sup>3</sup> ), Percentage (%)	CDP Water Information Request W1.2a, 1.2b, 1.2c CDSB Framework REQ-04 Sources of environmental impacts GRI G4 Aspect: Water (EN8, EN9, and EN10) WBCSD Global Water Tool (GWT) CEO Water Mandate – Section 3 Company Water Profile <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Discussion of water management risks and description of management strategies and practices to mitigate those risks	Discussion and Analysis	n/a	CDP Water Information Request W3 Water risks, W8 Targets and Initiatives CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets CEO Water Mandate – Section 5 Detailed Disclosure <b>Additional Source(s):</b> Alliance for Water Stewardship Standard Version 1.0

**Table 3a: Consumption I**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Non-Alcoholic Beverages (cont.)**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Energy & Fleet Fuel Management 	Operational energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules, Percentage (%)	CDP Climate Change Information Request CC11.2, CC11.3, CC3.1d Climate Change Reporting Framework 4.31.f GRI G4 Aspect: Energy (EN3) <b>Additional Source(s):</b> Green-e Energy National Standard Version 2.5
	Fleet fuel consumed, percentage renewable	Quantitative	Gigajoules, Percentage (%)	CDP Climate Change Information Request CC11.3 GRI G4 Aspect: Energy (EN3) <b>Additional Source(s):</b> U.S. EPA’s Renewable Fuel Standard
Environmental & Social Impacts of Ingredient Supply Chains  	Percentage of beverage ingredients sourced from regions with High or Extremely High Baseline Water Stress	Quantitative	Percentage (%) by spend	CDP Water Information Request W3.2d CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets WBCSD Global Water Tool (GWT) CEO Water Mandate – Section 5 Detailed Disclosure <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Percentage of beverage ingredients sourced that are certified to third-party environmental and/or social standards, by certification scheme	Quantitative	Percentage (%) by spend	CDP Forest Information Request F9.4 GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (FP2) <b>Additional Source(s):</b> Roundtable on Sustainable Palm Oil (RSPO); Roundtable on Responsible Soy (RTRS); Rainforest Alliance; Bon Sucro; USDA Organic
	List of priority beverage ingredients and discussion of sourcing risks due to environmental and social considerations	Discussion & Analysis	n/a	CDP Climate Change Information Request CC2 Strategy and CC5 Climate Change Risks; CDP Forests Information Requests 1.3a, F2. Risk assessment, F3 Risks, F8 Policies, F10 Engagement CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (DMA), GRI G4 Aspect: Supplier Environmental Assessment (EN33)

**Table 3a: Consumption I**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Alcoholic Beverages**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Water Management ■ ■	(1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic Meters (m <sup>3</sup> ), Percentage (%)	CDP Water Information Request W1.2a, 1.2b, 1.2c CDSB Framework REQ-04 Sources of environmental impacts GRI G4 Aspect: Water (EN8, EN9, and EN10) WBCSD Global Water Tool (GWT) CEO Water Mandate – Section 3 Company Water Profile <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Discussion of water management risks and description of management strategies and practices to mitigate those risks	Discussion and Analysis	n/a	CDP Water Information Request W3 Water risks, W8 Targets and Initiatives CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets CEO Water Mandate – Section 5 Detailed Disclosure <b>Additional Source(s):</b> Alliance for Water Stewardship Standard Version 1.0
Energy & Fleet Fuel Management ■	Operational energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules, Percentage (%)	CDP Climate Change Information Request CC11.2, CC11.3, CC3.1d Climate Change Reporting Framework 4.31f GRI G4 Aspect: Energy (EN3) <b>Additional Source(s):</b> Green-e Energy National Standard Version 2.5

**Table 3a: Consumption I**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Alcoholic Beverages (cont.)**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Environmental & Social Impacts of Ingredient Supply Chains ■ ■	Percentage of beverage ingredients sourced from regions with High or Extremely High Baseline Water Stress	Quantitative	Percentage (%) by spend	CDP Water Information Request W3.2d  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets  WBCSD Global Water Tool (GWT)  CEO Water Mandate – Section 5 Detailed Disclosure  <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Percentage of beverage ingredients sourced that are certified to third-party environmental and/or social standards, by certification scheme	Quantitative	Percentage (%) by spend	CDP Forest Information Request F9.4  GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (FP2)  <b>Additional Source(s):</b> Roundtable on Sustainable Palm Oil (RSPO); Roundtable on Responsible Soy (RTRS); Rainforest Alliance; Bon Suco; USDA Organic
	List of priority beverage ingredients and discussion of sourcing risks due to environmental and social considerations	Discussion & Analysis	n/a	CDP Climate Change Information Request CC2 Strategy and CC5 Climate Change Risks; CDP Forests Information Requests 1.3a, F2. Risk assessment, F3 Risks, F8 Policies, F10 Engagement  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets  GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (DMA), GRI G4 Aspect: Supplier Environmental Assessment (EN33)

**Table 3a: Consumption I**

■ Physical Effects   ■ Transition to a Low-Carbon, Resilient Economy   ■ Climate Regulation

**Household & Personal Products**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Water Management ■ ■	(1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic Meters (m <sup>3</sup> ), Percentage (%)	CDP Water Information Request W1.2a, 1.2b, 1.2c  CDSB Framework REQ-04 Sources of environmental impacts  GRI G4 Aspect: Water (EN8, EN9, and EN10)  WBCSD Global Water Tool (GWT)  CEO Water Mandate – Section 3 Company Water Profile  <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Discussion of water management risks and description of management strategies and practices to mitigate those risks	Discussion and Analysis	n/a	CDP Water Information Request W3 Water risks, W8 Targets and Initiatives  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets  CEO Water Mandate – Section 5 Detailed Disclosure  <b>Additional Source(s):</b> Alliance for Water Stewardship Standard Version 1.0
Environmental & Social Impacts of Palm Oil Supply Chain ■ ■	Amount of palm oil sourced, percentage certified through (1) Roundtable on Sustainable Palm Oil (RSPO) Book & Claim and Mass Balance systems and (2) RSPO Identity Preserved and Segregated systems	Quantitative	Metric tons (t), Percentage (%)	CDP Forest Information Request F9.4  GRI G4 Food Processing Sector Aspect: Procurement/Sourcing Practices (FP2)  <b>Additional Source(s):</b> Roundtable on Sustainable Palm Oil (RSPO)

**Table 3b: Consumption II**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Food Retailers & Distributors**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Air Emissions from Refrigeration ■	Gross global Scope 1 emissions from refrigerants	Quantitative	Metric tons CO <sub>2</sub> -e	CDP Climate Change Information Request CC8.2 Emissions Data, CC8.5 Data Accuracy  CDSB Framework REQ-04 Sources of environmental impacts  Climate Change Reporting Framework 4.19.1, 4.29  GRI G4 Aspect: Emissions (EN15)  <b>Additional Source(s):</b> WRI/WBCSD Greenhouse Gas Protocol (definitions and calculation methodology)
	Average refrigerant emissions rate	Quantitative	Percentage (%)	EPA Green Chill Store Certification Program Guidance
Energy & Fleet Fuel Management ■	Operational energy consumed, percentage grid electricity, percentage renewable energy	Quantitative	Gigajoules, Percentage (%)	CDP Climate Change Information Request CC11.2, CC11.3, CC3.1d  Climate Change Reporting Framework 4.31.f  GRI G4 Aspect: Energy (EN3)
	Fleet fuel consumed, percentage renewable	Quantitative	Gigajoules, Percentage (%)	CDP Climate Change Information Request CC11.3, CC3.1d  Climate Change Reporting Framework 4.31.f  GRI G4 Aspect: Energy (EN3)
Management of Environmental & Social Impacts in the Supply Chain ■ ■	Discussion of strategy to manage environmental and social risks within the supply chain	Discussion and Analysis	n/a	CDP Climate Change Information Request CC2 Risk Management Approach, CC5.1 Climate Change Risks  CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management's environmental policies, strategy and targets  GRI G4 Aspect: Supplier Environmental Assessment and Supplier Human Rights Assessment (EN33 and HR10)

**Drug Retailers & Convenience Stores**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Energy Management in Retail ■	Total energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules (GJ), percentage (%)	CDP Climate Change Information Request CC11.2, CC11.3, CC3.1d  Climate Change Reporting Framework 4.31.f  GRI G4 Aspect: Energy (EN3)



**Table 3b: Consumption II**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Multiline and Specialty Retailers & Distributors**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Energy Management in Retail & Distribution ■	Total energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules (GJ), percentage (%)	CDP Climate Change Information Request CC11.2, CC11.3, CC3.1d Climate Change Reporting Framework 4.31.f GRI G4 Aspect: Energy (EN3)

**Apparel, Accessories & Footwear**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Raw Materials Sourcing & Innovation ■ ■	Top five raw materials used in products, by weight  Note to metric—Disclosure shall include a discussion of environmental and social risks associated with sourcing each of the top five raw materials used in products.	Quantitative	Metric tons (t)	CDP Climate Change Information Request CC2 Risk Management Approach, CC5.1 Climate Change Risks CDSB Framework REQ-02 Risks and Opportunities, REQ-01 Management’s environmental policies, strategy and targets GRI G4 Aspect: Materials (EN1)


**E-Commerce**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Energy & Water Footprint of Hardware Infrastructure ■ ■	(1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic Meters (m <sup>3</sup> ), Percentage (%)	CDP Water Information Request W1.2a, 1.2b, 1.2c CDSB Framework REQ-04 Sources of environmental impacts GRI G4 Aspect: Water (EN8, EN9, and EN10) WBCSD Global Water Tool (GWT) CEO Water Mandate – Section 3 Company Water Profile <b>Additional Source(s):</b> WRI Aqueduct (provides definitions of water stress); Alliance for Water Stewardship Standard Version 1.0
	Total energy consumed, percentage grid electricity, percentage renewable energy	Quantitative	Gigajoules (GJ), Percentage (%)	CDP Climate Change Information Request CC11.2, CC11.3, CC3.1d Climate Change Reporting Framework 4.31.f GRI G4 Aspect: Energy (EN3)
	Description of the integration of environmental considerations into strategic planning for data center needs	Discussion and Analysis	n/a	REQ-01 Management’s environmental policies, strategy and targets


**Table 3b: Consumption II**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**E-Commerce (cont.)**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Logistics & Packaging Efficiency 	Total greenhouse gas (GHG) footprint of product shipments	Quantitative	Gigajoules (GJ), percentage (%)	CDP Climate Change Information Request CC14 Scope 3 Emissions  CDSB Framework REQ-04 Sources of environmental impacts; Climate Change Reporting Framework 4.27  GRI G4 Aspect: Emissions (EN17)  European Standard EN 16258:2012
	Description of strategies to reduce the environmental impact of product delivery	Discussion and Analysis	n/a	CDP Climate Change Information Request CC14.4a, 14.4b, 14.4c, 14.4d  CDSB Framework REQ-02 Risks and opportunities, REQ-05 Performance and comparative analysis  GRI G4 Aspect: Transport (EN30)

**Appliance Manufacturing**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Product Lifecycle Environmental Impacts 	Percentage of eligible products certified to a U.S. EPA ENERGY STAR® standard	Quantitative	Percentage (%) by revenue	CDP Climate Change Information Request CC3.2  CDSB Framework REQ-02 Risks and opportunities  Climate Change Reporting Framework 4.10  GRI G4 Aspect: Energy (EN7)  U.S. EPA ENERGY STAR®
	Percentage of eligible products certified to an Association of Home Appliance Manufacturers (AHAM) sustainability standard	Quantitative	Percentage (%) by revenue	CDP Climate Change Information Request CC3.2  CDSB Framework REQ-02 Risks and opportunities  Climate Change Reporting Framework 4.10  GRI G4 Aspect: Energy (EN7)  Association of Home Appliance Manufacturers (AHAM) sustainability standards

**Table 3b: Consumption II**

■ Physical Effects    ■ Transition to a Low-Carbon, Resilient Economy    ■ Climate Regulation

**Building Products & Furnishings**

Topic and Climate Risk	Metric	Category	Unit of Measure	Alignment / Source
Energy Management in Manufacturing ■	Total energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules (GJ), Percentage (%)	CDP Climate Change Information Request CC11.2, CC11.3, CC3.1d Climate Change Reporting Framework 4.31.f GRI G4 Aspect: Energy (EN3)
Product Lifecycle Environmental Impacts ■	Discussion of efforts to manage product lifecycle impacts and meet demand for sustainable products	Discussion and Analysis	n/a	CDP Climate Change Information Request CC3.2 CDSB Framework REQ-02 Risks and opportunities Climate Change Reporting Framework 4.10 GRI G4 Aspect: Products and Services (EN27) <b>Additional Source(s):</b> ISO 14040; ISO14044; ISO 14025; NSF/ANSI 140: Carpet, NSF/ANSI 332; NSF/ANSI 336; NSF/ANSI 342; NSF/ANSI 347; ANSI/NSC 373; NSF P391; ANSI A138.1-2011; ANSI/BIFMA e3 level®
Wood Sourcing ■	Total wood fiber purchased, (1) percentage from third-party certified forestlands, by standard, and (2) percentage meeting other fiber sourcing standards, by standard	Quantitative	Metric tons (t), Percentage (%) by weight	CDP Forest Information Request F9.4, F9.6 <b>Additional Source(s):</b> Forestry Stewardship Council certifications; Sustainable Forestry Initiative certifications; Programme for the Endorsement of Forest certifications