



SUSTAINABILITY ACCOUNTING STANDARD
RENEWABLE RESOURCES & ALTERNATIVE ENERGY SECTOR

PULP & PAPER PRODUCTS

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #RR0202
Prepared by the
Sustainability Accounting Standards Board®

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Exposure Draft Standard for Public Comment

PULP & PAPER PRODUCTS

Sustainability Accounting Standard

About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly listed corporations in the U.S. in disclosing material sustainability information for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization. Through 2016, SASB is developing standards for more than 80 industries in 10 sectors.

About this Standard

This Standard is an exposure draft presented for public review and comment. This version is not intended for implementation.

The public comment period lasts for 90 days, beginning on Tuesday, July 7th, 2015, and ending on Monday, October 5th, 2015. The Standard is subject to change thereafter.

For instructions on providing comments to SASB, [please click here](#).

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Table of Contents

- Introduction 1**
 - Purpose & Structure 1
 - Industry Description 1
 - Guidance for Disclosure of Sustainability Topics in SEC filings 2
 - Guidance on Accounting of Sustainability Topics 4
 - Users of the SASB Standards 4
 - Scope of Disclosure 5
 - Reporting Format 5
 - Timing 7
 - Limitations 7
 - Forward-looking Statements 7

- Sustainability Disclosure Topics & Accounting Metrics 8**
 - Greenhouse Gas Emissions 9
 - Air Quality 13
 - Energy Management 15
 - Water Management 17
 - Wood & Fiber Sourcing & Recovery 21

INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for the Pulp & Paper Products industry.

SASB Sustainability Accounting Standards are comprised of **(1) disclosure guidance and (2) accounting standards on sustainability topics** for use by U.S. and foreign public companies in their annual filings (Form 10-K or 20-F) with the U.S. Securities and Exchange Commission (SEC). To the extent relevant, SASB Standards may also be applicable to other periodic mandatory filings with the SEC, such as the Form 10-Q, Form S-1, and Form 8-K.

SASB Standards identify sustainability topics at an industry level, which may constitute material information—depending on a company’s specific operating context—for a company within that industry. SASB Standards are intended to provide guidance to company management, which is ultimately responsible for determining which information is material and should therefore be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB Standards provide companies with standardized sustainability metrics designed to communicate performance on industry level sustainability topics. When making disclosure on sustainability topics, companies can use SASB Standards to help ensure that disclosure is standardized and therefore decision-useful, relevant, comparable, and complete.

SASB Standards are intended to constitute “suitable criteria” as defined by AT 101.23 - 32¹ and referenced in AT 701², as having the following attributes:

- *Objectivity*—Criteria should be free from bias.
- *Measurability*—Criteria should permit reasonably consistent measurements, qualitative or quantitative, of subject matter.
- *Completeness*—Criteria should be sufficiently complete so that those relevant factors that would alter a conclusion about subject matter are not omitted.
- *Relevance*—Criteria should be relevant to the subject matter.

Industry Description

The Pulp & Paper Products industry consists of companies that produce a range of wood pulp and paper products including wood pulp fiber, groundwood paper, office paper, newsprint, and paper for industrial applications. Companies in the industry typically function as business-to-business entities and may have international operations. While some companies may own or operate timberlands, these activities are outside the scope of SASB’s Pulp & Paper Products standard; forestry and logging activities are covered by SASB’s Forestry & Logging standard.

¹ http://pcaobus.org/Standards/Attestation/Pages/AT101.aspx#at_101_fn7

² <http://pcaobus.org/Standards/Attestation/Pages/AT701.aspx>

Guidance for Disclosure of Sustainability Topics in SEC Filings

1. Industry-Level Sustainability Topics

For the Pulp & Paper Products industry, SASB has identified the following sustainability disclosure topics:

- Greenhouse Gas Emissions
- Air Quality
- Energy Management
- Water Management
- Wood & Fiber Sourcing & Recovery

2. Company-Level Determination and Disclosure of Material Sustainability Topics

Sustainability disclosures are governed by the same laws and regulations that govern disclosures by securities issuers generally. According to the U.S. Supreme Court, a fact is material if, in the event such fact is omitted from a particular disclosure, there is “a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the ‘total mix’ of the information made available.”^{3, 4}

SASB has attempted to identify those sustainability topics that are reasonably likely to have a material effect on the financial condition or operating performance of companies within each SICs industry. SASB recognizes, however, that each company is ultimately responsible for determining what information should be disclosed within the context of Regulation S-K and other guidance.

Regulation S-K, which sets forth certain disclosure requirements associated with Form 10-K and other SEC filings, requires companies, among other things, to describe in the Management’s Discussion and Analysis of Financial Condition and Results of Operations (MD&A) section of Form 10-K “any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. If the registrant knows of events that will cause a material change in the relationship between costs and revenues (such as known future increases in costs of labor or materials or price increases or inventory adjustments), the change in the relationship shall be disclosed.”

Furthermore, Instructions to Item 303 state that the MD&A “shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition.”²

The SEC has provided guidance for companies to use in determining whether a trend or uncertainty should be disclosed. The two-part assessment prescribed by the SEC, based on probability and magnitude, can be applied to the topics included within this standard:

- First, a company is not required to make disclosure about a known trend or uncertainty if its management determines that such trend or uncertainty is not reasonably likely to occur.

³ TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).

⁴ C.F.R. 229.303(item 303)(a)(3)(ii).

- Second, if a company’s management cannot make a reasonable determination of the likelihood of an event or uncertainty, then disclosure is required unless management determines that a material effect on the registrant’s financial condition or results of operation is not reasonably likely to occur.

3. Sustainability Accounting Standard Disclosures in Form 10-K

a. Management’s Discussion and Analysis

For purposes of comparability and usability, companies should consider making disclosure on sustainability topics in the MD&A, in a sub-section titled **“Sustainability Accounting Standards Disclosures.”**⁵

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, it may be relevant for companies to disclose sustainability information in other sections of Form 10-K, including, but not limited to:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Item 101(c)(1)(xii) expressly requires disclosure regarding certain costs of complying with environmental laws:

Appropriate disclosure also shall be made as to the material effects that compliance with Federal, State and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the capital expenditures, earnings and competitive position of the registrant and its subsidiaries.

- **Legal proceedings**—Item 103 of Regulation S-K requires companies to describe briefly any material pending or contemplated legal proceedings. Instructions to Item 103 provide specific disclosure requirements for administrative or judicial proceedings arising from laws and regulations that target discharge of materials into the environment or that are primarily for the purpose of protecting the environment.
- **Risk factors**—Item 503(c) of Regulation S-K requires filing companies to provide a discussion of the most significant factors that make an investment in the registrant speculative or risky, clearly stating the risk and specifying how a particular risk affects the particular filing company.

c. Rule 12b-20

Securities Act Rule 408 and Exchange Act Rule 12b-20 require a registrant to disclose, in addition to the information expressly required by law or regulation, “such further material information, if any, as may be necessary to make the required statements, in light of the circumstances under which they are made, not misleading.”

More detailed guidance on disclosure of material sustainability topics can be found in the **SASB Conceptual Framework**, available for download via <http://www.sasb.org/approach/conceptual-framework/>.

⁵ [SEC \[Release Nos. 33-8056; 34-45321; FR-61\] Commission Statement about Management’s Discussion and Analysis of Financial Condition and Results of Operations](#): “We also want to remind registrants that disclosure must be both useful and understandable. That is, management should provide the most relevant information and provide it using language and formats that investors can be expected to understand. Registrants should be aware also that investors will often find information relating to a particular matter more meaningful if it is disclosed in a single location, rather than presented in a fragmented manner throughout the filing.”

Guidance on Accounting for Sustainability Topics

For each sustainability topic included in the Pulp & Paper Products industry Sustainability Accounting Standard, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when preparing disclosures on the sustainability topics identified herein;

As appropriate—and consistent with Rule 12b-20⁶—when disclosing a sustainability topic identified by this Standard, companies should consider including a narrative description of any material factors necessary to ensure completeness, accuracy, and comparability of the data reported. Where not addressed by the specific accounting metrics, but relevant, the registrant should discuss the following, related to the topic:

- The registrant’s **strategic approach** to managing performance on material sustainability issues;
- The registrant’s **relative performance** with respect to its peers;
- The **degree of control** the registrant has;
- Any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- Data for the registrant’s **last three completed fiscal years** (when available).

SASB recommends that registrants use SASB Standards specific to their primary industry as identified in the [Sustainable Industry Classification System \(SICS™\)](#). If a registrant generates significant revenue from multiple industries, SASB recommends that it also consider sustainability topics that SASB has identified for those industries and disclose the associated SASB accounting metrics.

In disclosing to SASB Standards, it is expected that registrants disclose with the same level of rigor, accuracy, and responsibility as they apply to all other information contained in their SEC filings.

Users of the SASB Standards

The SASB Standards are intended to provide guidance for companies that engage in public offerings of securities registered under the Securities Act of 1933 (the Securities Act) and those that issue securities registered under the Securities Exchange Act of 1934 (the Exchange Act),⁷ for use in SEC filings, including, without limitation, annual reports on Form 10-K (Form 20-F for foreign issuers), quarterly reports on Form 10-Q, current reports on Form 8-K, and registration statements on Forms S-1 and S-3. Disclosure with respect to the SASB Standards is not required or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

⁶ SEC Rule 12b-20: “In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made, not misleading.”

⁷ Registration under the Securities Exchange Act of 1934 is required (1) for securities to be listed on a national securities exchange such as the New York Stock Exchange, the NYSE Amex, and the NASDAQ Stock Market or (2) if (A) the securities are equity securities and are held by more than 2,000 persons (or 500 persons who are not accredited investors) and (B) the company has more than \$10 million in assets.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities that are consolidated for financial reporting purposes as defined by accounting principles generally accepted in the United States for consistency with other accompanying information within SEC filings⁸
- That for consolidated entities, disclosures be made, and accounting metrics calculated, for the whole entity, regardless of the size of the minority interest; and
- That information from unconsolidated entities not be included in the computation of SASB accounting metrics. A registrant should disclose, however, information about unconsolidated entities to the extent that the registrant considers the information necessary for investors to understand the effect of sustainability topics on the company's financial condition or operating performance (typically, this disclosure would be limited to risks and opportunities associated with these entities).

Reporting Format

Use of Financial Data

In instances where accounting metrics, activity metrics, and technical protocols in this standard incorporate financial data (e.g., revenues, cost of sales, expenses recorded and disclosed for fines, etc.), such financial data shall be prepared in accordance with the accounting principles generally accepted in the United States of America ("US GAAP") and be consistent with the corresponding financial data reported within the registrant's SEC filings. Should accounting metrics, activity metrics and technical protocols in this standard incorporate disclosure of financial data that is not prepared in accordance with US GAAP, the registrant shall disclose such information in accordance with the SEC Regulation G.

Activity Metrics and Normalization

SASB recognizes that normalizing accounting metrics is important for the analysis of SASB disclosures.

SASB recommends that a registrant disclose any basic business data that may assist in the accurate evaluation and comparability of disclosure, to the extent that they are not already disclosed in the Form 10-K (e.g., revenue, EBITDA, etc.).

Such data—termed "activity metrics"—may include high-level business data such as total number of employees, quantity of products produced or services provided, number of facilities, or number of customers. It may also include industry-specific data such as plant capacity utilization (e.g., for specialty chemical companies), number of transactions (e.g., for Internet media and services companies), hospital bed days (e.g., for health care delivery companies), or proven and probable reserves (e.g., for oil and gas exploration and production companies).

⁸ See US GAAP consolidation rules (Section 810).

Activity metrics disclosed should:

- Convey contextual information that would not otherwise be apparent from SASB accounting metrics.
- Be deemed generally useful for an investor relying on SASB accounting metrics in performing their own calculations and creating their own ratios.
- Be explained and consistently disclosed from period to period to the extent they continue to be relevant. However, a decision to make a voluntary disclosure in one period does not obligate a continuation of that disclosure if it is no longer relevant or if a better metric becomes available.⁹

Where relevant, SASB recommends specific activity metrics that—at a minimum—should accompany SASB accounting metric disclosures.

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Pulp production	Quantitative	Air-dried metric tons (t)	RR0202-A
Paper production	Quantitative	Air-dried metric tons (t)	RR0202-B
Total wood fiber purchased ¹⁰	Quantitative	Metric tons (t)	RR0202-C

Units of Measure

Unless specified, disclosures should be reported in International System of Units (SI units).

Uncertainty

SASB recognizes that there may be inherent uncertainty when disclosing certain sustainability data and information. This may be related to variables such as the reliance on data from third-party reporting systems and technologies, or the unpredictable nature of climate events. Where uncertainty around a particular disclosure exists, SASB recommends that the registrant should consider discussing its nature and likelihood.

Estimates

SASB recognizes that scientifically-based estimates, such as the reliance on certain conversion factors or the exclusion of *de minimis* values, may occur for certain quantitative disclosures. Where appropriate, SASB does not discourage the use of such estimates. When using an estimate for a particular disclosure, SASB expects that the registrant discuss its nature and substantiate its basis.

⁹ *Improving Business Reporting: Insights into Enhancing Voluntary Disclosures*, FASB Business Reporting Research Project, January 29, 2001.

¹⁰ Note to **RR0202-C**—The scope of wood fiber-based raw materials includes all inputs that are processed to be sold as a finished good, including recycled raw materials, virgin raw materials, and goods that will be consumed directly in the production process, excluding biomass for energy use.

Timing

Unless otherwise specified, disclosure shall be for the registrant's fiscal year.

Limitations

There is no guarantee that SASB Standards address all sustainability impacts or opportunities associated with a sector, industry, or company, and therefore, a company must determine for itself the topics—sustainability-related or otherwise—that warrant discussion in its SEC filings.

Disclosure under SASB Standards is voluntary. It is not intended to replace any legal or regulatory requirements that may be applicable to user operations. Where such laws or regulations address legal or regulatory topics, disclosure under SASB Standards is not meant to supersede those requirements. Disclosure according to SASB Standards shall not be construed as demonstration of compliance with any law, regulation, or other requirement.

SASB Standards are intended to be aligned with the principles of materiality enforced by the SEC. However, SASB is not affiliated with or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Forward-looking Statements

Disclosures on sustainability topics can involve discussion of future trends and uncertainties related to the registrant's operations and financial condition, including those influenced by external variables (e.g., environmental, social, regulatory, and political). Companies making such disclosures should familiarize themselves with the safe harbor provisions of Section 27A of the Securities Act and Section 21E of the Exchange Act, which preclude civil liability for material misstatements or omissions in such statements if the registrant takes certain steps, including, among other things, identifying the disclosure as "forward-looking" and accompanying such disclosure with "meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statements."

The following sections contain the disclosure guidance associated with each accounting metric such as guidance on definitions, scope, accounting, compilation, and presentation.

The term "shall" is used throughout this document to indicate those elements that reflect requirements of the Standard. The terms "should" and "may" are used to indicate guidance, which, although not required, provides a recommended means of disclosure.

Table 1. Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions	Gross global Scope 1 emissions	Quantitative	Metric tons (t) CO ₂ -e	RR0202-01
	Biogenic carbon dioxide emissions ¹¹	Quantitative	Metric tons (t) CO ₂ -e	RR0202-02
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emission-reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	RR0202-03
Air Quality	Air emissions for the following pollutants: NO _x (excluding N ₂ O), SO _x , volatile organic compounds (VOCs), particulate matter (PM), and hazardous air pollutants (HAPs)	Quantitative	Metric tons (t)	RR0202-04
	Number of incidents of non-compliance with air quality permits, standards, and regulations	Quantitative	Number	RR0202-05
Energy Management	Total energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules (GJ), Percentage (%)	RR0202-06
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 ³), Percentage (%)	RR0202-07
	Discussion of water management risks and description of management strategies and practices to mitigate those risks	Discussion and Analysis	n/a	RR0202-08
	Number of incidents of non-compliance with water quality permits, standards, and regulations	Quantitative	Number	RR0202-09
Wood & Fiber Sourcing & Recovery	Percentage of wood fiber purchased (1) from third-party certified forestlands, by standard, and (2) percentage meeting other fiber sourcing standards, by standard	Quantitative	Percentage (%) by weight	RR0202-10
	Amount of recycled and recovered fiber procured ¹²	Quantitative	Metric tons (t)	RR0202-11
	Discussion of strategy to manage opportunities and risks to wood and fiber sourcing presented by climate change	Discussion and Analysis	n/a	RR0202-12

¹¹ Note to **RR0202-02**—The registrant shall discuss the implications of its biogenic emissions with respect to the overall carbon cycle, including whether its biogenic CO₂ emissions are carbon neutral.

¹² Note to **RR0202-11**—The registrant shall discuss any environmental lifecycle tradeoffs between use of recycled and recovered fiber versus virgin fiber in its products, and how these assessments are incorporated into wood fiber-sourcing decisions.

Greenhouse Gas Emissions

Description

The Pulp & Paper Products industry generates significant direct greenhouse gas (GHG) emissions, contributing to climate change and creating additional regulatory risks for companies due to climate change mitigation policies. Specifically, emissions-reduction regulations can significantly increase companies' costs and capital expenditures. Direct greenhouse gases are produced by the combustion of fossil fuels and biomass in stationary and mobile internal combustion engines, cogeneration boilers, and other processing equipment. Cogeneration is commonly used to improve energy efficiency on-site. Companies in this industry typically utilize significant amounts of biomass for their energy needs; such biomass may be sourced from residuals generated during operations. GHG emissions from the use of biomass are generally not covered by regulatory regimes, as biomass is considered carbon neutral. The use of biomass can therefore largely reduce the costs associated with purchasing fossil fuels, as well as mitigate regulatory risks under the current guidelines. Regulatory authorities such as the U.S. Environmental Protection Agency, however, are currently assessing the role of biogenic emissions from stationary sources, creating uncertainty about the scope of future GHG regulations. The relative size of the Pulp & Paper Products industry's biogenic emissions suggests that this is a serious consideration and must be managed carefully. In the event that the neutrality consideration for biomass emissions were to change in the future, this could result in additional emissions reporting, mitigation, or offset obligations. Reducing GHG emissions through improved energy efficiency, the use of energy sources with lower lifecycle emissions relative to fossil fuels, or process advances can lower costs and protect companies from further regulations that limit or put a price on carbon emissions.

Accounting Metrics

RR0202-01. Gross global Scope 1 emissions

.01 The registrant shall disclose gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the six GHGs covered under the Kyoto Protocol (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride).

- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalents (CO₂-e), calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for GWP factors is the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (2013).
- Gross emissions are GHGs emitted to the atmosphere before accounting for any GHG reduction activities, offsets, or other adjustments for activities in the reporting period that have reduced or compensated for emissions.
- Disclosure corresponds to section CC8.2 of the Carbon Disclosure Project (CDP) Questionnaire (2015) and REQ-11 of the Climate Disclosure Standards Board (CDSB) *Climate Change Reporting Framework* (CCRF) (2015).

.02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) in [The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard](#), Revised Edition, March 2004 (hereafter, the "GHG Protocol").

- These emissions include direct emissions of GHGs from stationary or mobile sources that include, but are not limited to, equipment, production facilities, office buildings, and transportation (i.e., marine, road, or rail).
- .03 GHG emission data shall be consolidated according to the approach with which the registrant consolidates its financial reporting data, which is generally aligned with:
- The Financial Control approach defined by the GHG Protocol and referenced by the [CDP Guidance for companies reporting on climate change on behalf of investors & supply chain members 2013](#) (hereafter, the “CDP Guidance”).
 - The approach detailed in REQ-1, “Organizational boundary setting for GHG emissions reporting,” of the CDSB CCRF (2015).
- .04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the CDP Guidance.
- The registrant shall consider the CDP Guidance as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.
- .05 The registrant should discuss any change in its emissions from the previous fiscal year, such as if the change was due to emissions reductions, divestment, acquisition, mergers, changes in output, and/or changes in calculation methodology.
- .06 In the case that current reporting of GHG emissions to the CDP or other entity (e.g., a national regulatory disclosure program) differs in terms of the scope and consolidation approach used, the registrant may disclose those emissions. However, primary disclosure shall be according to the guidelines described above.
- .07 The registrant should discuss the calculation methodology for its emissions disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.
- .08 The registrant should consult the most recent version of each document referenced in this standard at the time disclosure occurs.

RR0202-02. Biogenic carbon dioxide emissions

- .09 The registrant shall disclose its carbon dioxide (CO₂) emissions (i.e., emissions from the combustion of biomass), where:
- Biogenic CO₂ emissions are defined by the U.S. Environmental Protection Agency (EPA) as CO₂ emissions related to the natural carbon cycle, as well as those resulting from the combustion, harvest, digestion, fermentation, decomposition, or processing of biologically based materials, where:
 - The carbon cycle is defined as the flow of carbon in various forms through the atmosphere, ocean, terrestrial biosphere, and lithosphere.

- Biologically based materials (or “biogenic materials”) are defined as non-fossilized and biodegradable organic materials originating from modern or contemporarily grown plants, animals, or microorganisms (including products, by-products, residues, and wastes from agriculture, forestry, and related industries, as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material) and excluding materials such as peat, coal, petroleum, natural gas, and other products that are derived from biogenic materials but are considered non-renewable during the time frame relevant to policymaking.

.10 Examples of biogenic CO₂ emissions include:

- CO₂ derived from combustion of biological material, including forest-derived and agriculture-derived feedstocks
- CO₂ from the combustion of biogas collected through biological decomposition of waste in landfills, wastewater treatment, or manure-management processes
- CO₂ from combustion of the biological fraction of municipal solid waste or biosolids

.11 The registrant shall calculate and disclose its biogenic CO₂ emissions using the biogenic assessment factor (BAF) equation and methodology outlined in sections 2.1 through 2.7, “Biogenic Assessment Factor Equation”, of the U.S. EPA’s [Framework for Assessing Biogenic CO₂ Emissions from Stationary Sources](#).

Note to **RR0202-02**

.12 The registrant shall discuss the implications of its biogenic emissions with respect to the overall carbon cycle, including whether its biogenic CO₂ emissions are carbon neutral, based on the considerations outlined by the EPA’s [Framework for Assessing Biogenic CO₂ Emissions from Stationary Sources](#) and the WRI/WBCSD GHG Protocol.

.13 Relevant discussion topics include, but are not limited to:

- The carbon flux of the forestlands where the biomass originated
- The type of biomass used
- The source(s) of the biomass
- The area of forestlands used to grow the biomass
- The percentage of the biomass burned by the registrant (by weight) that was cut on land not owned by the registrant
- Whether the biomass was grown, harvested, and combusted in a carbon neutral manner

RR0202-03. Description of long-term and short-term strategy or plan to manage Scope 1 emissions, including emission-reduction targets and an analysis of performance against those targets

.14 The registrant shall discuss the following, where relevant:

- The scope, such as whether strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources;
- Whether strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., E.U. ETS, RGGI, WCI, etc.), including regional, national, international, or sectoral programs; and
- The activities and investments required to achieve the plans, and any risks or limiting factors that might affect achievement of the plans and/or targets.

.15 For emission-reduction targets, the registrant shall disclose:

- The percentage of emissions within the scope of the reduction plan;
- The percentage reduction from the base year;
 - The base year is the first year against which emissions are evaluated toward the achievement of the target.
- Whether the target is absolute or intensity based, and the metric denominator if it is an intensity-based target;
- The timelines for the reduction activity, including the start year, the target year, and the base year. Disclosure shall be limited to activities that were ongoing (active) or reached completion during the fiscal year; and
- The mechanism(s) for achieving the target, such as energy-efficiency efforts, energy source diversification, carbon capture and storage, etc.

.16 Where necessary, the registrant shall discuss any circumstances in which the target base year emissions have been, or may be, recalculated retrospectively or where the target base year has been reset.

.17 Disclosure corresponds with:

- CDSB CCRF (2015) REQ-9, "Management actions."
- CDP questionnaire (2015) CC3, "Targets and Initiatives."

Air Quality

Description

In addition to emitting GHGs, pulp and paper mills emit regulated air emissions, including sulfur dioxide, particulate matter, chlorine dioxide, methanol, ammonia, and acetaldehyde, which are linked with significant human health and environmental impacts. The sources of emissions include cogeneration fuel boilers, pulp and paper pressure chambers, wood chip pulping, pulping chemical recovery, and process engines. While emissions of hazardous substances from the industry have declined considerably in recent years, it is still among the largest industrial emitters of air toxics. Because of the industry's high emissions levels, air pollution abatement expenditures can be significant, while increasingly stringent air-quality regulations raise the likelihood of higher costs in the future. Noncompliance with emissions regulations can result in regulatory fines and may require the installation of costly emissions-reduction equipment. Therefore, companies that can cost-effectively reduce harmful air emissions could improve operational efficiency, benefit from a lower cost structure, and decrease regulatory risk.

Accounting Metrics

RR0202-04. Air emissions for the following pollutants: NO_x (excluding N₂O), SO_x, volatile organic compounds (VOCs), particulate matter (PM), and hazardous air pollutants (HAPs)

.18 The registrant shall disclose its emissions of air pollutants (in metric tons) that are released to the atmosphere as a result of its activities:

- Direct air emissions from stationary or mobile sources that include, but are not limited to, production facilities, office buildings, marine vessels transporting products, and truck fleets.

.19 The registrant shall disclose emissions released to the atmosphere by emission type. Substances include:

- Oxides of nitrogen (including NO and NO₂ and excluding N₂O) reported as NO_x.
- Oxides of sulfur (SO₂ and SO₃) reported as SO_x.
- Nonmethane volatile organic compounds (VOCs), defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and methane, that participates in atmospheric photochemical reactions, except those designated by the EPA as having negligible photochemical reactivity.
 - Where regional and national definitions supersede EPA regulations, such as EC Directive 1999/13/EC and Schedule 1 of the Canadian Environmental Protection Act 1999, the registrant may refer to the relevant regulations on VOCs.
- Particulate matter (PM), reported as the sum of PM₁₀ and PM_{2.5}, or all particulates less than 10 micrometers in diameter.
- Hazardous air pollutants (HAPs), defined by the EPA as those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects.

- .20 This scope does not include CO₂, CH₄, and N₂O, which are disclosed in RR0202-01 as Scope 1 GHG emissions.
- .21 Air emissions data shall be consolidated according to the approach with which the registrant consolidates its financial reporting data, which is aligned with the consolidation approach used for RR0202-01.
- .22 The registrant should discuss the calculation methodology for its emissions disclosure, such as whether data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

RT0202-05. Number of incidents of non-compliance with air quality permits, standards, and regulations

- .23 The registrant shall disclose the total number of instances of non-compliance, including violations of a technology-based standard and exceedances of a quality-based standard.
- .24 The scope of disclosure includes incidents governed by federal, state, and local statutory permits and regulations including, but not limited to, the Clean Air Act and other state or local air quality legislation.
- .25 An incident of non-compliance shall be disclosed regardless of whether it resulted in an enforcement action (e.g., fine, warning letter, etc.).
- .26 Violations, regardless of their measurement methodology or frequency, shall be disclosed. These include:
- For continuous emissions, limitations, standards, and prohibitions that are generally expressed as maximum daily, weekly, and monthly averages.
 - For non-continuous emissions, limitations that are generally expressed in terms of frequency, total mass, maximum rate of discharge, and mass or concentrations of specified pollutants.
 - False or inaccurate reporting.
 - Failure to obtain permits.

Energy Management

Description

Pulp and paper manufacturing is energy-intensive, and energy can account for a significant share of operating costs. In most facilities, energy is derived from the direct combustion of biomass and fossil fuels (leading to the regulatory risks covered under the disclosure topic Greenhouse Gas Emissions) and purchased from the electrical grid. The price volatility of fossil fuels and conventional grid electricity can increase as a result of evolving climate change regulations and new incentives for energy efficiency and renewable energy, among other factors, while alternative energy sources become cost-competitive. Decisions regarding generating electricity on-site versus sourcing it from the grid, as well as the use of alternative and biomass energy, can create trade-offs related to the energy supply's cost and reliability for operations and the extent of the regulatory risk from Scope 1 emissions. In this context, the potential regulatory consequences of using biomass energy must be considered. The manner in which a company manages its energy efficiency, its reliance on different types of energy and the associated sustainability risks, and its ability to access alternative energy sources is likely to significantly impact its financial performance.

Accounting Metrics

RR0202-06. Total energy consumed, percentage grid electricity, percentage from renewables

- .27 The registrant shall disclose total energy consumption from all sources as an aggregate figure in gigajoules or their multiples.
- The scope includes energy purchased from sources external to the organization or produced by the organization itself (self-generated).
 - The scope includes only energy consumed by entities owned or controlled by the organization.
 - The scope includes energy from all sources, including direct fuel usage, purchased electricity, and heating, cooling, and steam energy.
- .28 In calculating energy consumption from fuels and biofuels, the registrant shall use higher heating values (HHV), also known as gross calorific values (GCV), which are directly measured or taken from the Intergovernmental Panel on Climate Change (IPCC), the U.S. Department of Energy (DOE), or the U.S. Energy Information Administration (EIA).
- .29 The registrant shall disclose purchased grid electricity consumption as a percentage of its total energy consumption.
- .30 The registrant shall disclose renewable energy consumption as a percentage of its total energy consumption.

.31 The scope of renewable energy includes renewable fuel the registrant consumes and renewable energy the registrant directly produces, purchases through a renewable power purchase agreement (PPA) that explicitly includes renewable energy certificates (RECs), or for which Green-e Energy Certified RECs are paired with grid electricity.

- For any renewable electricity generated on-site, any RECs must be retained (i.e., not sold) and retired on behalf of the registrant in order for the registrant to claim them as renewable energy.
- For renewable PPAs, the agreement must explicitly include and convey that RECs be retained and retired on behalf of the registrant in order for the registrant to claim them as renewable energy.
- The renewable portion of the electricity grid mix that is outside of the control or influence of the registrant is excluded from disclosure.
- Renewable energy is defined as energy from sources that are replenished at a rate greater than or equal to their rate of depletion, consistent with EPA [definitions](#), such as geothermal, wind, solar, hydro, and biomass.

.32 For the purposes of this disclosure, the scope of renewable energy from hydro and biomass sources is limited to the following:

- Energy from hydro sources that are certified by the Low Impact Hydropower Institute or that are eligible for a state Renewable Portfolio Standard.
- Energy from biomass sources is limited to materials certified to a third-party standard (e.g., Forest Stewardship Council, Sustainable Forest Initiative, Programme for the Endorsement of Forest Certification, or American Tree Farm System), materials considered “eligible renewables” according to the Green-e Energy National Standard Version 2.5 (2014), and materials that are eligible for a state Renewable Portfolio Standard.

.33 The registrant shall apply conversion factors consistently for all data reported under this disclosure, such as the use of HHVs for fuel usage (including biofuels) and conversion of kWh to gigajoules (for energy data including electricity from solar or wind energy).

.34 The registrant may disclose the types of renewable energy it used as a percentage of the total renewable energy consumed (i.e., percentage of renewable energy from (a) biomass, (b) wind energy, (c) solar energy, etc.).

Water Management

Description

Pulp and paper production is a water-intensive process. Water is used primarily in raw materials processing, process cooling, and steam generation at on-site cogeneration plants. Companies require ample, stable water supplies and produce large volumes of wastewater, which is commonly treated on-site and discharged into the environment. Process water is typically rich in dissolved organic compounds and other solids that can harm ecosystems, underscoring the importance of water treatment, which can be costly. Water contamination results in regulatory risks, including penalties for violations. In addition to water contamination, water availability is an increasing concern for the industry. The majority of the industry's water needs is met by surface water withdrawals. Water is becoming a scarce resource around the world, given increasing consumption due to population growth and rapid urbanization, and reduced supplies due to climate change. Water scarcity can result in higher supply costs, supply disruptions, and tension with local water users. Pulp and paper manufacturing facilities, depending on their location, may be exposed to these risks. Companies can adopt various strategies to address water supply and treatment issues, such as cost-effectively enhancing the recycling of process water, improving production techniques to lower water intensity, and ensuring compliance with water effluent regulations.

Accounting Metrics

RR0202-07. (1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress

.35 The registrant shall disclose the amount of water (in thousands of cubic meters) that was withdrawn from all sources, where:

- Water sources include surface water (including water from wetlands, rivers, lakes, and oceans), groundwater, rainwater collected directly and stored by the organization, wastewater obtained from other entities, municipal water supplies, or other water utilities.

.36 The registrant may choose to disclose the portion of its supply by source if, for example, significant portions of withdrawals are from non-freshwater sources, where:

- Fresh water may be defined according to the local statutes and regulations where the registrant operates. Where there is no regulatory definition, fresh water shall be considered to be water that has a solids (TDS) concentration of less than 1000 mg/l per the [Water Quality Association definition](#).
- Water obtained from a water utility in compliance with U.S. [National Primary Drinking Water Regulations](#) can be assumed to meet the definition of fresh water.

.37 The registrant shall disclose the amount of water (in thousands of cubic meters) that was consumed in its operations, where water consumption is defined as:

- Water that evaporates during withdrawal, usage, and discharge;
- Water that is directly or indirectly incorporated into the product or service;

- Water that does not otherwise return to the same catchment area from which it was withdrawn, such as water returned to another catchment area or the sea.

.38 The registrant shall analyze all of its operations for water risks and identify activities that withdraw and consume water in locations with High (40–80%) or Extremely High (>80%) Baseline Water Stress as classified by the World Resources Institute’s (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)).

.39 The registrant shall disclose its water withdrawn in locations with High or Extremely High Baseline Water Stress as a percentage of the total water withdrawn.

.40 The registrant shall disclose its water consumed in locations with High or Extremely High Baseline Water Stress as a percentage of the total water consumed.

RR0202-08. Discussion of water management risks and description of strategies and practices to mitigate those risks

.41 The registrant shall discuss its risks associated with water withdrawals, water consumption, and discharge of water to the environment and describe how it manages these risks.

.42 The registrant shall discuss, where applicable, risks to the availability of adequate, clean water resources.

- Relevant information to provide includes, but is not limited to:
 - Environmental constraints, such as operating in water-stressed regions, drought, interannual or seasonal variability, and risks due to the impact of climate change.
 - External constraints, such as volatility in water costs, stakeholder perceptions and concerns related to water withdrawals (e.g., those from local communities, non-governmental organizations, and regulatory agencies), direct competition with and impact from the actions of other users (commercial and municipal), restrictions to withdrawals due to regulations, and the ability to obtain and retain water rights or permits.
 - How risks may vary by withdrawal source, including wetlands, rivers, lakes, oceans, groundwater, rainwater, municipal water supplies, or supply from other water utilities.

.43 The registrant shall discuss, where applicable, risks associated with its discharge of wastewater.

- Relevant information to provide includes, but is not limited to:
 - Environmental constraints, such as the ability to maintain compliance with regulations focused on the quality of effluent discharged to the environment, the ability to eliminate existing and emerging pollutants of concern, and the ability to maintain control over runoff and storm water discharges.
 - External constraints, such as increased liability and/or reputational risks, restrictions to discharges and/or increased operating costs due to regulation, stakeholder perceptions and concerns related to water discharges (e.g., those from local communities, non-governmental organizations, and regulatory agencies), and the ability to obtain discharge rights or permits.

- How risks may vary by discharges to different destinations, including wetlands, rivers, lakes, oceans, groundwater, rainwater, municipal water supplies, or other water utilities.

.44 The registrant should include a discussion of the potential impacts that these risks may have on its operations and the timeline over which such risks are expected to manifest.

- Impacts may include, but are not limited to, those associated with costs, revenues, liabilities, continuity of operations, and reputation.

.45 The registrant shall provide a description of its short-term and long-term strategy or plan to manage these risks, including the following, where relevant:

- Any water management targets it has set, and an analysis of performance against those targets.
 - Water management targets can include water management goals that the registrant prioritizes to manage its risks and opportunities associated with water withdrawal, consumption, or discharge.
 - Targets can include, but are not limited to, those associated with reducing water withdrawals, reducing water consumption, reducing water discharges, and improving water discharge quality.
- The scope of its strategy, plans, or targets, such as whether they pertain differently to different business units, geographies, or water-consuming operational processes.
- The activities and investments required to achieve the plans and targets, and any risks or limiting factors that might affect achievement of the plans and/or targets.

.46 For water management targets, the registrant shall additionally disclose:

- The percentage reduction or improvements from the base year, where:
 - The base year is the first year against which water management targets are evaluated toward the achievement of the target.
- Whether the target is absolute or intensity based, and the metric denominator if it is an intensity-based target.
- The timelines for the water management plans, including the start year, the target year, and the base year.
- The mechanism(s) for achieving the target, including:
 - Efficiency efforts, such as the use of water recycling and/or closed-loop systems
 - Product innovations such as redesigning products or services to require less water
 - Process and equipment innovations, such as those that enable the use of less water in manufacturing or operations

- The use of tools and technologies (e.g., the [World Wildlife Fund Water Risk Filter](#), [WRI/WBCSD Global Water Tool](#), and [Water Footprint Network Footprint Assessment Tool](#)) to analyze water use, risk, and opportunities
 - Collaborations or programs in place with the community or other organizations
- .47 Disclosure of strategies, plans, and targets shall be limited to activities that were ongoing (active) or reached completion during the fiscal year.
- .48 The registrant may choose to discuss if its water management decisions and practices incorporate consideration of any additional lifecycle impacts or environmental tradeoffs for the registrant, including tradeoffs associated with land-use impacts, energy consumption, and GHG emissions.

RR0202-09. Number of incidents of non-compliance with water quality permits, standards, and regulations

- .49 The registrant shall disclose the total number of instances of non-compliance, including violations of a technology-based standard and exceedances of a quality-based standard.
- .50 The scope of disclosure includes incidents governed by federal, state, and local statutory permits and regulations including, but not limited to, the discharge of a hazardous substance, violation of pretreatment requirements, or total maximum daily load (TMDL) exceedances.
- .51 An incident of non-compliance shall be disclosed regardless of whether it resulted in an enforcement action (e.g., fine, warning letter, etc.).
- .52 Violations, regardless of their measurement methodology or frequency, shall be disclosed. These include:
- For continuous discharges, limitations, standards, and prohibitions that are generally expressed as maximum daily, weekly, and monthly averages.
 - For non-continuous discharges, limitations that are generally expressed in terms of frequency, total mass, maximum rate of discharge, and mass or concentrations of specified pollutants.

Wood & Fiber Sourcing & Recovery

Description

Pulp and paper products manufacturers source wood and wood fiber from forestry and logging companies, paper fiber recyclers, and forests that companies themselves manage. The potential for adverse environmental and social externalities in forestry and logging operations, such as deforestation and harm to endangered species or impacts on indigenous communities, can create reputational and operational impacts for pulp and paper companies. To mitigate supply chain risk and satisfy growing customer demand for sustainably sourced fiber and paper products, pulp and paper manufacturers utilize certification of forests and fiber chain-of-custody standards, which verify that virgin and recycled fiber originate from sustainably managed forests. Pulp and paper companies can benefit financially from robust fiber-sourcing guidelines and by encouraging or assisting their suppliers to engage in sustainable forestry practices, including through supporting group certification of smaller timber producers. In addition, pulp and paper manufacturers face trade-offs from the use of recycled fiber. As with certified products, those with recycled content are increasingly in demand. Using recycled fiber can minimize the need for virgin fiber, potentially reducing adverse externalities from timber production, as well as divert paper waste streams, thereby lowering landfill GHG emissions. Companies could also benefit from preempting regulations designed to extend the product end-of-life responsibility to manufacturers. Conversely, manufacturing products with a greater recycled content can increase waste generation and energy consumption, while recycled fiber can be more costly to purchase, given demand-supply gaps. Therefore, companies could benefit from a lifecycle approach that includes optimizing recycled fiber use to balance its environmental and economic trade-offs.

Accounting Metrics

RR0202-10. Percentage of wood fiber purchased (1) from third-party certified forestlands, by standard, and (2) percentage meeting other fiber sourcing standards, by standard

.53 The percentage shall be calculated as the total weight (in air dried metric tons) of the registrant's wood-fiber-based raw materials that have been sourced from third-party certified forestlands divided by the total weight (in air dried metric tons) of wood-fiber-based raw materials purchased, where certified fiber includes that from forestlands certified to standards promulgated by the following organizations (or the equivalent):

- Forest Stewardship Council (FSC) (i.e., FSC Forest Management and Chain of Custody certifications),
- Sustainable Forest Initiative (SFI) (i.e., SFI Forest Management and Chain of Custody labels),
- Programme for the Endorsement of Forest Certification (PEFC) (i.e., PEFC Certified).

.54 The scope of wood-fiber-based raw materials includes all inputs that are processed to be sold as a finished good, including recycled raw materials, virgin raw materials, and goods that will be consumed directly in the production process, excluding biomass for energy.

.55 For fiber that is certified to multiple schemes, the registrant shall not account for the weight more than once when calculating the total percentage of fiber certified to a third-party forest management standard.

- .56 The registrant shall disclose the amount of wood fiber certified to each relevant certification (e.g., FSC Chain of Custody, SFI Chain of Custody (certified forest content), and PEFC Certified).
- The registrant shall indicate whether fiber is certified to multiple certification schemes, and identify the respective certifications.
- .57 The registrant shall disclose the percentage of the total wood fiber purchased from non-certified forestlands that meets other fiber sourcing standards, including:
- Responsible fiber sourcing standards (e.g., SFI Certified Fiber Sourcing Standard);
 - Controlled wood standards (e.g., FSC Controlled Wood Certification, PEFC Controlled Wood);
 - Recycled fiber standards that include post- and pre-consumer reclaimed material (e.g., PEFC Recycled Label, FSC Recycled Label); and
 - Any other due diligence standards that cover fiber sourcing requirements for fiber from non-certified forestlands.
- .58 For fiber from non-certified forestlands that meets multiple fiber sourcing standards, the registrant shall not account for the weight more than once when calculating the total percentage of fiber from non-certified forestlands that meets other fiber sourcing standards.
- .59 The registrant shall disclose the percentage of wood fiber that meets each relevant sourcing standard (e.g., FSC Controlled Wood, SFI Fiber Sourcing Standard, PEFC Recycled, etc.).
- The registrant shall indicate whether fiber meets multiple fiber sourcing standards, and identify the respective standards.
- .60 The registrant shall disclose if at a minimum its fiber sourcing standards for fiber from non-certified forestlands meets the following criteria:
- Wood legality and compliance with the Lacey Act of 1990 (16 U.S.C. §§ 3371–3378)
 - Wood sourced from areas of protected conservation status or high biodiversity value
 - Logging in or near areas of endangered species habitat
 - Policies to verify forestry management and harvesting practices of suppliers, including reviews of environmental impact assessments or forestry management plans
 - The use of genetically modified organisms (GMOs), pesticides, or other chemicals in forests
- .61 The registrant shall discuss its approach to verifying compliance with its fiber sourcing standards for fiber from non-certified forestlands, which may include codes of conduct, audits, and/or contracts, among others.

.62 The registrant may also choose to disclose the sources of its wood fiber (e.g., from corporate, private, or federally owned forestlands and whether fiber is grown domestically or internationally) and the potential risks associated with procuring fiber from these sources.

RR0202-11. Amount of recycled and recovered fiber procured

.63 The registrant shall disclose the amount of recycled and recovered fiber it procured (in metric tons) from suppliers as well as recycled and recovered fiber it obtained directly through collection programs.

.64 Recycled content is defined, consistent with definitions in ISO 14021:1999, “Environmental labels and declarations—Self-declared environmental claims (Type II environmental labelling),” as the portion, by mass, of recycled or recovered material in a product or packaging, where only pre-consumer and post-consumer materials shall be considered as recycled content, and where:

- Recycled material is defined as material that has been reprocessed from recovered (or reclaimed) material by means of a manufacturing process and made into a final product or a component for incorporation into a product.
- Recovered material is defined as material that would have otherwise been disposed of as waste or used for energy recovery, but has instead been collected and recovered (or reclaimed) as a material input, in lieu of new primary material, for a recycling or manufacturing process.
- Pre-consumer material is defined as material that has been diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap that are generated in a process and are capable of being reclaimed within the same process that generated them.
- Post-consumer material is defined as material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product that can no longer be used for its intended purpose. This includes returns of material from the distribution chain.
- Fiber shall be considered recycled or recovered if it meets the SFI definition of [recycled content](#) or the FSC definition of [reclaimed material](#).

Note to RR0202-11

.65 The registrant shall discuss any environmental lifecycle tradeoffs between use of recycled and recovered fiber versus virgin fiber in its products, where:

- An environmental lifecycle tradeoff is defined as an environmental benefit or consequence of sourcing one type of fiber over another.
 - Environmental lifecycle benefits from using recycled and recovered fiber can include, but are not limited to, reducing the need for deforestation, lower GHG emissions from paper in landfills and reducing landfill waste.
 - Environmental lifecycle consequences of using recycled and recovered fiber can include increased resource consumption and air emissions during the transportation and processing of fiber.

.66 The registrant shall discuss how lifecycle tradeoff assessments are incorporated into its fiber sourcing decisions, including how the following risks and opportunities are managed:

- Costs of recycled and recovered materials
- Constraints related to accessing the necessary supply of recycled and recovered fiber
- Necessary recycling infrastructure needed by the registrant, or by external paper collection facilities
- Consumer behavior to improve recovery of paper for recycling
- Virgin wood fiber sourcing risks
- Improving paper recovery rates
- Regulation related to consumer recycling or minimum recycled content usage
- Quality of fiber needed for products
- Product innovation opportunities
- Increased revenue and reputational benefits related to products with recycled or recovered content

RR0202-12. Discussion of strategy to manage opportunities and risks to wood and fiber sourcing presented by climate change

.67 The registrant shall discuss the risks and opportunities that are presented by climate change scenarios to its wood and fiber sourcing, including, where relevant:

- Identification of the physical risks presented by climate change, including, but not limited to, increased temperatures, changes in growth rates, changes in seasonality, availability of water, pest migration, changes in the frequency of fires, and increased frequency of extreme weather events that could affect the availability and yield of wood and fiber.
- Identification of political and social risks, such as pollution from human activities affecting forestlands, increased harvesting restrictions, changing regulations, or stakeholder perceptions or concerns (e.g., those from local communities, non-governmental organizations, and regulatory agencies).

.68 The registrant shall provide:

- A breakdown of the geographic location of the forestlands from which it procures from, identification of the potential climate change risks or opportunities that may manifest within each of these regions, and the percentage of the forestlands that could be affected by these risks or opportunities.
- A breakdown of the types of tree species the registrant procures for wood fiber, identification of the potential risks or opportunities presented by climate change that may manifest among these

different species, and the percentage of the registrant's wood and fiber supply that could be affected by these risks or opportunities.

- Where relevant, a discussion of how risks and opportunities may vary between the source(s) (i.e., plantation forestlands and natural forestlands) of forestlands the registrant procures from.

.69 The registrant shall provide a discussion of the relative priority among the disclosed risks and opportunities that may affect the forestlands and tree species it relies upon for wood and fiber.

.70 The timeline over which such risks and opportunities are expected to manifest.

.71 The registrant shall provide a discussion of the scenarios used to determine the risks and opportunities to wood fiber sourcing presented by climate change, including:

- How such scenarios will manifest and the potential implications that this would have on its forestlands (e.g., how the area, health, vitality, and biodiversity of its forestlands may be affected).
- The methods or models used to develop these scenarios, including the use of global models or scientific research provided by governmental and non-governmental organizations (e.g., [Intergovernmental Panel on Climate Change Climate Scenario Process](#)).

.72 The registrant shall discuss efforts to assess and monitor the impacts of climate change and the related strategies to alleviate and/or adapt to any risks and/or utilize any opportunities, where:

- Alleviation strategies include, but are not limited to, improving supplier engagement in sustainable management practices and supply chain diversification.
- Adaptation strategies include, but are not limited to, monitoring of changes, research and development into alternate products and fibers, increased use of recycled content, and production efficiencies, among others.

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