Integrated Oil & Gas

Technical Bulletin

Prepared by the
Sustainability Accounting Standards Board ®

January 2014
Exposure Draft for Public Comment

Integrated Oil & Gas
Technical Bulletin

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 issues 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 and is accredited to set standards by the American National Standards Institute (ANSI).

SASB is developing standards for more than 80 industries in 10 sectors. SASB's standards-setting process includes evidence-based analysis with in-depth industry research and engagement with a broad range of stakeholders. The end result of this process is the creation of a complete, industry-specific accounting standard which accurately reflects the material issues for each industry.

About this Bulletin
This bulletin is an exposure draft providing additional information on the oil and gas sub-sector, presented for public review and comment. This version is not intended for implementation.

The public comment period lasts for 90 days beginning Tuesday, January 14, 2014 and ending Monday, April 14, 2014. This Bulletin is subject to change thereafter.

For instructions on providing comments to SASB please click here.

For an introduction to SASB Standards please click here.

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SASB Sustainability Accounting Standard – Technical Bulletin

Integrated Oil & Gas

Industry Description

Integrated oil and gas companies may operate across two or more parts of the oil and gas value chain, including upstream (exploration and production) operations, midstream (transportation and distribution) operations, and refining and marketing operations. Additionally, integrated oil and gas companies contract the Oil and Gas Services industry to conduct several upstream activities and to obtain equipment.

Note: This bulletin provides guidance on sustainability disclosure topics and metrics that are likely to be material for integrated oil and gas companies. SASB has separate sustainability accounting standards for the Oil and Gas Exploration and Production (NR-0101), Services (NR-0104), Midstream (NR-0102), and Refining and Marketing industries (NR-0103), considering their "pure-play" activities. Registrants that are integrated oil and gas companies should use the guidance in this bulletin and refer to the sustainability accounting standards for "pure-play" activities for reporting purposes.

Table 1. Activity Level Metrics

Topic	Code[1]	Activity Metric[2]
Activity Level	NR0101-A	Wellhead production of crude oil, condensates, natural gas liquids and dry gas, in million barrels of oil equivalent (MBOE).
	NR0101-B	Proved, probable, and possible reserves of oil products in million barrels (MMbbl) and gas products in million cubic feet (MMcf).[3]
	NR0103-A	Refining throughput of crude oil and other feedstocks in million barrels of oil equivalent (MMBOE).[4]
	NR0103-B	Refining operating capacity, in million barrels per day (MBPD) measured per calendar day and per stream day.[5]
	NR0103-C	Solomon-UEDC™ or Utilized Equivalent Distillation Capacity, where UEDC is the sum of nominal capacity per unit multiplied by the coefficient of complexity (as defined by Solomon Associates).

[1] Codes reference SASB Standards: NR-0101 and NR-0103.

[2] Activity Metrics reference SASB Standards: NR-0101 and NR-0103.

[3] The registrant shall follow guidance published by the Securities and Exchange Commission (SEC) in its Oil and Gas Reporting Modernization (Section §229.1202 [Item 1202] Disclosure of Reserves).

[4] The total volume of crude oil and other feedstocks processed in the refinery system during the reporting period.

[5] Per the U.S. Energy Information Administration, operating (or operable) capacity is the amount of capacity that, at the beginning of the period, is in operation; not in operation and not under active repair, but capable of being placed in operation within 30 days; or not in operation but under active repair that can be completed within 90 days. Operable capacity is the sum of the operating and idle capacity and is measured in barrels per calendar day or barrels per stream day.

Table 2. Material Sustainability Topics & Accounting Metrics

Relevant Topic	Relevant Code[6]	Relevant Accounting Metric[7]
Greenhouse Gas Emissions	NR0101-01	Gross global Scope 1 emissions (metric tons CO_2-e), percentage covered under a regulatory program, and percentage by hydrocarbon resource.
	NR0101-02	Amount of gross global Scope 1 emissions (metric tons CO_2-e) from: (1) combustion; (2) flared hydrocarbons; (3) process emission; (4) directly vented releases; and (5) fugitive emissions/leaks.
	NR0101-03	Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including emissions reduction target for Scope 1 emissions, that was active, in fiscal year, and an analysis of performance against those targets.
Air Quality	NR0103-04	Air emissions, in metric tons, for the following pollutants: NO_x (excluding N_2O), SO_x, particulate matter (PM), and volatile organic compounds (VOCs).
	NR0101-05	Percentage (by productive capacity) of natural gas wells that fully implement the U.S. EPA's New Source Performance Standard (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) rules for completions and equipment.
Water Management	NR0101-06	Total fresh water withdrawn (m^3), returned (m^3), recycled (m^3); and percentage withdrawn in water-stressed regions, evaluated as High or Extremely High Baseline Water Stress, as defined by the WRI Water Risk Atlas.
	NR0101-07	Volume (m^3) of produced water and flowback generated; percentage (1) discharged, (2) injected, (3) recycled; hydrocarbon content (in metrics tons) in discharged water.
	NR0101-08	Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used, including those currently exempt from MSDS disclosure per Appendix E to 29 CFR Part §1910.1200.
	NR0101-09	Percentage of hydraulically fractured wells for which there is: • A baseline assessment of groundwater quality conducted prior to development • Regular monitoring groundwater quality • Communication of findings to relevant stakeholders
Hazardous Materials Management	NR0103-08	Amount of waste from operations (metric tons) by: (1) RCRA non-exempt characteristic hazardous waste, (2) RCRA exempt; percentage recycled.
	NR0103-09	Number of underground storage tank (UST) incidents requiring cleanup; percentage in states with UST financial assurance funds.
Land Use and Biodiversity Impacts	NR0101-10	Percentage of proved reserves: (1) in sites with high conservation value, (2) in the Arctic.
	NR0101-11	Number of offshore sites; description of best practice environmental management plan used throughout the project lifecycle, and the percentage of sites (by number) to which it was applied.
	NR0101-12	Terrestrial sites (by acreage of land disturbed); description of best practice environmental management plan used throughout the project lifecycle, and the percentage of sites (by acreage) to which it was applied; impacted area (by acreage) that was restored.
	NR0101-13	Number and aggregate volume of hydrocarbon spills (bbls), volume in Arctic, and volume recovered.

[6] Codes reference SASB Standards: NR-0101, NR-0102, NR-0103, and NR-0104.

[7] Accounting Metrics reference SASB Standards: NR-0101, NR-0102, NR-0103, and NR-0104.

Relevant Topic	Relevant Code[6]	Relevant Accounting Metric[7]
Community Relations	NR0101-14	Discussion of engagement processes and due diligence practices relating to the community rights comprising economic rights, social and cultural rights, and environmental rights, including how these practices are applied to business partners.
	NR0101-15	Estimated value at risk (in U.S. dollars) to capital expenditure projects due to country, regional, and/or community risks, including a description of the valuation model or risk approach used.
Security, Human Rights and Rights of Indigenous People	NR0101-16	Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operating in conflicts zones.
Employee Recruitment, Development, and Inclusion	NR0101-17	Discussion of efforts to recruit and retain highly skilled employees and foster workforce inclusion such as through supporting STEM education, recruiting from diverse labor pools, training of local and indigenous populations, and/or innovative technological solutions.
Workforce Health, Safety & Well-being	NR0101-18	(1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate, by employees (full time and contract) and short service employees (full time and contact).
Product Specifications and Clean Fuel Blends	NR0103-14	Percentage of Renewable Volume Obligation (RVO) for fuel blends and exports under the expanded Renewable Fuel Standards met through: (1) Production of qualifying renewable fuels (2) Purchase of "separated" renewable identification numbers (RIN).
	NR0103-15	Initiatives designed to improve the commercialization of advanced biofuels, such as through retail options at gas stations, investments in joint ventures with primary producers, or through partnerships with transportation-related entities (e.g., air, ground, or marine fleet operators; vehicle manufacturers).
Business Ethics and Payment Transparency	NR0101-19	Percentage of proved reserves in countries that have the 20 lowest ranking in the Transparency International's Corruption Perception Index.
	NR0101-20	Description of the management system for prevention of corruption and bribery including due diligence procedures associated with business partners.
	NR0103-16	Dollar amount of legal and regulatory fines and settlements associated with fraud, such as price gouging, price fixing, or market manipulation, including those with the U.S. Commodities Futures Trade Commission and Federal Trade Commission. Description of fines and settlements and corrective actions implemented in response to events.
Process Safety, Emergency Preparedness and Response	NR0103-11	Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1) and lesser consequence (Tier 2), as defined by ANSI/API RP-754.
	NR0103-12	Challenges to Safety Systems indicator rate (Tier 3), as defined by ANSI/API RP-754.
	NR0103-13	Discussion of measurement of Operating Discipline and Management System Performance through Tier 4 Indicators, as defined by ANSI/API RP-754.
	NR0101-24	Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout the exploration and production lifecycle.

Relevant Topic	Relevant Code[6]	Relevant Accounting Metric[7]
Reserves Valuation and Capital Expenditures	NR0101-25	Sensitivity of hydrocarbon reserve levels (in MMbls or MMcf) to future price projection scenarios that account for a price on carbon emissions.
	NR0101-26	Estimated greenhouse gas emissions potential (in metrics tons CO_2-e) embedded in proved hydrocarbon reserves.
	NR0101-27	Discussion of how price and demand for hydrocarbons and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets.
Management of the Legal & Regulatory Environment	NR0101-28	Amount of contributions (in U.S. dollars) to (1) political campaigns and (2) lobbyists or lobbying organizations; recipients of the five largest amounts.
	NR0101-29	Description of position on environmental and climate change legislation and regulation, and strategy for managing associated risks and opportunities.
Contractor and Supply Chain Management	n/a	*Contractor and supply chain management cuts across multiple issues and therefore material aspects have been incorporated into the several of the above indicators, including: NR0101-16; NR0101-18; NR0101-21; NR0101-22; NR0101-23; NR0101-24.*

Oil & Gas – Exploration & Production

SICS™ #NR0101

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Oil & Gas - Exploration & Production

Sustainability Accounting Standard

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SASB Sustainability Accounting Standard

Oil & Gas Exploration and Production **(NR0101)**

Industry Description

Oil and gas exploration and production (E&P) companies explore for, extract or produce energy products such as crude oil and natural gas, which comprise the upstream operations of the oil and gas value chain. Companies in the industry develop conventional and unconventional oil and gas reserves; these include but are not limited to, shale oil and/or gas reserves, oil sands, and gas hydrates. Activities covered by these standards include the development of both on-shore and off-shore reserves, in the U.S. and/or international markets. The E&P industry creates contracts with the Oil and Gas Services industry to conduct several E&P activities and to obtain equipment.

Note: The standards discussed below are for "pure-play" E&P activities, or independent E&P companies. Integrated oil and gas companies conduct upstream operations but are also involved in the distribution and/or refining or marketing of products. Disclosure topics and metrics on material sustainability issues that apply to such integrated companies are discussed in the Oil & Gas Integrated Bulletin. SASB has separate standards for the Oil and Gas Services (NR-0104), Midstream (NR-0102), and Refining and Marketing industries (NR-0103).

Table 1. Activity Level Metrics

Topic	Code	Activity Metric
Activity Level	NR0101-A	Wellhead production of crude oil, condensates, natural gas liquids and dry gas (), in million barrels of oil equivalent (MBOE).
	NR0101-B	Proved, probable, and possible reserves of oil products in million barrels (MMbbl) and gas products in million cubic feet (MMcf).[1]

Table 2. Material Sustainability Topics & Accounting Metrics

Topic	Code	Accounting Metric
Greenhouse Gas Emissions	NR0101-01	Gross global Scope 1 emissions (metric tons CO_2-e), percentage covered under a regulatory program, and percentage by hydrocarbon resource.
	NR0101-02	Amount of gross global Scope 1 emissions (metric tons CO_2-e) from: (1) combustion; (2) flared hydrocarbons; (3) process emission; (4) directly vented releases; and (5) fugitive emissions/leaks.

[1] The registrant shall follow guidance published by the Securities and Exchange Commission (SEC) in its Oil and Gas Reporting Modernization (Section §229.1202 [Item 1202] Disclosure of Reserves).

Topic	Code	Accounting Metric
	NR0101-03	Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including a reduction target for Scope 1 emissions, that was active, in fiscal year, and an analysis of performance against those targets.
Air Quality	NR0101-04	Air emissions, in metric tons, for the following pollutants: NO_x (excluding N_2O), SO_x, and volatile organic compounds (VOCs).
	NR0101-05	Percentage (by productive capacity) of natural gas wells that fully implement the U.S. Environmental Protection Agency's (EPA) New Source Performance Standard (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) rules for completions and equipment.
Water Management	NR0101-06	Total fresh water withdrawn (m^3), returned (m^3), recycled (m^3); and percentage withdrawn in water-stressed regions, evaluated as High or Extremely High Baseline Water Stress, as defined by the WRI Water Risk Atlas.
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Topic	Code	Accounting Metric
Workforce Health, Safety & Well-being	NR0101-18	(1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate, by employees (full-time and contract) and short service employees (full-time and contract).
Business Ethics & Payment Transparency	NR0101-19	Percentage of proved reserves in countries that have the 20 lowest ranking in the Transparency International's Corruption Perception Index.
	NR0101-20	Description of the management system for prevention of corruption and bribery including due diligence procedures associated with business partners.
Process Safety, Emergency Preparedness & Response	NR0101-21	Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1) and lesser consequence (Tier 2), as defined by the International Association of Oil & Gas Producers (OGP).
	NR0101-22	Challenges to the Safety Systems indicator rate (Tier 3), as defined by the International Association of Oil & Gas Producers (OGP).
	NR0101-23	Discussion of the measurement of Operating Discipline and Management System Performance through Tier 4 Indicators, as defined by the International Association of Oil & Gas Producers (OGP).
	NR0101-24	Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout the exploration and production lifecycle.
Reserves Valuation & Capital Expenditures	NR0101-25	Sensitivity of hydrocarbon reserve levels (in MMbbls or MMcf) to future price projection scenarios that account for a price on carbon emissions.
	NR0101-26	Estimated greenhouse gas emissions potential (in metrics tons CO_2-e), embedded in proved hydrocarbon reserves.
	NR0101-27	Discussion of how price and demand for hydrocarbons and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets.
Management of the Legal & Regulatory Environment	NR0101-28	Amount of contributions (in U.S. dollars) to (1) political campaigns and (2) lobbyists or lobbying organizations; recipients of the five largest amounts.
	NR0101-29	Description of position on environmental and climate change legislation and regulation, and strategy for managing associated risks and opportunities.
Contractor & Supply Chain Management	n/a	*Contractor and supply chain management cuts across multiple issues and therefore material aspects have been incorporated into several of the above indicators, including: NR0101-16; NR0101-18; NR0101-21; NR0101-22; NR0101-23; NR0101-24.*

Greenhouse Gas Emissions

Description

Oil and Gas E&P operations generate significant direct GHG emissions from combustion in stationary and mobile internal combustion engines, gas processing equipment, and from venting, flaring, and fugitive methane. The relative magnitude of direct GHG emissions from the industry exposes it to higher operating and capital expenditures from emissions regulations at the state, national, and regional levels. With the development of unconventional resources the industry's activities are likely to become more emissions-intensive; at the same time, the nature and impact of future GHG regulations are highly uncertain. Conversely, energy efficiency, use of cleaner fuels, or process improvements to reduce fugitive emissions and venting and flaring, can provide benefits in the forms of lower costs or higher revenues. Higher revenues can also come from capturing and selling gas that may otherwise be flared or escape through leaks.

Accounting Metrics

NR0101-01. Gross global Scope 1 emissions (metric tons CO_2-e), percentage covered under a regulatory program, and percentage by hydrocarbon resource.

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

- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalent (CO_2-e), calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the IPCC's Second Assessment Report (1995).
- 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 and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

.02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) 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 mobiles sources; these sources include but are not limited to equipment at well sites, production facilities, refineries, chemical plants, terminals, fixed site drilling rigs, office buildings, marine vessels transporting products, tank truck fleets, mobile drilling rigs, and moveable equipment at drilling and production facilities.

.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")[2] .
- The financial approach detailed in Chapter 3 of the IPIECA/API/OGP Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions, Second Edition, 2011 (hereafter, the "IPIECA GHG Guidelines").
- The approach detailed in Section 4.23 "Organizational boundary setting for GHG emissions reporting" of Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF)[3].

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[2] "An organization has financial control over an operation if it has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities. Generally an organization has financial control over an operation for GHG accounting purposes if the operation is treated as a group company or subsidiary for the purposes of financial consolidation" *Guidance for companies reporting on climate change on behalf of investors & supply chain members 2013* (p. 95).

[3] This is based on the requirements of the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting It is consistent with the way in which information relating to entities within a group or interest in joint ventures/associates would be included in consolidated financial statements. *Climate Change Reporting Framework*, CDSB.

.04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the IPIECA GHG Guidelines and the CDP Guidance.

- The registrant shall consider the CDP Guidance as a normative reference. Thus, any updates made year-on-year shall be considered as updates to this guidance.

.05 The registrant shall provide a breakdown of its emissions by the following classifications of hydrocarbon resources, where relevant: (1) conventional oil, (2) unconventional oil, (3) conventional gas, and (4) unconventional gas.

- Consistent with the U.S. Energy Information Administration, unconventional (or nonconventional) resources are defined dynamically as hydrocarbon resources that do not meet the criteria for conventional production (i.e., crude oil and natural gas that is produced by a well drilled into a geologic formation in which the reservoir and fluid characteristics permit the oil and natural gas to readily flow to the wellbore).
- Unconventional (or nonconventional) oil includes oil shales, oil sands, heavy oil, etc.
- Unconventional (or nonconventional) gas includes coal seam gas, shale gas, etc.

.06 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory programs.

- Regulatory programs include cap-and-trade schemes and carbon tax/fee system.
- Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., EPA mandatory reporting rule).

.07 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.

.08 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 previously mentioned.

.09 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

NR0101-02. Amount of gross global Scope 1 emissions (metric tons CO_2-e) from: (1) combustion; (2) flared hydrocarbons; (3) process emission; (4) directly vented releases; and (5) fugitive emissions/leaks.

.10 The registrant shall disclose the amount of direct greenhouse gas (GHG) emissions in CO_2-e from the following sources:

(1) combustion emissions, which includes the use of fuel in gas compression, power generation, heating, coke burn, etc.;
(2) flaring of hydrocarbons, such as in depressurizing, start-up/shut-down, well testing and well work-over, etc.;
(3) process emissions, which includes vessel loading, tank storage and flushing, etc.;
(4) venting of hydrocarbons, defined as the intentional (or designed), controlled release of gas to the atmosphere during normal operations;
(5) estimate of fugitive emissions or leaks of GHG gases, including leaks from piping and other equipment, well leaks, and non-routine events (e.g., pipeline maintenance, gas releases, equipment maintenance)

.11 Disclosure corresponds to:

- Section OG3.3 of the Investor CDP information request for Oil and Gas sector module
- "Other reporting elements" of E1 of the IPIECA Oil and Gas Industry Guidance on Voluntary Sustainability Reporting.

NR0101-03. Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including a reduction target for Scope 1 emissions, that was active, in fiscal year, and an analysis of performance against those targets.

.12 The registrant shall discuss the following where relevant:

- The scope, such as if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, emissions sources;
- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU ETS, RGGI, WCI, etc.), including regional, national, international or sectoral programs;
- 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; and

.13 For emission reduction targets the registrants shall disclose:

- The percentage of emissions within the scope of the reduction plan.
- The percentage reduction from base year.

        - The base year is the first or starting year against which emissions are evaluated towards 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.
    - The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.;

.14 When necessary, the registrant shall discuss any circumstances in which the target base year emissions have been or may be re-calculated retrospectively or in which the target base year has been reset;

.15 Disclosure corresponds with:

- CDSB Section 4, "Management actions"[4]
- CDP questionnaire "CC3. Targets and Initiatives"

Notes

Definitions:

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Additional References:

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[4] 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

Air Quality

Description

Other air emissions from E&P operations include Hazardous Air Pollutants, Criteria Air Pollutants, and Volatile Organic Compounds, which can have significant, localized human health and environmental impacts. The financial impacts on companies from air emissions will vary depending on the specific locations of operations and the prevailing air emissions regulations, and include higher operating or capital expenditures and regulatory or legal penalties. As E&P operations expand close to population centers, the impacts on human health are likely to be exacerbated, if air emissions limits are breached. Companies that employ reduced emission completions and reduce flaring are likely to enjoy improved competitiveness in an environment of increasing regulatory and public concerns about air quality in the U.S. and globally.

Accounting Metrics

NR0101-04. Air emissions, in metric tons, for the following pollutants: NO_x (excluding N_2O), SO_x, and volatile organic compounds (VOCs).

.16 The registrant shall disclose its emissions released in the atmosphere of air pollutants associated with extraction and production operations, such as:
- Direct air emissions from stationary or mobiles sources that include, but are not limited to, equipment at well sites, production facilities, refineries, chemical plants, terminals, fixed site drilling rigs, office buildings, marine vessels transporting products, tank truck fleets, mobile drilling rigs, and moveable equipment at drilling and production facilities.

.17 The registrant shall disclose emissions consistent with IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting, as noted below.

.18 The registrant shall disclose emissions released to the atmosphere from oil and natural gas operations by types of emissions. Substances include:
- Oxides of nitrogen (including NO and NO_2 and excluding N_2O), reported as NO_2;
- Oxides of sulphur (SO_2 and SO_3) reported at SO_2;
- Non-methane 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 which participates in atmospheric photochemical reactions, except those designated by EPA as having negligible photochemical reactivity

.19 This scope does not include CO_2, methane, and nitrous oxide, which are disclosed in NR0101-01, as Scope 1 GHG emissions.

.20 Air emissions data shall be consolidated, according to the approach with which the registrant consolidates its financial reporting data; this is aligned with the consolidation approach used for NR0101-01.

.21 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

NR0101-05. Percentage (by annual production) of natural gas wells that fully implement the U.S. EPA's New Source Performance Standard (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) rules for completions and equipment.

.22 The registrant shall calculate the percentage as the fiscal year production for all hydraulically fractured or refractured wells that fully implement EPA reduced emission completion rules (in million barrels of oil equivalent) divided by the total natural gas production from hydraulically fractured or re-fractured wells for the fiscal year (in million barrels of oil equivalent).

.23 The full implementation of EPA reduced emission completion rules is defined as a completion (or a recompletion), in which the operator has captured the gas emissions and made it available for use or sale.

.24 Completions that are exempt from the EPA rules, such as exploratory wells, delineation wells, hydraulically fractured low-pressure wells, shall be exempt for the purposes of this disclosure.

.25 The scope of disclosure shall apply to all natural gas wells, regardless of whether they are under the jurisdiction of the U.S. EPA.

Notes

Definitions:

Water Management

Description

Depending on the extraction technique, E&P operations need relatively large quantities of water, which may expose companies to the risk of reduced availability of water, regulations limiting usage, or related cost increases, particularly in water-stressed regions. Contamination of local water resources can result from produced water, hydraulic fracturing fluids, and methane leakage, particularly due to deficiencies in well-casings. There is debate about whether or not hydraulic fracturing operations have contaminated groundwater supplies in the past, since there is difficulty in establishing causality without baseline data. However, in the U.S., concerns about chemicals used in hydraulic fracturing fluids have led to increased disclosure by companies through a voluntary industry registry, FracFocus, to state regulations, as well as legislative proposals to repeal federal exemptions for hydraulic fracturing operations.

Accounting Metrics

NR0101-06. Total fresh water withdrawn (m^3), returned (m^3), recycled (m^3); and percentage withdrawn in water-stressed regions, evaluated as High or Extremely High Baseline Water Stress, as defined by the WRI Water Risk Atlas.

.26 The registrant shall disclose the amount of water (in thousands of cubic meters) that was withdrawn from freshwater sources for use in operations.

- Fresh water may be defined, according to the local statutes and regulations where the registrant operates. If there is no regulatory definition, then fresh water shall be considered as water that has a solids (TDS) concentration of less than 1000 mg/l per the Water Quality Association definition.

.27 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was returned to the environment during the fiscal year. This figure shall include the amount discharged directly to the environment or indirectly discharged through a third party, such as a local wastewater treatment plant.

.28 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was recycled during the fiscal year. This figure shall include the amount recycled in closed-loop and open-loop systems. Water recycled for purposes other than exploration and production operations (e.g., grey water reuse) shall not be included in this figure.

- Any volume of water reused multiple times shall be regarded as recycled every time it is recycled and reused.

.29 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online here), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

NR0101-07. Volume (m^3) of produced water and flowback generated; percentage (1) discharged, (2) injected, (3) recycled; hydrocarbon content (in metrics tons) in water discharged.

.30 The registrant shall disclose the volume (in thousands of cubic meters) of produced water and flowback fluid generated during its activities.

.31 Produced water is defined according to the U.S. EPA (40 CFR 435.41) as water (brine) obtained from the hydrocarbon bearing formation strata during the extraction of oil and gas. This can include formation water, injection water, and any chemicals added downhole or during the oil/water separation process.

.32 Flowback is defined as the recovered hydraulic fracturing fluid that returns to the surface during a hydraulic fracturing operation that may often be mixed with produced water.

.33 The registrant shall calculate the percentage of produced water and flowback fluid that was:

(1) Discharged directly to the environment or indirectly discharged through a third party, such as a local wastewater treatment plant.

(2) Injected, such as into a Class II injection well under the U.S. EPA's Underground Injection Control (UIC) program, or equivalent.

(3) Recycled for use in other wells in fracturing fluids or in other drilling and production processes.

.34 The registrant shall disclose the amount (in metric tons) of hydrocarbons in produced water, flowback, or other water discharged to the environment.

- Other water discharges may include process water and storm water.
- Measurements of hydrocarbon content should be made using test methods required or approved by local regulatory authorities (or equivalent applicable standards).

NR0101-08. Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used, including those currently exempt from MSDS disclosure per Appendix E to 29 CFR Part §1910.1200.

.35 The registrant shall calculate the percentage as the number of hydraulically fractured wells for which it provides public disclosure of all of the chemical content of fracturing fluid divided by the total number of hydraulically fractured wells.

.36 The registrant shall count only wells for which all fluid chemicals are publicly disclosed, including the chemicals that meet the definition of a trade secret, according to Appendix E to 29 CFR Part §1910.1200 and may be exempt from disclosure on a material safety data sheet (MSDS).

.37 Public disclosure includes but is not limited to posting to a publicly accessible corporate website or fracfocus.org.

NR0101-09. Percentage of hydraulically fractured wells for which there is:

- **A baseline assessment of groundwater quality conducted prior to development**
- **Regular monitoring groundwater quality**
- **Communication of findings to relevant stakeholders**

.38 The registrant shall calculate the percentage as the number of hydraulically fractured wells for which it or its designee has conducted a baseline water quality assessment and conducts regular monitoring of the water quality, divided by the total number of hydraulically fractured wells.

.39 A baseline water quality assessment includes testing of any water sources (including bodies of water and water wells), located near a well location prior to drilling.

- In accordance with API Guidance Document HF1, a test can qualify as a baseline if it was conducted prior to hydraulically fracturing but after well-drilling.[5]
- The registrant shall sample water sources that overlapped with the fractured well and that are within the anticipated fracture radius plus a safety factor.

.40 Monitoring includes testing of all water sources for which a water quality baseline was established.

- Monitoring shall occur in real time or at regular intervals (e.g., monthly or quarterly) that have been established, based on scientific principles.

.41 The results of baseline groundwater quality tests and ongoing monitoring shall, at a minimum, be communicated to residents and business owners in proximity to hydraulic fracturing sites and local regulatory authorities.

Notes

Definitions:

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Additional References:

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[5] "Hydraulic Fracturing Operations – Well Construction and Integrity Guidelines", *API Guidance Document HF1*, First Edition, October 2009.

Land Use & Biodiversity Impacts

Description

The industry's activities can have significant impacts on biodiversity, including habitat loss and alteration through land use for exploration, production, and disposing of drilling and associated wastes, threats of oil spills and leaks to many species and habitats. Impacts are particularly significant in ecologically sensitive areas and can be challenging to address especially for oil sands operations and deep water off-shore drilling. Company value can be affected by regulatory risks from legislation and permitting to protect ecosystems, in the U.S. and abroad, and from regulations specifically related to well decommissioning or waste disposal. Companies face litigation risks if other industries dependent on local ecosystems are affected due to major events such as oil spills. Conversely, effective plugging of oil and gas wells can lower operating costs or result in increased production from effective well redevelopment.

Accounting Metrics

NR0101-10. Percentage of proved reserves: (1) in sites with high conservation value, (2) in the Arctic.

.42 The registrant shall calculate percentage (1) as the amount of net proved reserves in sites with high conservation value areas divided by the registrant's net proved reserves.

.43 Reserves are considered to be in a high conservation area if they are:

- Located within a WWF Global 200 terrestrial ecoregion.[6]
- Located within International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI), listed in the World Database of Protected Areas (WDPA) and mapped on ProtectedPlanet.net.

.44 The registrant shall calculate percentage (2) as the amount of net proved reserves in the Arctic divided by the registrant's net proved reserves.

.45 Reserves are considered to be in the Arctic if they are north of the Arctic Circle or the parallel of latitude that runs 66º 33'N.

.46 Reserves of oil products shall be calculated in millions of barrels.

.47 Reserves of natural gas products shall be calculated in billions of cubic feet.

.48 For reserves located in high conservation areas within the Arctic, the registrant shall include the amount of reserves in calculations for (1) and (2).

.49 The registrant may choose to separately identify reserves in areas with additional ecological, biodiversity, or conservation designations such as those listed by the A-Z Guide of Areas of Biodiversity Importance prepared by the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC).

.50 The registrant may choose to provide discussion around reserves that are located in high conservation values areas or the Arctic but present low risk biodiversity or ecosystem services risks; the registrant may choose to provide similar discussion for reserves located in areas with low biodiversity concern but that present high biodiversity or ecosystem services risks.

NR0101-11. Number of offshore sites; description of best-practice environmental management plan used throughout the project lifecycle, and the percentage of sites (by number) to which it was applied.

.51 The registrant shall disclose the number of offshore projects, where the scope includes projects that are in the exploration, development, production, or decommissioning phase.

.52 The registrant shall provide a brief description of its best-practice environmental management plan(s) implemented, including where relevant:

- Lifecycle stages to which the plan(s) apply, such as: geologic survey, exploratory drilling, site development, hydrocarbon production, closure, decommissioning, and restoration.
- The topics addressed by the plan(s) such as: ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, hazardous chemical usage.
- The underlying references for its plan(s) including whether they are codes, guidelines, standards, or regulations and if they were developed by the registrant, an industry organization, a third-party organization (e.g., a non-governmental organization), a governmental agency, or some combination of these groups.

[6] Olson, D. M., Dinerstein, E. 2002. The Global 200: Priority ecoregions for global conservation. Annals of the Missouri Botanical Garden 89(2):199-224

- Its rationale for determining that the plan(s) identified constitutes a best practice.

.53 The registrant shall calculate the percentage as the number of offshore projects to which it applied its best-practice environmental management plan divided by the total number of offshore projects.

.54 Relevant references may include:

- "Environmental management in oil and gas exploration and product – An overview of issue and management approaches," Joint E&P Forum/UNEP Technical Publication 1997.
- "Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit to Assist Government Agencies," DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative.

NR0101-12. Terrestrial sites (by acreage of land disturbed); description of best practice environmental management plan used throughout the project lifecycle, and the percentage of sites (by acreage) to which it was applied and impacted area (by acreage) that was restored.

.55 The registrant shall disclose the total acreage of disturbed land, where the scope includes land in the exploration, development, production, or decommissioning project phase.

- This disclosure shall be a cumulative total of all currently active sites, recently decommissioned sites, or sites being restored; it is not limited to land newly disturbed during the fiscal year.
- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.56 The registrant shall provide a brief description of its best-practice environmental management plan(s) implemented, including where relevant:

- Lifecycle stages to which the plan(s) apply, such as: geologic survey, exploratory drilling, site development, hydrocarbon production, closure, decommissioning, and restoration.
- The topics addressed by the plan(s) such as: ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, hazardous chemical usage.
- The underlying references for its plan(s) including whether they are codes, guidelines, standards, or regulations and if they were developed by the registrant, an industry organization, a third-party organization (e.g., a non-governmental organization), a governmental agency, or some combination of these groups.
- Its rationale for determining that the plan(s) identified constitutes a best practice.

.57 The registrant shall calculate the percentage as the acreage of terrestrial projects to which it applied its best-practice environmental management plan divided by the total acreage of terrestrial projects.

- If environmental management plans differ significantly by hydrocarbon resource (e.g., conventional oil as compared to unconventional natural gas) then the registrant shall calculate the percentage separately by appropriate resource.
- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.58 The registrant shall disclose the acreage of land impacted by operations that was restored during the fiscal year, where, at a minimum, restoration meets the Society for Ecological Restoration definition: "the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed."

- Restoration may be further defined by local, state, or national laws, industry standards, or the registrant's own guidelines.
- The registrant shall disclose the definition of restoration and accompanying practices it follows in its description of its best-practice environmental management plan.

.59 Relevant references may include:

- "Environmental management in oil and gas exploration and production: An overview of issue and management approaches," Joint E&P Forum/UNEP Technical Publication 1997.
- "Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit to Assist Government Agencies", DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative.

NR0101-13. Number and aggregate volume of hydrocarbon spills (bbls), volume in Arctic, and volume recovered.

.60 The registrant shall disclose the total number and volume (in barrels) of hydrocarbon spills where:

- Spills are defined as greater than 1bbl (42 U.S. gallons or 159 liters).

- Spills include those that reached the environment and exclude spills that were contained within impermeable secondary containment.

.61 Consistent with IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting (hereafter, "IPIECA Guidance"), the volume reported shall represent the total estimated amount spilled that reached the environment and not be reduced by the amount of such hydrocarbon subsequently recovered, evaporated, or otherwise lost.

.62 Consistent with IPIECA Guidance, the scope of releases from operations and events includes:

- Above-ground and below-ground facilities.
- Sabotage, earthquakes, or other events outside operational control.
- Company-owned and operated transport.
- Leakage over time, which is counted once at the time it is identified.

.63 The registrant may choose to disclose spills to soil and water separately. A spill that qualifies as a spill to both soil and water should be reported as a single spill to water, with the volume properly apportioned to soil and water.

.64 The registrant shall disclose the volume of spills (in bbls) that occurred in the Arctic, considered to be the area north of the Arctic Circle or north of the parallel of latitude at 66º 33' north.

.65 The registrant shall calculate the volume of spills recovered as the amount of spilled hydrocarbons (in bbls) removed from the environment through short-term spill response activities, excluding:

- Amounts that were recovered during longer-term remediation at spill sites.
- Amounts that evaporated, burned, or were dispersed.

.66 The registrant shall calculate recovery rates using an accepted standard or guideline such as California Code of Regulations, Title 14. Division 1, Subdivision 4, Office of Oil Spill Prevention and Response, Chapter 7. Enforcement Subchapter 2. Determining Amount of Petroleum Hydrocarbons Recovered, Sections 877-880, Effective June 13, 2009.

Notes

Definitions:

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Additional References:

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Community Relations

Description

E&P activities take place over a number of years, and companies may be involved in multiple projects in areas that can have a wide range of community impacts, including those related to land acquisition, construction of facilities, air and water emissions from operations, decommissioning impacts, and accidents. If managed inadequately, such impacts impinge on the economic, social, environmental, and cultural rights of community members. Without due diligence regarding community or regional impacts throughout a project's lifecycle, companies may expose themselves to class action lawsuits, project delays and disruptions, and higher costs, creating financial risk and potentially higher costs of capital. Conversely, where communities are not necessarily affected negatively due to company operations, companies may benefit from addressing associated community concerns related to health, employment, and education, among others. E&P companies that provide a valuable product or service to the community (such as preventive vaccination) could generate value for themselves (for example, through lower absenteeism of the workforce). E&P companies that are perceived as engaging in rent-seeking and exploiting a country or community's resources without providing any benefits in return may be exposed to the risk of resource nationalism actions by host governments and communities that restrict their activities or impose additional costs.

Accounting Metrics

NR0101-14. Discussion of engagement processes and due diligence practices relating to the community rights comprising economic rights, social and cultural rights, and environmental rights, including how these practices are applied to business partners.

.67 The registrant shall describe its procedure and practice of due diligence with regards to the rights of communities in areas where it conducts business, intends to conduct business, or previously conducted business. Rights include:

- Economic rights, including the right to employment, fair wages, payment transparency, and respect of infrastructure and agricultural land.
- Environmental rights, including the right to clean local air and water and safe discharge and disposal of waste.
- Social rights, including the right to adequate health care, education, and housing.
- Cultural rights, including the right to protection of places of cultural significance (e.g., sacred sites or burial sites).

.68 The discussion shall include due diligence processes employed during all stages or project development (i.e., prior, during, and post).

.69 The discussion shall include how practices apply to business partners such as contractors, sub-contractors, suppliers, and joint venture partners.

.70 The registrant should describe its efforts to eliminate or mitigate community risks and/or address community concerns, including but not limited to:

- The use of social impact assessment (SIA) that evaluates, manages, and mitigates risks.
- Efforts to engage with stakeholders, build consensus, and collaborate with communities.
- "Shared" or "blended" value projects that provide quantifiable benefits to the community and the registrant.
- Meeting the standards of financial and aid institutions such as the International Finance Corporation.

NR0101-15. Estimated value at risk (in U.S. dollars) to capital expenditure projects due to country, regional, and/or community risks, including a description of the valuation model or risk approach used.

.71 The registrant shall calculate the aggregate estimated value at risk (in U.S. dollars) to its capital expenditure projects as the difference in value (in U.S. dollars) between a project free from country, regional, and/or community risks (hereafter, country risk) and the value of a project adjusted for these risks.

.72 This calculation shall be conducted using an appropriate valuation model; variations of the Capital Asset Pricing Model (CAPM) are commonly used to assess country risk.

- Value at risk can be calculated by applying an additional discount rate premium used when calculating the net present value of a project using discounted cash flow analysis (DCF).

- Value at risk can be expressed as a reduction in the expected cash flows of a project due to country risk when calculating the net present value of a project using discounted cash flow (DCF) analysis.
- If a project is insured for country risks, the value as risk can be expressed as a reduction in the cash flows of a project due to the cost of insurance when calculating the net present value of a project using discounted cash flow (DCF) analysis.

.73 Country, regional, and/or community risks include but are not limited to corruption, business legal structure, political stability, regulation, resource nationalism, ethnic conflict, stability of the local market, labor force (skills) availability, resettlement and access to land, quality of access to infrastructure (e.g., ports, roads, shipping channels), and/or general license to operate.

- These risks are likely to manifest differently at the country (national), regional (state), community (local level), and project levels.
- This risk differs from sovereign risk, which is the potential for a central bank or government-backed entity to willingly or unwillingly default on debt obligations or significantly alter key economic variables such as foreign exchange rates, import ratios, and money supply.

.74 The registrant shall describe the model or approach used to value capital expenditure projects such as via adjusted discount rate, expected cash flow, or by other methods.

.75 The registrant should identify and describe country risks specific to its projects and unique operating context.

- This may include the identification of country, regional, and community risks and/or the discussion of specific projects.
- This may include discussion of how the registrant has mitigated these risks through community engagement partnerships, blended value projects, etc.; the registrant shall quantify this reduction in risk according to the methods described above.
- Discussion should be additional to broad country risk classification (e.g., OECD Prevailing Country Risk classification, Standard & Poor's Country Risk ratings, World Economic Form Global Competitiveness Index, etc.).

Notes

Definitions

Free, Prior, and Informed Consent includes: reaching in advance written agreements with local government officials and community organizations outlining company practices related to specific community concerns (noise, setbacks, road use and damage repair, monitoring and addressing social, environmental, and health impacts, etc.). Such agreements may include operating practices above and beyond requirements of state regulations and local zoning codes and land use plans applicable to oil and gas drilling and production operations. The company may have a dedicated "hotline" to receive individual complaints arising from company operations and has a response tracking mechanism in place to record complaints and company responses.

Additional References:

International Convention on Economic, Social and Cultural Rights (1966)

Security, Human Rights, & Rights of Indigenous People

Description

E&P companies face additional community-related risks when operating in conflict zones, in areas with weak or absent governance institutions, rule of law, and legislation to protect human rights, or in areas with vulnerable communities such as indigenous people. Companies using private or government security forces to protect their workers and assets may knowingly or unknowingly contribute to extreme cases of human rights violations, including use of excessive force. Indigenous people are often the most vulnerable sections of the population, with limited capacity to defend their unique rights and interests. Companies perceived as contributing to human rights violations or failing to account for indigenous peoples' rights may be affected due to protests, riots, or suspension of permits, and they could face substantial costs related to compensation or settlement payments. In the absence of country laws to address such cases, several international instruments have emerged to provide guidelines for companies, including obtaining the free, prior, and informed consent of indigenous peoples for decisions affecting them. With greater awareness, several countries are also beginning to implement specific laws protecting indigenous peoples' rights, creating increasing regulatory risk for companies.

Accounting Metrics

NR0101-16. Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in conflict zones.

.76 The registrant shall describe its due diligence practices and procedures with respect to indigenous rights of communities in which it operates or intends to operate, including:
- Upholding ILO Convention No. 169.
- Use of free, prior, and informed consent (or consultation) processes.

.77 The registrant shall describe its due diligence practices and procedures with respect to human rights, including:
- Upholding the fundamental International Labour Organization (ILO) conventions on freedom of association (No. 87), collective bargaining (No. 98), forced labor (No. 29, No. 105), child labor (No. 138, No. 182), fair wages (No. 100), and discrimination (No. 111).
- Implementation of the European Commission, "Oil and Gas Sector Guide on Implementing the UN Guiding Principles on Business and Human Rights," specifically Human Rights Due Diligence (Principle 17a-c).
- Implementation of Voluntary Principles on Security and Human Rights.

.78 The registrant shall discuss its practices and procedures while operating in zones of conflict, such as:
- Describing its approach according to IPICEA's "Guide to operating in areas of conflict for the oil and gas industry," which includes "do no harm," "do something," and "do something + +."

.79 The discussion shall include due diligence processes employed during all stages or project development (i.e., prior, during, and post).

.80 The discussion shall include how practices apply to business partners, such as contractors, sub-contractors, suppliers, and joint venture partners.

.81 The registrant should describe its efforts to eliminate or mitigate community risks and/or address community concerns including but not limited to:
- The use of social impact assessment (SIA) that evaluates, manages, and mitigates risks.
- Efforts to engage with stakeholders, build consensus, and collaborate with communities.
- "Shared" or "blended" value projects that provide quantifiable benefits to the community and the registrant.
- Meeting the standards of financial and aid institutions such as the International Finance Corporation.

Employee Recruitment, Development, & Inclusion

Description

The Oil and Gas Exploration & Production industry, which has global operations, is facing a shortage of experienced and skilled workers, with a significant proportion of the workforce close to retirement and a need for more workers due to rapid growth in the industry. Technological advancements within the industry necessitate more highly-educated workers. Despite this shortage and the availability of a diverse talent pool, studies show that the industry has a relatively much lower representation of women and minorities in the workforce and on the Boards of companies compared to other industries. Gender-based discrimination within the industry, family care responsibilities, and societal conditioning, among other factors, are cited as making the work environment in the E&P industry less attractive for women. In this context, companies that have a comprehensive recruitment and development strategy, including recruiting from a diverse talent base, ensuring equal career advancement opportunities, partnering with educational institutions, and employing and training local hires in international operations, could improve efficiencies and lower disruptions to operations, likely leading to higher profits.

Accounting Metrics

NR0101-17. Discussion of efforts to recruit and retain highly skilled employees and foster workforce inclusion such as through supporting STEM education, recruiting from diverse labor pools, training of local and indigenous populations, and/or innovative technological solutions.

.82 The registrant shall discuss its efforts to recruit and retain skilled workers where relevant through:

- Supporting science, technology, engineering, and math (STEM) education programs, partnerships, workshops, etc.
- Recruiting efforts targeted at diverse labor supply pools (such as women, workers with disabilities, etc.), who are traditionally underrepresented in the Oil and Gas industry.
- Increasing collaboration between other industry members (e.g., national oil companies, services companies, etc.), workers' organizations, and other stakeholders to improve retention, improve training, and develop new technologies.
- Local content initiatives that include training and skills transfer for local and/or indigenous populations.
- Addressing aspects of industry culture that may be unappealing to workers (e.g., long hours, work away from home, etc.).

.83 The registrant should describe challenges in recruiting and retaining its workforce due to lack of availability of a qualified and experienced talent pool, including specific regions, positions, business units where it faces these challenges.

Notes

Definitions:

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Additional References:

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Workforce Health, Safety, & Well-being

Description

Workers involved in E&P activities face significant health and safety risks due to the harsh working environments and hazards of handling oil and gas. In addition to acute impacts, workers may develop chronic health conditions, including from silica or dust inhalation, as well as mental health problems. A company's ability to protect employee health and safety and to create a culture of safety and well-being among employees at all levels can help prevent accidents, mitigating costs and operational downtime, and enhance workforce productivity. Frequent injuries or a high rate of fatalities can lead to increase in regulatory compliance costs, healthcare costs, or insurance premiums. Since a significant proportion of the workforce at oil and gas drilling sites consists of temporary workers and employees of Oil and Gas Service companies, health impacts on and safety performance of such workers also have impacts on E&P companies. Additional health and safety protocols may be needed to protect women and minorities, particularly when they operate in regions where they continue to face discrimination.

Accounting Metrics

NR0101-18. (1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate, by employees (full time and contract) and short service employees (full time and contact).

.84 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its total recordable injury rate (TRIR) as calculated and reported in the Occupational Safety and Health Administration's (OSHA) Form 300.

- OSHA guidelines provide details on determining whether an event is a recordable occupational incident and definitions for exemptions for incidents that occurred in the work environment but are not occupational.

.85 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its total recordable injury rate according to the U.S. Bureau of Labor Statistics guidance and/or using the U.S. Bureau of Labor Statistics calculator.

.86 The registrant shall disclose its near miss frequency rate (NMFR), where a near miss is defined as an incident where no property or environmental damage or personal injury occurred, but where damage or personal injury easily could have occurred but for a slight circumstantial shift.

- The registrant should refer to organizations such as the National Safety Council (NSC) for guidance on implementing near miss reporting.
- The registrant should disclose its process for classifying, identifying, and reporting near miss incidents.

.87 The registrant shall disclose its TRIR and NMFR for its direct employees (by full time and contract) and it shall disclose its TRIR and NMFR for short service employees (by full time and contract).

.88 Short Service Employee (SSE) is defined as a newly placed full-time or temporary employee or subcontractor with less than six months' experience in the assigned job.

.89 The scope includes all employees domestic and foreign.

.90 Rates shall be calculated as: (statistic count / total hours worked)*200,000.

Notes

Definitions:

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Additional References:

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Business Ethics & Payment Transparency

Description

Business ethics and transparency in payments to governments or individuals are material to this industry due to the importance of government relations for the conduct of business and gaining access to oil and gas reserves and the emergence of several anti-corruption, anti-bribery, and payments-transparency laws and initiatives in the U.S. and abroad. Enforcement of these could lead to significant one-time costs or higher ongoing compliance costs and even affect a company's social license to operate. Companies are under pressure to ensure that their governance structures and practices can address corruption and willful or unintentional participation in illegal or unethical payments to government officials or private persons or in unfairly influencing them through gifts or other means. Operating in corruption-prone countries can exacerbate the risk.

Accounting Metrics

NR0101-19. Percentage of proved reserves in countries that have the 20 lowest rankings in the Transparency International's Corruption Perception Index.

.91 The registrant shall disclose the amount of its net proved reserves located in the 20 countries ranking lowest in Transparency International's Corruption Perception Index (CPI).
- In the event that that two or more countries share the 20th lowest ranking, all shall be included in the scope of disclosure.

.92 Reserves of oil products shall be calculated in millions of barrels.
.93 Reserves of natural gas products shall be calculated in billions of cubic feet.
.94 The registrant shall use the most current version of the CPI via Transparency International's publicly accessible website.

NR0101-20. Description of the management system for prevention of corruption and bribery including due diligence procedures associated with business partners.

.95 Relevant aspects of a management system include employee awareness programs, internal mechanisms for reporting and following up on suspected violations, anti-corruption policies, and participation in the Extractive Industry Transparency Coalition (EITI).
.96 The registrant shall discuss its due diligence procedures for assessing and managing corruption and bribery risks associated with its business partners (e.g., suppliers, contractors, and JV partners).
.97 The registrant may choose to discuss the implementation of one or more of the following:
- Key Organization for Economic Co-operation and Development (OECD) guidelines;
- International Chamber of Commerce (ICC): Rules of Conduct against Extortion and Bribery;
- Transparency International: Business Principles for Countering Bribery;
- United Nations Global Compact: 10th Principle;
- World Economic Forum (WEF): Partnering Against Corruption Initiative (PACI).

Definitions:

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Additional References:

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Process Safety, Emergency Preparedness, & Response

Description

Analysis of the cause of major accidents, such as large oil spills and space exploration accidents, often point to a failure of organizational structures to flag, communicate, and take actions on risks, lack of a safety culture in the organization, inadequate learning from prior events, and lack of internal communication due to operational siloes. A strong safety culture and a systematic approach to safety, risk management (including emergency preparedness and response), and operational integrity across the company and in relationships with contractors could help companies prevent or respond to significant spills or accidents with wide-ranging impacts on the environment, employees, and local communities. Companies face reputational risks, fines, and operational risks from one-off incidents and a loss of social license to operate if such incidents persist.

Accounting Metrics

NR0101-21. Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1) and lesser consequence (Tier 2), as defined by the International Association of Oil & Gas Producers (OGP).

.98 The registrant shall disclose Tier 1 process safety events rates (PSE) and Tier 2 process safety event rates (PSE) for instances of loss of primary containment (LOPC) using terms and definitions from the International Association of Oil and Gas Producers' (OGP) *Process Safety – Recommended Practice on Key Performance Indicators, Report No. 456.*

.99 A process safety event (PSE) is defined as a loss of primary containment (LOPC) from a process that meets the Tier 1 or Tier 2 definitions below, is recordable, and for the purpose of recording a PSE:

- Drilling facilities are considered to be part of a process when operations are "in-hole."
- Land or marine vessels (trucks and ships) are considered to be part of a process when physically connected to a production facility.

.100 A loss of primary containment (LOPC) is defined as an unplanned or uncontrolled release of any material from primary containment, including non-toxic and non-flammable materials (e.g., steam, hot condensate, nitrogen, compressed CO_2 or compressed air). For drilling operations, any unplanned or uncontrolled release to the surface (seabed or ground level) should be included. LOPC is a type of event. An unplanned or uncontrolled release is an LOPC irrespective of whether the material is released into the environment, secondary containment, or into other primary containment not intended to contain the material released under normal operating conditions.

.101 A Tier 1 Process Safety Event (PSE) is defined as a loss of primary containment (LOPC) as the greatest consequence, resulting in one or more of the following consequences:

- An employee, contractor, or subcontractor "days away from work" injury and/or fatality.
- A hospital admission and/or fatality of a third-party.
- An officially declared community evacuation or community shelter-in-place.
- A fire or explosion resulting in greater than or equal to $25,000 of direct cost to the Company.
- A pressure relief device (PRD) discharge to atmosphere whether directly or via a downstream destructive device that results in one or more of the following four consequences:
  - liquid carryover
  - discharge to a potentially unsafe location
  - an onsite shelter-in-place
  - public protective measures (e.g., road closure) and a PRD discharge quantity greater than the threshold quantities specified in Appendix B of the OGP *Process Safety – Recommended Practice on Key Performance Indicators, Report No. 456* in any one-hour period
- A release of material greater than the threshold quantities specified in Appendix B of the OGP *Process Safety – Recommended Practice on Key Performance Indicators, Report No. 456* in any one-hour period.

.102 A Tier 2 Process Safety Event (PSE) is defined as a loss of primary containment (LOPC) with lesser consequence, not disclosed as a Tier 1 PSE, and resulting in one or more of the following consequences:

- An employee, contractor, or subcontractor recordable injury;
- A fire or explosion resulting in greater than or equal to $2,500 of direct cost to the Company;

- A pressure relief device (PRD) discharge to atmosphere whether directly or via a downstream destructive device that results in one or more of the following four consequences:
    - liquid carryover
    - discharge to a potentially unsafe location
    - an onsite shelter-in-place
    - public protective measures (e.g., road closure) and a PRD discharge quantity greater than the threshold quantities specified in Appendix B of the OGP *Process Safety – Recommended Practice on Key Performance Indicators, Report No. 456* in any one-hour period
- A release of material greater than the threshold quantities specified in Appendix B of the OGP *Process Safety – Recommended Practice on Key Performance Indicators, Report No. 456* in any one-hour period.

.103 The Tier 1 PSE Rate shall be calculated as (Total Tier 1 PSE Count / Total Hours Worked) x 200,000.

.104 The Tier 2 PSE Rate shall be calculated as (Total Tier 2 PSE Count / Total Hours Worked) x 200,000.

.105 Total work hours includes employees and contractors.

NR0101-22. Challenges to Safety Systems indicator rate (Tier 3) as defined by the International Association of Oil & Gas Producers (OGP).

.106 The registrant shall disclose a rate of Tier 3 "challenges to safety systems" using terms, definitions, and guidance from the International Association of Oil and Gas Producers' (OGP) *Process Safety – Recommended Practice on Key Performance Indicators, Report No. 456.*

- Tier 3 indicators may alternatively be referred to as "near miss" events or "high learning value" events.

.107 A Tier 3 operational situation is defined as a flaw or weakness within internal technical safety systems that lead to consequences that fall below the Tier 1 and Tier 2 LOPC impact threshold, such as:

- Demands on safety systems, which are activations (non-manual) of safety systems designed to prevent or mitigate impacts from losses of primary containment such as mechanical shutdown equipment or pressure relief devices.
- Safe operating limit excursions, which are breaches of safe operating limits for processes beyond which manual or automatic systems return the process to a predetermined safe state.
- Primary containment inspections or testing results outside acceptable limits, which occur when inspection or testing shows that safe primary containment operating limits have been exceeded and require repairs, replacement, or further testing of equipment.
- Near miss incidents, which are incidents which had the potential to result in an LOPC, but which were avoided by circumstance.

.108 Disclosure may include situations with no actual consequences but the recognition that, in other circumstances, further barriers could have been breached and resulted in a Tier 1 or Tier 2 PSE.

.109 The registrant shall calculate and disclose a Tier 3 indicator rate as (Total Tier 3 Indicator Count / Total Hours Worked) x 200,000.

.110 Total work hours includes employees and contractors.

NR0101-23. Discussion of measurement of Operating Discipline and Management System Performance through Tier 4 Indicators as defined by the International Association of Oil & Gas Producers (OGP).

.111 The registrant shall describe its approach to identifying, measuring, and managing "Operating Discipline and Management System Performance," or Tier 4 key performance indicators (KPIs).

.112 Tier 4 indicators are metrics developed by the registrant—specific to its facilities, operations, and safety priorities—that measure leading, proactive measures to maintain and improve safety, and manage risk.

.113 Relevant Tier 4 KPIs may be focused on:

- engineering and inherently safe design
- equipment maintenance, inspection, and testing
- process hazard and major incident risk assessments
- quality of and adherence to operating procedures
- contractor capability and management
- audit improvement actions
- asset integrity and process safety initiatives
- workforce and management training and development
- technical competence assessment and assurance

.114 Discussion may include the use of specific Tier 4 key performance indicators (KPI) such as those suggested in ANSI/API RP-754[7]. Examples of Tier 4 KPIs are:

- Number of process area retrospective and revalidation hazard evaluations completed on time
- Percentage and/or number of past-due process safety actions
- Percentage of process safety required training session completed with skills verification

.115 It is not recommended that the registrant disclose quantitative data or figures for its Tier 4 KPIs because they are generally not suitable for peer-to-peer benchmarking and may not be relevant at a corporate level (i.e., they may be site specific). It may be relevant, however, to discuss:

- Trends in Tier 4 KPIs over time and how they are correlated with the frequency of Tier 1, Tier 2, and Tier 3 indicators' rates (e.g., that an increase in the focus on Tier 4 performance can be correlated with a decrease in the Tier 1 PSE rate)
- Application and topical focus of Tier 4 KPIs for different facilities, business units, geographies, employee categories, etc.

NR0101-24. Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout the exploration and production lifecycle.

.116 Discussion shall include how the registrant integrates a culture of safety and emergency preparedness throughout its value chain, such as through training, joint management by the workforce and leadership, rules and guidelines, and use of technology.

.117 The registrant shall include description of how emergency preparedness is coordinated amongst business partners (e.g., contractors and sub-contractors).

.118 Disclosure may focus broadly on safety and emergency management systems, but shall specifically address the systems to avoid and manage emergencies, accidents, and incidents that could have catastrophic human health, local community, and environmental impacts.

.119 The exploration and production lifecycles include, at a minimum, geological and seismic surveys, site surveys, exploratory drilling, appraisal drilling, site development, production, and decommissioning.

Notes

Definitions:

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Additional References:

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[7] API Recommended Practice (RP) 754, Process Safety Performance Indicators for the Refining and Petrochemical Industries

Reserves Valuation & Capital Expenditures

Description

Estimates suggest that E&P companies are unlikely to be able to extract a significant proportion of their proved and probable oil and gas reserves if GHG emissions are to be controlled to limit global temperature increases to two degrees Celsius. Stewardship of capital resources while taking into account medium- to long-term trends, particularly related to climate change mitigation actions, is critical to prevent current asset impairment and maintain profitability and creditworthiness. Regulatory limits on GHG emissions at sub-national, national, and regional levels, together with improved competitiveness of alternative energy technologies, could lower the global demand and prices for oil and gas products and the net present value of oil and gas reserves. The magnitude and probability of impacts on reserves valuation and capital expenditures are likely to increase in the medium-term. Furthermore, companies with higher GHG impacts, more carbon-intensive production, and higher capital costs are likely to face greater risks.

Accounting Metrics

NR0101-25. Sensitivity of hydrocarbon reserve levels (in MMbbls or MMcf) to future price projection scenarios that account for a price on carbon emissions.

.120 The registrant shall conduct an analysis of its reserves to determine how several future scenarios may affect its determination of whether the reserves are proved, probable, or possible.

.121 The registrant shall base its analysis on price projections derived from the following scenarios conducted by the International Energy Agency (IEA) annually in its World Energy Outlook publication:

- New Policies Scenario, which assumes that broad policy commitments and plans that have been announced by countries including national pledges to reduce greenhouse-gas emissions and plans to phase out fossil-energy subsidies, occur even if the measures to implement these commitments have yet to be identified or announced. This broadly serves as the IEA baseline scenario.
- 450 Scenario, which assumes that an energy pathway occurs that is consistent with the goal of limiting the global increase in temperature to 2°C by limiting concentration of greenhouse gases in the atmosphere to around 450 parts per million of CO_2.

.122 The registrant shall conduct its analysis using the IEA's most current 2035[8] price projections in each scenario for:

- IEA crude oil imports in present-year U.S. dollars per barrel
- Natural gas (United States) in present-year U.S. dollars per million Btu

.123 The registrant shall follow guidance published by the Securities and Exchange Commission (SEC) in its Oil and Gas Reporting Modernization (Section §229.1202 [Item 1202] Disclosure of Reserves) for the following:

- Classifying of reserves as proved, probable, and possible
- Conducting a reserves sensitivity analysis
- Current (or base) case of reserve levels

.124 The registrant shall summarize its findings in the following table format:

Table. 1 Sensitivity of Reserves to Prices By Principal Product Type and Price Scenario

Price Case	Proved Reserves			Probable Reserves			Possible Reserves		
(Scenario)	Oil	Gas	Product A	Oil	Gas	Product A	Oil	Gas	Product A
	MMbbls	MMcf	measure	MMbbls	MMcf	measure	MMbbls	MMcf	Measure
Current (base)									
New Policies Scenario*									
450 Scenario*									

* using 2035 price projections

[8] As appropriate, and based on updates to IEA scenarios, SASB will provide updates to the future scenario year to be used in projections.

NR0101-26. Estimated greenhouse gas emissions potential (in metrics tons CO_2-e) embedded in proved hydrocarbon reserves.

.125 The registrant shall calculate and disclose an estimate of the greenhouse gas emissions possible from the downstream use of proved hydrocarbon reserves.

.126 The registrant shall make reasonable assumptions about the downstream use of hydrocarbon products, such as the projected amount that will be used in:

- Utility electricity generation
- Industrial uses (heating and electricity generation)
- Residential heating and cooling
- Transportation (road, air, water, and rail transportation)
- Other end-uses (petrochemicals, agrochemicals, asphalt, lubricants, etc.)

.127 In the absence of primary data, the registrant should refer to sources such as the U.S. Energy Information Agency (EIA) or the International Energy Agency (IEA) for assumptions about downstream use disposition of crude oil, petroleum distillates, and natural gas.

.128 In its calculations, the registrant shall use fuel emissions factors, national average emissions factors, transportation and mobile emission factors, and global warming potential values referenced by the Greenhouse Gas Protocol.

- Calculation shall exclude lifecycle energy and emissions associated with the extraction, refining, and transportation.

.129 The registrant should reference the approach and methodology described in Greenhouse Gas Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

NR0101-27. Discussion of how price and demand for hydrocarbons and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets.

.130 The registrant shall discuss how projections for price, demand, and the path of climate regulation (including findings from NR0101-25 and NR0101-26) influence the registrant's capital expenditure (CAPEX) strategy.

.131 The registrant shall discuss the implications of price and demand scenario planning (i.e., NR0101-25) may affect decisions to explore, acquire, and develop new reserves.

- The registrant may choose to discuss its use of other price and demand scenarios in addition to those disclosed in NR0101-25, particularly if these scenarios differ depending on the type of hydrocarbon reserves, country or region where exploration occurs, technological attributes of capital expenditure projects, or other factors.

.132 It may be relevant for the registrant to discuss what factors materially influence its CAPEX decision making, including, for example:

- How the scope of climate change regulation—such as which countries, regions, and/or industries likely to be impacted—may influence the type of hydrocarbon on which the registrant focuses its exploration and development.
- Its view of the alignment between the time horizon over which price and demand for hydrocarbons may be affected by climate regulation and time horizons for returns on capital expenditures on reserves.
- How the structure of climate regulation—i.e., a carbon tax versus cap-and-trade—may differently affect price and demand and thus the registrants capital expenditure decision making.

.133 The registrant should discuss how these trends affect decision making in the context of different types of reserve expenditures, including development of assets, acquisition of properties with proved reserves, acquisition of properties with unproved reserves, and exploration activities.

- The registrant shall discuss capital expenditures, regardless of the accounting method it uses (i.e., full cost or successful efforts).

Notes

Definitions:

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Additional References:

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Management of the Legal & Regulatory Environment

Description

The interaction of companies in the E&P industry with their legal and regulatory environments can have material impacts on shareholder value, both when they spend significant amounts on related activities such as lobbying and campaign contributions and as a result of changes in laws or policies that can affect operations. In particular, climate change and environmental laws and regulations can have material impacts on the E&P business. However, given the scientific consensus that human-induced climate change is occurring, efforts to delay climate-related policy or legislative changes may prove counterproductive to the industry in the long-term by creating regulatory and therefore investment, uncertainty, or imposing higher costs in the future. Efforts to influence environmental laws and regulations unfairly may affect companies' reputations and social licenses to operate. The oil and gas sub-sector, including E&P companies, is one of the largest contributors to lobbying efforts.

Accounting Metrics

NR0101-28. Amount of contributions (in U.S. dollars) to (1) political campaigns and (2) lobbyists or lobbying organizations; recipients of the five largest amounts.

.134 The registrant shall disclose its total monetary contributions to political campaigns at any level of government: federal, state, or local.
.135 The registrant shall disclose its total monetary contributions to lobbyists and lobbying organizations. This disclosure includes contributions made to trade organizations, which in turn contribute to political lobbying efforts.
.136 The registrant shall list the names of recipients (individuals or organizations) to which it contributed the five largest dollar amounts, considering the total contributions made during the fiscal year to such individuals or organizations.

NR0101-29. Description of position on environmental and climate change legislation and regulation, and strategy for managing associated risks and opportunities.

.137 The registrant shall discuss the position of company management regarding impending, new or amended legislation or regulations related to climate change and environmental impacts, which are likely to have a material impact on the registrant's operations; such disclosure should include a statement of whether management supports such legislation or regulations, and whether there are risks or opportunities emerging from certain provisions within such legislation or regulations (e.g., undue cost burden of certain provisions, ability to monetize greenhouse gas reduction activities, etc.).
.138 Climate change and environmental legislation and regulation material to the registrant's operations may include, but is not limited to, efforts to cap or tax greenhouse gas emissions, permitting of deep-water off-shore drilling, waste disposal rules, etc.
.139 The registrant shall discuss management strategy to manage such risks and opportunities; strategies may include activities such as lobbying, campaign contributions, changes to business structure or positioning in anticipation of regulations, etc.
.140 The registrant shall discuss the scope, such as if strategies pertain differently to different business units or geographies.
.141 The registrant shall discuss the activities and expenditures required to implement the strategy and any risks or limiting factors that might affect achievement of plans and/or targets.
.142 The registrant shall provide disclosure that is consistent with the Securities and Exchange Commission interpretive guidance regarding disclosure related to climate change (17 CFR Parts 211, 231 and 241).

Notes

Definitions:

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Additional References:

SEC interpretive guidance regarding disclosure related to climate change (17 CFR PARTS 211, 231 and 241).
http://www.sec.gov/rules/interp/2010/33-9106.pdf

Contractor & Supply Chain Management

Description

Oil and Gas E&P companies contract with Oil and Gas Services companies and other business partners for services and equipment at different stages of the exploration and production processes. The responsibility for environmental, health, and safety incidents and associated costs, while sometimes outlined in contracts, is not always clearly defined and both parties may face significant costs and reputational impacts when such incidents occur. Therefore, the performance of such contractors and business partners on the environmental and social issues that are material to E&P companies directly can also impact the operations and financial performance of E&P companies themselves. E&P companies applying selection and performance standards for environmental and social issues relevant to E&P operations to suppliers, contractors, and business partners would benefit from lower risks and enhanced shareholder value.

Accounting Metrics

Note: Because of the close relationship between the performance of E&P companies and their suppliers, contractors and business partners particularly related to protection of human rights and rights of indigenous peoples, emergency preparedness and response, and worker health and safety, among other issues, SASB accounting metrics on each of these integrate a consideration of the performance of such entities.

Specific metrics include:

NR0101-16. Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operating in conflicts zones.

NR0101-18. (1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate, by employees (full time and contract) and short service employees (full time and contact).

NR0101-21. Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1) and lesser consequence (Tier 2) as defined by the International Association of Oil & Gas Producers (OGP).

NR0101-22. Challenges to Safety Systems indicator rate (Tier 3) as defined by the International Association of Oil & Gas Producers (OGP).

NR0101-23. Discussion of measurement of Operating Discipline and Management System Performance through Tier 4 Indicators as defined by the International Association of Oil & Gas Producers (OGP).

NR0101-24. Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout the exploration and production lifecycle.

Oil & Gas - Midstream

SICS™ #NR0102

Prepared by the
Sustainability Accounting Standards Board ®

January 2014
Exposure Draft for Public Comment

Oil & Gas – Midstream

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 issues 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 and is accredited to set standards by the American National Standards Institute (ANSI).

SASB is developing standards for more than 80 industries in 10 sectors. SASB's standards-setting process includes evidence-based analysis with in-depth industry research and engagement with a broad range of stakeholders. The end result of this process is the creation of a complete, industry-specific accounting standard which accurately reflects the material issues for each industry.

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, January 14, 2014, and ending on Monday, April 14, 2014. This Standard is subject to change thereafter.

For instructions on providing comments to SASB please click here.

For an introduction to SASB Standards please click here.

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SASB Sustainability Accounting Standard

Oil & Gas Midstream **(NR0102)**

Industry Description

The midstream natural gas industry is involved in the gathering, transporting, and processing of natural gas from the wellhead, removal of impurities, production of natural gas liquids, storage, pipeline transport, and shipping and regasification of liquefied natural gas (LNG). Midstream oil companies are mainly responsible for transport of crude oil and refined products, using a network of pipes and pumping stations over land and via tankers by sea. Companies that own and operate bulk stations, as well as those that manufacture and install pipelines, are also part of this industry.

Note: The standards discussed below are for "pure-play" midstream activities, or independent midstream companies. Integrated oil and gas companies may own or operate midstream operations, but are also involved in the upstream operations of the oil and gas value chain, and in the refining or marketing of products. Disclosure topics and metrics on material sustainability issues that apply to such integrated companies are discussed in the Integrated Oil & Gas Bulletin. SASB has separate standards for the Oil and Gas Exploration & Production (NR-0101), and Refining & Marketing industries (NR-0103).

Table 1. Activity Level Metrics

Topic	Code	Activity Metric
Activity Level	NR0102-A	Total metric ton-kilometers of (1) natural gas, (2) crude oil, and (3) refined petroleum products transported, by mode of transport (e.g., pipelines, rail, tanker, truck, etc.).

Table 2. Material Sustainability Topics & Accounting Metrics

Topic	Code	Accounting Metric
Greenhouse Gas Emissions & Other Air Emissions	NR0102-01	Gross global Scope 1 emissions (metric tons CO_2-e) and percentage covered under a regulatory program.
	NR0102-02	Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities, and impacts, including emissions reduction target for Scope 1 emissions, that was active in fiscal year, and an analysis of performance against those targets.
	NR0102-03	Air emissions (in metric tons) for the following pollutants: NO_x (excluding N_2O), SO_x, volatile organic compounds (VOCs), and particulate matter (PM).
Ecological Impacts	NR0102-04	Percentage of land owned, leased, and/or operated (by acreage): (1) in sites with high conservation value, (2) in the Arctic.
	NR0102-05	Acreage of land disturbed; description of best practice environmental management plan used throughout the project lifecycle and the percentage of sites (by acreage) to which it was applied; impacted area (by acreage) that was restored.

Topic	Code	Accounting Metric
	NR0102-06	Number and aggregate volume of hydrocarbon spills (bbls), volume in Arctic, and volume recovered.
Community Relations	NR0102-07	Discussion of due diligence practices relating to the community rights, comprising economic rights, social and cultural rights, and environmental rights, including how these practices are applied to business partners.
	NR0102-08	Number of lawsuits and complaints from individuals or organizations in areas surrounding existing or proposed facilities that relate to impacts, accidents, or chronic exposure.
	NR0102-09	Financial risk (in U.S. dollars) to capital expenditure projects due to country, regional, and/or community risks.
Regulatory Compliance & Competitive Behavior	NR0102-10	Amount (in U.S. dollars) of legal and regulatory fines and settlements associated with federal pipeline and storage regulations (e.g., FERC, CFTC, and FTC). Description of fines and settlements and corrective actions implemented in response to events.
	NR0102-11	Amount of contributions (in U.S. dollars) to (1) political campaigns and (2) lobbyists or lobbying organizations; recipients of the five largest amounts.
	NR0102-12	Description of position on environmental and climate change legislation and regulation, and strategy for managing associated risks and opportunities.
Process Safety, Emergency Preparedness & Response	NR0102-13	Discussion of management systems used to integrate a culture of safety and preparedness throughout the value chain (including for contract and sub-contract partners) and throughout project lifecycles.
	NR0102-14	Number of significant pipeline incidents (Category 1), and number of pipeline incidents of lesser consequence (Category 2).

Greenhouse Gas Emissions & Other Air Emissions

Description

The Midstream industry generates significant quantities of greenhouse gases (GHG) and other air emissions from compressor engine exhausts, oil and condensate tank vents, natural gas processing, and fugitive emissions, in addition to emissions from mobile sources. Air pollutants can have significant, localized human health and environmental impacts. At the same time, the management of methane emissions has emerged as a major operational, reputational, and regulatory risk. Financial impacts on companies will vary depending on the specific location of operations and the prevailing emissions regulations, and include higher operating or capital expenditures, and regulatory or legal penalties. Companies that capture and monetize, or reduce emissions may enjoy higher revenues and improved competitiveness in an environment of increasing regulatory and public concerns about air quality and climate change, in the U.S. and globally.

Accounting Metrics

NR0102-01. Gross global Scope 1 emissions (metric tons CO_2-e) and percentage covered under a regulatory program.

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

- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalents (CO_2-e), calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the IPCC's Second Assessment Report (1995).
- 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 and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

.02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) 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 mobiles sources that include, but are not limited to, equipment at well sites, production facilities, refineries, chemical plants, terminals, office buildings, marine vessels transporting products, tank truck fleets, and moveable equipment at drilling and production facilities.

.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")[1]
- The financial approach detailed in Chapter 3 of the IPIECA/API/OGP Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions, Second Edition, 2011 (hereafter, the "IPIECA GHG Guidelines")
- The approach detailed in Section 4.23, "Organizational boundary setting for GHG emissions reporting" of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF)[2]

.04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the IPIECA GHG Guidelines and the CDP Guidance.

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[1] "An organization has financial control over an operation if it has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities. Generally an organization has financial control over an operation for GHG accounting purposes if the operation is treated as a group company or subsidiary for the purposes of financial consolidation" *Guidance for companies reporting on climate change on behalf of investors & supply chain members 2013* (p. 95).

[2] This is based on the requirements of International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting and is consistent with how information relating to entities within a group or interest in joint ventures/associates would be include on consolidated financial statements. *Climate Change Reporting Framework*, CDSB.

- 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 shall disclose the percentage of its emissions that are covered under a regulatory program, such as European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory programs.

- Regulatory programs include cap-and-trade schemes and carbon tax/fee systems.
- Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).

.06 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.

.07 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.

.08 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

NR0102-02. Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities, and impacts, including emissions reduction target for Scope 1 emissions, that was active in fiscal year, and an analysis of performance against those targets.

.09 The registrant shall discuss the following where relevant:

- The scope, such as if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources;
- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU ETS, RGGI, WCI, etc.), including regional, national, international, or sectoral programs;
- 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.

.10 For emission reduction targets, the registrants shall disclose:

- The percentage of emissions within the scope of the reduction plan;
- The percentage reduction from base year
  - The base year is the first or starting 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 which reach completion during the fiscal year;
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

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

.12 Disclosure corresponds with:

- CDSB Section 4, "Management Actions"[3]
- CDP questionnaire, "CC3. Targets and Initiatives"

NR0102-03. Air emissions (in metric tons) for the following pollutants: NO_x (excluding N_2O), SO_x, volatile organic compounds (VOCs), and particulate matter (PM).

.13 The registrant shall disclose its emissions of air pollutants associated with midstream operations released to the atmosphere, such as:

- Direct air emissions from stationary or mobile sources that include, but are not limited to, equipment at well sites, production facilities, refineries, chemical plants, terminals, office buildings, marine vessels transporting products, tank truck fleets, and moveable equipment at drilling and production facilities.

[3] 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

.14 The registrant shall disclose emissions consistent with IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting, as noted below.

.15 The registrant shall disclose emissions released to the atmosphere from oil and natural gas operations by emissions type. Substances include:

- Oxides of nitrogen (including NO and NO_2, and excluding N_2O) reported as NOx;
- Oxides of sulfur (SO_2 and SO_3) reported as SOx;
- Non-methane 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, which participates in atmospheric photochemical reactions, except those designated by the EPA as having negligible photochemical reactivity;
- Particulate matter (PM); reported as the sum of PM_{10} and $PM_{2.5}$, or all particulates less than 10 micrometers in diameter

.16 This scope does not include CO_2, methane, and nitrous oxide, which are disclosed in NR0102-01, as Scope 1 GHG emissions.

.17 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 NR0102-01.

.18 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

Notes

Definitions:

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Additional References:

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Ecological Impacts

Description

The storage and transport of crude oil, natural gas, and related products through a vast system of maritime transportation vehicles, pipelines, trains, and trucks present considerable risk to the environment and to local communities. Leaks, accidental discharges, pipeline rights-of-way, and open easements over ecologically sensitive land could impact ecosystems in several ways, including natural habitat loss, changes in species movement, and sedimentation. Regulatory agencies, supported by legislation that protects endangered species, require plans to mitigate or remediate negative ecological impacts prior to project approval, which, together with regulatory compliance costs, can require significant capital and operational expenditures. Companies that prevent and proactively manage ecological impacts can avoid project delays and litigation liabilities, and gain easier access to new projects and sources of revenue.

Accounting Metrics

NR0102-04. Percentage of land (by acreage): (1) in sites with high conservation value, (2) in the Arctic.

.19 The registrant shall calculate percentage (1) as the acreage land (owned, leased, and/or operated) in sites with high conservation value areas divided by the registrant's total acreage of land (owned, leased, and/or operated).

.20 Land is considered to be in a high conservation area if it is:

- Located within a WWF Global 200 terrestrial ecoregion.[4]
- Located within International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI), listed in the World Database of Protected Areas (WDPA), and mapped on ProtectedPlanet.net.

.21 The registrant shall calculate percentage (2) as the acreage of land (owned, leased, and/or operated) in the Arctic divided by the registrant's total acreage of land (owned, leased, and/or operated).

.22 Land is considered to be in the Arctic if is north of the Arctic Circle (north of the parallel of latitude at 66º 33' north).

.23 If land is located in the Arctic in an area that is also a high conservation area, the registrant shall include that acreage in calculations for (1) and (2).

.24 The scope of land for which the registrant shall provide disclosure includes that which is owned, leased, and/or operated (e.g., rights-of-way, easements, and land concessions).

.25 The registrant may choose to separately identify land in areas with additional ecological, biodiversity, or conservation designations, such as those listed by the A-Z Guide of Areas of Biodiversity Importance prepared by the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC).

.26 The registrant may choose to provide discussion around lands that are located in high conservation value areas or the Arctic, but which present low biodiversity or ecosystem services risks; the registrant may choose to provide similar discussion for land located in areas with low biodiversity concern, but which present high biodiversity or ecosystem services risks.

NR0102-05. Acreage of land disturbed; description of best practice environmental management plan used throughout the project lifecycle and the percentage of sites (by acreage) to which it was applied; impacted area (by acreage) that was restored.

.27 The registrant shall disclose the total acreage of disturbed land, where the scope includes land which is owned, leased, and/or operated (e.g., rights-of-way, easements, and land concessions).

- This disclosure shall be a cumulative total of all currently active sites, recently decommissioned sites, or sites being restored; it is not limited to land newly disturbed during the fiscal year.
- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.28 The registrant shall provide a brief description of its best practice environmental management plan(s) implemented, including, where relevant:

- Lifecycle stages to which the plan(s) apply, such as land acquisition and surveying, development and pipeline construction, pipeline operations, closure, decommissioning, and restoration;

[4] Olson, D. M., Dinerstein, E. 2002. The Global 200: Priority ecoregions for global conservation. Annals of the Missouri Botanical Garden 89(2):199-224

- The topics addressed by the plan(s), such as ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, and hazardous chemical usage;
- The underlying references for its plan(s), including whether they are codes, guidelines, standards, or regulations, and if they were developed by the registrant, an industry organization, a third-party organization (e.g., a non-governmental organization), a governmental agency, or some combination of these groups; and
- Its rationale for determining that the plan(s) identified constitutes a best practice.

.29 The registrant shall calculate the percentage as the acreage of land to which it applied its best practice environmental management plan divided by the total acreage of land.

- If environmental management plans differ significantly by activity (e.g., natural gas pipeline as compared to oil pipelines), then the registrant shall calculate the percentage separately by activity.
- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.30 The registrant shall disclose the acreage of land impacted by operations that was restored during the fiscal year, where, at a minimum, restoration meets the Society for Ecological Restoration definition: "the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed."

- Restoration may be further defined by local, state, or national laws, industry standards, or the registrant's own guidelines.
- The registrant shall disclose the definition of restoration and accompanying practices it follows in its description of its best practice environmental management plan.

.31 Relevant references may include:

- "Environmental management in oil and gas exploration and product – An overview of issue and management approaches", Joint E&P Forum/UNEP Technical Publication 1997
- "Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: Oil Fields and Mines: A Toolkit to Assist Government Agencies", DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative

NR0102-06. Number and aggregate volume of hydrocarbon spills (bbls), volume in Arctic, and volume recovered.

.32 The registrant shall disclose the total number and volume (in barrels) of hydrocarbon spills, where:

- Spills are defined as greater than 1bbl (42 U.S. gallons, or 159 liters);
- Spills include those that reached the environment and exclude spills that were contained within impermeable secondary containment.

.33 Consistent with IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting (hereafter, "IPIECA Guidance"), the volume reported shall represent the total estimated amount spilled that reached the environment and shall not be reduced by the amount of such hydrocarbon subsequently recovered, evaporated, or otherwise lost.

.34 Consistent with IPIECA Guidance, the scope of releases from operations and events includes:

- Above-ground and below-ground facilities;
- Sabotage, earthquakes, or other events outside operational control;
- Company-owned and operated transport; and
- Leakage over time, which is counted once at the time it is identified.

.35 The registrant may choose to disclose spills to soil and water separately. A spill that qualifies as a spill to both soil and water should be reported as a single spill to water, with the volume properly apportioned to soil and water.

.36 The registrant shall disclose the volume of spills (in bbls) that occurred in the Arctic, considered to be the area north of the Arctic Circle or (north of the parallel of latitude at 66º 33' north).

.37 The registrant shall calculate the volume of spills recovered as the amount of spilled hydrocarbons (in bbls) removed from the environment through short-term spill response activities, excluding:

- Amounts that were recovered during longer-term remediation at spill sites
- Amounts that evaporated, burned, or were dispersed

.38 The registrant shall calculate recovery rates using an accepted standard or guideline, such as California Code of Regulations, Title 14. Division 1, Subdivision 4, Office of Oil Spill Prevention and Response, Chapter 7. Enforcement Subchapter 2. Determining Amount of Petroleum Hydrocarbons Recovered, Sections 877-880, Effective June 13, 2009.

Notes

Definitions:

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Community Relations

Description

Pipeline companies rely on right-of-way agreements with the owner of the property over which the pipeline route has been planned. Impacts on local communities and landowners of midstream company projects include disturbances from pipeline equipment and workers, as well as health impacts from accidents. Without adequate community engagement, midstream companies may face significant additional costs and capital expenditures in order to reroute pipelines, or due to longer time-to-completion of projects. Negative community impacts can hurt a company's social license to operate, making it more difficult to gain rights-of-way, and ultimately increasing its risk profile and cost of capital.

Accounting Metrics

NR0102-07. Discussion of due diligence practices relating to the community rights, comprising economic rights, social and cultural rights, and environmental rights, including how these practices are applied to business partners.

.39 The registrant shall describe its procedure and practice of due diligence with regard to the rights of communities in areas where it conducts business, intends to conduct business, or previously conducted business. Rights include:

- Economic rights, including the right to employment, fair wages, payment transparency, and respect of infrastructure and agricultural land
- Environmental rights, including the right to clean local air and water, and the safe discharge and disposal of waste
- Social rights, including the right to adequate health care, education, and housing
- Cultural rights, including the right to protection of places of cultural significance (e.g., sacred sites or burial sites)

.40 The discussion shall include due diligence processes employed during all stages of project development (i.e., prior, during, and post).

.41 Discussion shall include how practices apply to business partners, such as contractors, sub-contractors, suppliers, and joint venture partners.

.42 The registrant should describe its efforts to eliminate or mitigate community risks, and/or to address community concerns, including, but not limited to:

- The use of social impact assessments (SIA) that evaluate, manage, and mitigate risks
- Efforts to engage with stakeholders, build consensus, and collaborate with communities
- "Shared" or "blended" value projects that provide quantifiable benefits to the community and the registrant
- Meeting the standards of financial and aid institutions, such as the International Finance Corporation

NR0102-08. Number of lawsuits and complaints from individuals or organizations in areas surrounding existing or proposed facilities that relate to impacts, accidents, or chronic exposure.

.43 The registrant shall disclose the number of lawsuits and complaints from individuals or organizations relating to impacts from existing or proposed facilities.

.44 The scope of complaints includes those for which the grievance was formally communicated to the registrant, which includes, but is not limited to, petitions, requests for public hearing, and protests.

.45 Complaints may relate to:

- Impacts, or releases to air or water, waste discharges, traffic, noise, etc.
- Accidents, such as fires, explosions, spills, or leaks
- Chronic exposure, such as long-term effects from air emissions

.46 The registrant should discuss the scope, impact, and context of the lawsuits or complaints, including whether operations were materially impacted.

.47 The registrant should describe any actions it took as a result of incidents, including, but not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.

NR0102-09. Financial risk (in U.S. dollars) to capital expenditure projects due to country, regional, and/or community risks.

.48 The registrant shall calculate the aggregate estimated value at risk (in U.S. dollars) to its capital expenditure projects as the difference in value (in U.S. dollars) between a project free from country, regional, and/or community risks (hereafter, "country risk") and the value of a project adjusted for these risks.

.49 This calculation shall be conducted using an appropriate valuation model; variations of the Capital Asset Pricing Model (CAPM) are commonly used to assess country risk.

- Value at risk can be calculated by applying an additional discount rate premium used when calculating the net present value of a project using discounted cash-flow DCF analysis.
- Value at risk can be expressed as a reduction in the expected cash flows of a project due to country risk when calculating the net present value of a project using DCF.
- If a project is insured for country risks, the value as risk can be expressed as a reduction in the cash flows of a project due to the cost of insurance when calculating the net present value of a project using DCF.

.50 Country, regional, and/or community risks include, but are not limited to, corruption, business legal structure, political stability, regulation, resource nationalism, ethnic conflict, stability of the local market, labor force (skills) availability, resettlement and access to land, quality of access to infrastructure (e.g., ports, roads, shipping channels), and/or general license to operate.

- These risks are likely to manifest differently at the country (national), regional (state), community (local), and project levels.
- This risk differs from sovereign risk, which is the potential for a central bank or government-backed entity to willingly or unwillingly default on debt obligations, or to significantly alter key economic variables, such as foreign exchange rates, import ratios, and money supply.

.51 The registrant shall describe the model or approach used to value capital expenditure projects, such as via adjusted discount rate, expected cash flow, or by other methods.

.52 The registrant should identify and describe country risks specific to its projects and unique operating context.

- This may include the identification of country, regional, and community risks, and/or the discussion of specific projects.
- This may include discussion of how the registrant has mitigated these risks through community engagement partnerships, blended value projects, etc.; the registrant shall quantify this reduction in risk according to the methods described above.
- Discussion should be offered in additional to broad country risk classification (e.g., the OECD Prevailing Country Risk classification, Standard & Poor's Country Risk ratings, World Economic Form Global Competitiveness Index, etc.).

Notes

Definitions:

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Additional References:

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Regulatory Compliance & Competitive Behavior

Description

Companies that own natural gas pipelines and storage facilities face numerous and constantly changing regulations from the Federal Energy Regulatory Commission (FERC) in all aspects of their operations, including rates charged, access offered to pipelines, and siting and construction of new facilities. Pipeline companies enjoy a natural monopoly, and FERC regulations ensure that companies do not abuse this position through unfair pricing, discriminatory service, or by other means. New market manipulation regulations from the Federal Trade Commission and the Commodity Futures Trading Commission could also affect the Midstream industry. Midstream companies face uncertainty in relation to their ability to change the rates charged, which could affect their ability to recover costs. Companies could face complaints from market participants that result in prospective rate changes or compensation payments, and may also face penalties from the FERC for violating regulations governing competitive behavior. Additionally, the interactions of companies in the Midstream industry with their legal and regulatory environments can have material impacts on shareholder value when they spend significant amounts on related activities, such as lobbying and campaign contributions, and as a result of new or altered climate change and other environmental laws or policies that can affect operations. Companies' ability to manage the changing legal and regulatory environment, as well as their ability to ensure their operations are competitive, could therefore have both acute and chronic impacts on value.

Accounting Metrics

NR0102-10. Amount (in U.S. dollars) of legal and regulatory fines and settlements associated with federal pipeline and storage regulations (e.g., FERC, CFTC, and FTC). Description of fines and settlements and corrective actions implemented in response to events.

.53 The registrant shall disclose the amount (excluding legal fees) of all fines or settlements associated with federal pipeline and storage regulations, including, but not limited to, those related to rates, pipeline access, price gouging, price fixing, or market manipulation.

- Disclosure includes enforcements from the FERC, the U.S. Commodities Futures Trade Commission, and the U.S. Federal Trade Commission.

.54 Disclosure shall include civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).

.55 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, or non-prosecution agreement) and context (e.g., fraud, anti-trust, etc.) of fines and settlements.

.56 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.

NR0102-11. Amount of contributions (in U.S. dollars) to (1) political campaigns and (2) lobbyists or lobbying organizations; recipients of the five largest amounts.

.01 The registrant shall disclose its total monetary contributions to political campaigns at any level of government: federal, state, or local.

.02 The registrant shall disclose its total monetary contributions to lobbyists and lobbying organizations. This disclosure includes contributions made to trade organizations, which in turn contribute to political lobbying efforts.

.03 The registrant shall list the names of recipients (individuals or organizations) to which it contributed the five largest dollar amounts, considering the total contributions made during the fiscal year to such individuals or organizations.

NR0102-12. Description of position on environmental and climate change legislation and regulation, and strategy for managing associated risks and opportunities.

.04 The registrant shall discuss the position of company management regarding impending, new or amended legislation or regulations related to climate change and environmental impacts, which are likely to have a material impact on the registrant's operations; such disclosure should include a statement of whether management supports such legislation or regulations, and whether there are

risks or opportunities emerging from certain provisions within such legislation or regulations (e.g., undue cost burden of certain provisions, ability to monetize greenhouse gas reduction activities, etc.).

.05 Climate change and environmental legislation and regulation material to the registrant's operations may include, but is not limited to, efforts to cap or tax greenhouse gas emissions, permitting rules, etc.

.06 The registrant shall discuss management strategy to manage such risks and opportunities; strategies may include activities such as lobbying, campaign contributions, changes to business structure or positioning in anticipation of regulations, etc.

.07 The registrant shall discuss the scope, such as if strategies pertain differently to different business units or geographies.

.08 The registrant shall discuss the activities and expenditures required to implement the strategy and any risks or limiting factors that might affect achievement of plans and/or targets.

.09 The registrant shall provide disclosure that is consistent with the Securities and Exchange Commission interpretive guidance regarding disclosure related to climate change (17 CFR Parts 211, 231 and 241).

Notes

Definitions:

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Additional References:

SEC interpretive guidance regarding disclosure related to climate change (17 CFR PARTS 211, 231 and 241).
http://www.sec.gov/rules/interp/2010/33-9106.pdf

Process Safety, Emergency Preparedness & Response

Description

In order to prevent or respond to significant spills or accidents with wide-ranging impacts on the environment, employees, and local communities, and therefore, to maintain their social license to operate, Midstream companies need to develop a strong safety culture, and establish a systematic approach to safety, risk management (including emergency preparedness and response), and operational integrity across their vast transportation and storage networks. Companies face reputational risks, legal and regulatory fines, operational risks, and remediation costs as a result of accidents, leaks, or spills of oil or gas, both of which are highly flammable and can cause significant environmental and health damage if released due to compromises in pipeline integrity, or while being transported by rail or tankers.

Accounting Metrics

NR0102-13. Discussion of management systems used to integrate a culture of safety and preparedness throughout the value chain (including for contract and sub-contract partners) and throughout project lifecycles.

.10 The registrant shall describe the safety and response management systems in place, whether internal proprietary procedures or those developed by a third party.

.11 Discussion shall include how the registrant integrates a culture of safety and emergency preparedness throughout its value chain, such as through training, joint management by the workforce and leadership, rules and guidelines, and use of technology.

.12 The registrant shall include description of how emergency preparedness is coordinated among business partners (e.g., contractors and sub-contractors).

.13 Disclosure may focus broadly on safety and emergency management systems, but shall specifically address the systems to avoid and manage emergencies, accidents, and incidents that could have catastrophic human health, local community, and environmental impacts.

.14 The midstream oil and gas project lifecycle includes, at a minimum, land acquisition (e.g., right-of-way easement negotiations), site surveys, site development and pipeline installation, revegetation, operation, and decommissioning and removal.

NR0102-14. Number of significant pipeline incidents (Category 1), and number of pipeline incidents of lesser consequence (Category 2).

.15 The registrant shall disclose the number of significant—or Category 1—pipeline incidents.

.16 A Category 1 incident is an event involving the release of gas, liquefied natural gas, oil, and other hazardous and non-hazardous materials from a pipeline or facility that resulted in any of the following events, as defined by the U. S. Pipeline and Hazardous Materials Safety Administration (PHMSA) pipeline safety and hazardous materials safety reporting guidelines:

- A death or a personal injury necessitating in-patient hospitalization;
- Estimated property and environmental damage of $50,000 or more, including losses to the operator and others, or both, but excluding cost of gas lost;
- Unintentional estimated gas loss of three million cubic feet or more;
- An event that results in an emergency shutdown of an LNG facility. Activation of an emergency shutdown system for reasons other than an actual emergency does not constitute an incident;
- An event that is significant in the judgment of the operator, even though it did not meet the criteria of paragraphs (1) or (2) of this definition.

.17 The registrant shall disclose the number of pipeline incidents of lesser consequences—or Category 2—pipeline incidents.

.18 Category 2 incidents are defined as:

- A release of gas, liquefied natural gas, oil, and hazardous and non-hazardous materials from a pipeline or facility that did not result in a Category 1 incident (as defined above);
- An incident, such as a pipeline hit (i.e., unintentional strikes of pipelines or storage vessels during ground excavation), that did result in a breach and leakage of the pipeline or storage vessel.

.19 The registrant should reference pipeline incident reporting protocols and definitions detailed in the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration Pipeline Safety Title 49 CFR Parts 190-199.

.20 The registrant may choose to describe any damage resulting from the incident, including to physical equipment and facilities of the registrant and others, and to the surrounding environment.

- This includes disclosure of whether the pipeline incident resulted in a service interruption deemed significant by the registrant.

Notes

Definitions:

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Additional References:

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Oil & Gas - Refining & Marketing

SICS™ #NR0103

Prepared by the
Sustainability Accounting Standards Board ®

January 2014
Exposure Draft for Public Comment

Oil & Gas - Refining and Marketing

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 issues 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 and is accredited to set standards by the American National Standards Institute (ANSI).

SASB is developing standards for more than 80 industries in 10 sectors. SASB's standards-setting process includes evidence-based analysis with in-depth industry research and engagement with a broad range of stakeholders. The end result of this process is the creation of a complete, industry-specific accounting standard that accurately reflects the material issues for each industry.

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, January 14, 2014, and ending on Monday, April 14, 2014. This Standard is subject to change thereafter.

For instructions on providing comments to SASB please click here.

For an introduction to SASB Standards please click here.

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SASB Sustainability Accounting Standard

Oil & Gas Refining and Marketing **(NR0103)**

Industry Description

Oil and Gas Refining and Marketing (R&M) companies refine petroleum products, market oil and gas products, or operate gas stations and convenience stores, all of which comprise the downstream operations of the oil and gas value chain. The types of refinery products influence the complexity of the refining process used, with different expenditure needs and intensity of environmental and social impacts.

Note: The standards discussed below are for "pure-play" R&M activities, or independent R&M companies. Integrated oil and gas companies conduct upstream operations and are also involved in the distribution and/or refining or marketing of products. Disclosure topics and metrics on material sustainability issues that apply to such integrated companies are discussed in the Integrated Oil & Gas Bulletin. SASB has separate standards for the Oil and Gas Exploration & Production (NR-0101), and Midstream (NR-0102) industries.

Table 1. Activity Level Metrics

Topic	Code	Activity Metric
Activity Level	NR0103-A	Refining throughput of crude oil and other feedstocks in million barrels of oil equivalent (MMBOE).[1]
	NR0103-B	Refining operating capacity, in million barrels per day (MBPD) measured per calendar day and per stream day.[2]
	NR0103-C	Solomon-UEDC™ or Utilized Equivalent Distillation Capacity, where UEDC is the sum of nominal capacity per unit multiplied by the coefficient of complexity (as defined by Solomon Associates).

Table 2. Material Sustainability Topics & Accounting Metrics

Topic	Code	Accounting Metric
Greenhouse Gas Emissions	NR0103-01	Gross global Scope 1 emissions in metric tons CO_2-e, percentage covered under a regulatory program, and gross global Scope 1 emissions per Solomon-UEDC™.
	NR0103-02	Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities, and impacts, including emissions reduction target for Scope 1 emissions that was active in fiscal year, and an analysis of performance against those targets.
	NR0103-03	Amount (in metric tons of hydrocarbon content) of flue gas flared.

[1] The total volume of crude oil and other feedstocks processed in the refinery system during the reporting period.

[2] Per the U.S. Energy Information Administration, operating (or operable) capacity is the amount of capacity that, at the beginning of the period, is in operation; not in operation and not under active repair, but capable of being placed in operation within 30 days; or not in operation but under active repair that can be completed within 90 days. Operable capacity is the sum of the operating and idle capacity and is measured in barrels per calendar day or barrels per stream day.

Topic	Code	Accounting Metric
Air Quality	NR0103-04	Air emissions (in metric tons) for the following pollutants: NO_x (excluding N_2O), SO_x, particulate matter (PM), and volatile organic compounds (VOCs).
	NR0103-05	Percentage of refineries for which there are both publicly accessible and easily interpretable real-time air quality monitoring data and community education initiatives about the health risks associated with localized air emissions.
Water Management	NR0103-06	Total fresh water withdrawn (m^3), returned (m^3), recycled (m^3); and percentage withdrawn in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas.
	NR0103-07	Number of incidents of non-compliance with water quality permits, standards, and regulations, such as total maximum daily load (TMDL) exceedances.
Hazardous Materials Management	NR0103-08	Amount of waste from operations (metric tons) by: (1) RCRA non-exempt characteristic hazardous waste, (2) RCRA exempt; percentage recycled.
	NR0103-09	Number of underground storage tank (UST) incidents requiring cleanup; percentage in states with UST financial assurance funds.
Employee Health, Safety & Well-being	NR0103-10	(1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate, by employees (full time and contract).
	NR0103-11	Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1) and lesser consequence (Tier 2), as defined by ANSI/API RP-754.
	NR0103-12	Challenges to Safety Systems indicator rate (Tier 3), as defined by ANSI/API RP-754.
	NR0103-13	Discussion of measurement of Operating Discipline and Management System Performance through Tier 4 Indicators, as defined by ANSI/API RP-754.
Product Specifications & Clean Fuel Blends	NR0103-14	Percentage of Renewable Volume Obligation (RVO) for fuel blends and exports under the expanded Renewable Fuel Standards met through: (1) Production of qualifying renewable fuels (2) Purchase of "separated" renewable identification numbers (RIN).
	NR0103-15	Initiatives designed to improve the commercialization of advanced biofuels, such as through retail options at gas stations, investments in joint ventures with primary producers, or through partnerships with transportation-related entities (e.g., air, ground, or marine fleet operators; vehicle manufacturers).
Pricing Integrity & Transparency	NR0103-16	Dollar amount of legal and regulatory fines and settlements associated with fraud, such as price gouging, price fixing, or market manipulation, including those with the U.S. Commodities Futures Trade Commission and Federal Trade Commission. Description of fines and settlements and corrective actions implemented in response to events.
Management of the Legal & Regulatory Environment	NR0103-17	Amount of contributions (in U.S. dollars) to (1) political campaigns and (2) lobbyists or lobbying organizations; recipients of the five largest amounts.
	NR0103-18	Description of position on environmental and climate change legislation and regulation, and strategy for managing associated risks and opportunities.

Greenhouse Gas Emissions

Description

Oil and Gas R&M operations generate significant direct greenhouse gas (GHG) emissions from the stationary combustion of fossil fuels for energy consumption, and energy costs are a significant share of refinery operating costs. Greenhouse gases are also released from process emissions, fugitive emissions resulting from leaks, emissions from venting and flaring, and from non-routine events such as equipment maintenance. The energy intensity of production, and therefore the GHG emissions intensity, can vary significantly, depending on the type of crude oil that is used as feedstock as well as refined product specifications. The relative magnitude of direct GHG emissions from the industry exposes it to higher operating and capital expenditures from existing emissions regulations at the state, national, and regional levels, with a high degree of uncertainty about future emissions regulations. Conversely, energy efficiency, co-generation, or process improvements can provide benefits in the form of operational efficiencies and lower costs.

Accounting Metrics

NR0103-01. Gross global Scope 1 emissions in metric tons CO_2-e, percentage covered under a regulatory program, and gross global Scope 1 emissions per Solomon-UEDC™.

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

- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalents (CO_2-e) calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the IPCC's Second Assessment Report (1995).
- 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 and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

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

.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").[3]
- The financial approach detailed in Chapter 3 of the IPIECA/API/OGP Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions, Second Edition, 2011 (hereafter, the "IPIECA GHG Guidelines").
- The approach detailed in Section 4.23 "Organizational boundary setting for GHG emissions reporting" of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).[4]

.04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the IPIECA GHG Guidelines and 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.

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[3] "An organization has financial control over an operation if it has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities. Generally an organization has financial control over an operation for GHG accounting purposes if the operation is treated as a group company or subsidiary for the purposes of financial consolidation" *Guidance for companies reporting on climate change on behalf of investors & supply chain members 2013* (p. 95).

[4] This is based on the requirements of International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting and is consistent with how information relating to entities within a group or interest in joint ventures/associates would be included on consolidated financial statements. *Climate Change Reporting Framework*, CDSB.

.05 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory program.

- Regulatory programs include cap-and-trade schemes and carbon tax/fee systems.
- Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).

.06 The registrant shall disclose its Scope 1 emissions per Solomon-UEDC™ or Utilized Equivalent Distillation Capacity, where UEDC is the sum of nominal capacity per unit multiplied by the coefficient of complexity (as defined by Solomon Associates).

.07 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.

.08 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.

.09 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

NR0103-02. Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities, and impacts, including emissions reduction target for Scope 1 emissions that was active in fiscal year, and an analysis of performance against those targets.

.10 The registrant shall discuss the following where relevant:

- The scope, such as if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources;
- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU ETS, RGGI, WCI, etc.), including regional, national, international or sectoral programs;
- 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

.11 For emission reduction targets the registrants shall disclose:

- The percentage of emissions within the scope of the reduction plan;
- The percentage reduction from base year
  - The base year is the first or starting year against which emissions are evaluated towards 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 reach completion during the fiscal year;
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

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

.13 Disclosure corresponds with:

- CDSB Section 4, "Management actions"[5]
- CDP questionnaire "CC3. Targets and Initiatives"

NR0103-03. Amount (in metric tons of hydrocarbon content) of flue gas flared.

.14 The registrant shall disclose the amount of gas flared to the atmosphere as the total mass of hydrocarbon gas sent to operational flared systems.

.15 Disclosure shall be consistent with IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting, Indicator E4: Flared Gas.

.16 The scope of disclosure includes routine flaring operations and non-routine flaring events.

[5] 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

.17 The calculation of flared gas shall be based on the composition of the gas stream involved and should exclude the mass of non-hydrocarbons, such as CO_2, water, H_2 and N_2. In the absence of measured gas composition data, engineering estimates should be applied.

.18 The calculation should include hydrocarbon mass of purge gas, pilot light fuel, and assist gas, if these are substantial relative to the total mass flared.

Notes

Definitions:

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Additional References:

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Air Quality

Description

Other air emissions from R&M operations include sulfur dioxide, nitrogen oxides, Volatile Organic Compounds, and other Hazardous Air Pollutants and Criteria Air Pollutants, which can have significant, localized human health and environmental impacts. Human health impacts can be particularly potent when refining and gas station operations are located close to communities. Releases occur from stationary combustion sources, storage vessels, flares, and equipment leaks, and may also occur as a result of accidents. R&M companies may face regulatory compliance costs, penalties, and difficulty obtaining permits through specific provisions under the U.S. Clean Air Act, such as the New Source Performance Standards, or similar rules in other countries. Companies may also face legal challenges from the local population or businesses that are directly affected by air pollutants, resulting in liabilities. Companies that are cost-effectively able to maintain air emissions below regulatory limits, and inform local communities about health risks and preventive measures, could achieve competitive margins and maintain their social license to operate.

Accounting Metrics

NR0103-04. Air emissions (in metric tons) for the following pollutants: NO_x (excluding N_2O), SO_x, particulate matter (PM), and volatile organic compounds (VOCs).

.19 The registrant shall disclose its emissions released to the atmosphere of air pollutants associated with refining and marketing operations, such as:
- Direct air emissions from stationary or mobile sources that include, but are not limited to, production facilities, refineries, chemical plants, terminals, office buildings, marine vessels transporting products, tank truck fleets, and moveable equipment at production facilities.

.20 The registrant shall disclose emissions consistent with IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting, as noted below.

.21 The registrant shall disclose emissions released to the atmosphere from refining and marketing operations by emissions type. Substances include:
- Oxides of nitrogen (including NO and NO_2 and excluding N_2O) reported as NO_x;
- Oxides of sulfur (SO_2 and SO_3) reported at SO_x;
- Particulate matter (PM); reported as the sum of PM_{10} and $PM_{2.5}$, or all particulates less than 10 micrometers in diameter;
- Non-methane 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.

.22 This scope does not include CO_2, methane, and nitrous oxide, which are disclosed in NR0103-01, as Scope 1 GHG emissions.

.23 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 NR0103-01.

.24 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

NR0103-05. Percentage of refineries for which there are both publicly accessible and easily interpretable real-time air quality monitoring data and community education initiatives about the health risks associated with localized air emissions.

.25 The registrant shall disclose the percentage of its refineries for which it provides publicly accessible air quality data and engages with the community immediately surrounding the refinery to provide education about the health risks of localized air pollution.

.26 Publicly accessible air quality monitoring data may include data available through local and state websites, user applications, or other electronic tools.

.27 Community education initiatives about the health risks associated with local air emissions may include seminars, workshops, notifications, and emergency preparedness planning.

Notes

Definitions:

Additional References:

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Water Management

Description

Refineries can use relatively large quantities of water depending on their size and the complexity of the refining process. This exposes them to the risk of reduced water availability, depending on their location, and related cost increases. Refinery operations lead to process wastewater and surface water runoff, with many of the waste streams requiring treatment at on-site wastewater treatment plants before discharge. Reducing water use and contamination through recycling, reuse, and other water management strategies could create operational efficiency for companies; lower their operating costs; and minimize the impacts of regulations, water supply shortages, and community-related disruptions on operations.

Accounting Metrics

NR0103-06. Total fresh water withdrawn (m^3), returned (m^3), recycled (m^3); and percentage withdrawn in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas.

.28 The registrant shall disclose the amount of water (in thousands of cubic meters) that was withdrawn from freshwater sources for use in operations.

- Fresh water may be defined according to the local statutes and regulations where the registrant operates. If 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.

.29 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was returned to the environment during the fiscal year. This figure shall include the amount discharged directly to the environment or indirectly discharged through a third party, such as a local wastewater treatment plant.

.30 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was recycled during the fiscal year. This figure shall include the amount recycled in closed-loop and open-loop systems. Water recycled for purposes other than refining and marketing operations (e.g., grey water reuse) shall not be included in this figure.

- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.

.31 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online here), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

NR0103-07. Number of incidents of non-compliance with water quality permits, standards, and regulations, such as total maximum daily load (TMDL) exceedances.

.32 The registrant shall disclose the total number of instances of non-compliance, including violations of a technology-based standard or exceedances of a quality-based standard.

.33 The scope of disclosure includes incidents related to statutory permits and regulations or voluntary agreements, standards, or guidelines.

.34 Voluntary standards include the registrant's own water quality standards (parameters) or "effluent guidelines" from the International Finance Corporation (IFC) "Environmental, Health and Safety Guidelines for Petroleum Refining"

.35 Typical parameters of concern include hydrocarbons (oil, grease, and hydrocarbons), chemical oxygen demand (COD)/biochemical oxygen demand (BOD), sulfides, ammonia, phenols, total suspended solids (TSS), and total dissolved solids (TDS).

.36 An incident of non-compliance shall be disclosed regardless of whether it received an enforcement action (e.g., fine, warning letter, etc.).

.37 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 average, and monthly average.
- 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.

Notes

Definitions:

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Additional References:

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Hazardous Materials Management

Description

R&M companies face regulatory and operational challenges in managing waste generated by their activities and in handling and storing petroleum products. Many of these substances are hazardous to human health and the environment, and can affect redevelopment of land for closed facilities. The Resource Conservation and Recovery Act (RCRA) in the U.S. governs waste generated by R&M companies, which include metals, spent acids, solid catalysts, and wastewater treatment sludge. Companies are also affected by RCRA regulations specific to Underground Storage Tanks (USTs), focusing on preventing, detecting, and remediating releases of hazardous substances. Despite improvements in UST systems, leaks still occur, and companies may continue to be impacted by related regulatory actions. Main substances of concern include benzene, toluene, ethylbenzene and xylenes (BTEX), Methyl tertiary butyl ether (MTBE), and lead in petroleum products. Spills and releases occurring in populated areas can be difficult and expensive to remediate.

Accounting Metrics

NR0103-08. Amount of waste from operations (metric tons) by: (1) RCRA non-exempt characteristic hazardous waste, (2) RCRA exempt; percentage recycled.

.38 The registrant shall calculate and disclose the amount of waste (in metric tons) that meets the definition of hazardous waste under Subtitle C of the U.S. Environmental Protection Agency's (EPA) Resource Conservation and Recovery Act (RCRA).
- This includes waste that displays the following characteristics: ignitability, corrosivity, reactivity, or toxicity
- This excludes waste that is classified as exempt by the U.S. EPA, such as certain oil-bearing hazardous secondary materials.

.39 The registrant shall calculate and disclose the amount of waste (in metric tons) that does not meet the definition of hazardous waste or is exempt from classification as hazardous waste under RCRA Subtitle C.

.40 The percentage recycled shall be calculated as the amount of this waste that was sold as a by-product plus the amount of waste recycled (through processing) by the registrant plus the amount sent externally for further recycling divided by the total amount of waste generated.
- Materials disposed of in landfills, both internal and external, and incinerated materials are classified as waste.
- Materials reused internally by the registrant are classified neither as a waste nor as a recycled material and shall be excluded from calculations.

NR0103-09. Number of underground storage tank (UST) incidents requiring cleanup; percentage in states with UST financial assurance funds.

.41 The registrant shall disclose the number of underground storage tank (UST) incidents (including leaks, spills, overfills, corrosion, etc.) for which the registrant had some degree of cleanup responsibilities (i.e., including shared cost of remediation).

.42 The scope of disclosure includes new incidents that occurred during the fiscal year as well as past events (e.g., legacy cleanup) for which the registrant was notified of responsibility during the fiscal year.

.43 The registrant shall disclose the number of UST incidents that occurred in states with UST financial assurance funds.
- The registrant shall further indicate any incidents that were legacy events in states that do not provide coverage for past events and any incidents that were not eligible for coverage under the rules of state UST trust funds.

.44 The registrant may choose to describe its effort to maintain compliance with the Federal Underground Storage Tank Program, including its method/process to prevent UST spills, overfills, and corrosion.

Notes

Definitions:

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Employee Health, Safety, & Well-being

Description

The R&M industry poses inherent risks to employee health and safety because of the presence of flammable hydrocarbons. Accidents or inadvertent exposures to chemicals and other hazards such as heat or noise during both routine and non-routine activities may result in employee fatalities, severe injuries, or illnesses. Organizational research and examples from other similarly risky industries show that it is important for a company in this industry to develop a culture of safety, one that reduces the probability of accidents and other health and safety incidents occurring and provides effective detection and response to accidents and other emergencies that do occur. Along with effective process safety management practices, a culture that engages and empowers employees to work with management in safeguarding their own health and safety, and preventing accidents, is likely to help companies reduce production downtime, mitigate or eliminate costs, and ensure workforce productivity.

Accounting Metrics

NR0103-10. (1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate, by employees (full time and contract).

.45 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its total recordable injury rate (TRIR), as calculated and reported in the Occupational Safety and Health Administration's (OSHA) Form 300.

- OSHA guidelines provide details on determination of whether an event is a recordable occupational incident and definitions for exemptions for incidents that occurred in the work environment but are not occupational.

.46 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its total recordable injury rate according to the U.S. Bureau of Labor Statistics guidance and/or using the U.S. Bureau of Labor Statistics calculator.

.47 The registrant shall disclose its near miss frequency rate (NMFR), in which a near miss is defined as an incident in which no property or environmental damage or personal injury occurred, but damage or personal injury easily could have occurred but for a slight circumstantial shift.

- The registrant should refer to organizations such as the National Safety Council (NSC) for guidance on implementing near miss reporting.
- The registrant should disclose its process for classifying, identifying, and reporting near miss incidents.

.48 The registrant shall disclose its TRIR and NMFR for its direct employees (by full time and contract) and it shall disclose its TRIR and NMFR for short-service employees (by full time and contract).

.49 Short Service Employees (SSE) are defined as a newly placed full-time or temporary employee or subcontractor with less than six months' experience in an assigned position.

.50 The scope includes all domestic and foreign employees.

.51 Rates shall be calculated as: (statistic count / total hours worked)*200,000.

NR0103-11. Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1) and lesser consequence (Tier 2), as defined by ANSI/API RP-754.

.52 The registrant shall disclose Tier 1 process safety events rates (PSE) and Tier 2 PSE for instances of loss of primary containment (LOPC) using terms and definitions from the ANSI/API Recommended Practice 754 – Process Safety Performance Indicators for the Refining and Petrochemical Industrial (hereafter, ANSI/API RP-754)

.53 A PSE is defined as an unplanned or uncontrolled loss of primary containment (LOPC) of any material including non-toxic and non-flammable materials (e.g. steam, hot condensate, nitrogen, compressed CO_2 or compressed air) from a process, or an undesired event or condition that, under slightly different circumstances, could have resulted in an LOPC of a material.

- LOPC is a type of event.
- An unplanned or uncontrolled release is an LOPC irrespective of whether the material is released into the environment, or into secondary containment, or into other primary containment not intended to contain the material released under normal operating conditions.

.54 A Tier 1 PSE is defined as a loss of primary containment (LOPC) with the greatest consequence, resulting in one or more of the following consequences:

- An employee, contractor or subcontractor "days away from work" injury and/or fatality;
- A hospital admission and/or fatality of a third party;
- An officially declared community evacuation or community shelter-in-place;
- A fire or explosion resulting in greater than or equal to $25,000 in direct costs to the Company;
- A pressure relief device (PRD) discharge to atmosphere whether directly or via a downstream destructive device that results in one or more of the following four consequences:
    - liquid carryover
    - discharge to a potentially unsafe location
    - an onsite shelter-in-place
    - public protective measures (e.g., road closure) and a PRD discharge quantity greater than the threshold quantities specified in Table 1 of ANSI/API RP-754 in any one-hour period
- A release of material greater than the threshold quantities specified in Table 1 of ANSI/API RP-754 in any one-hour period.

.55 A Tier 2 PSE is defined as a loss of primary containment (LOPC) with lesser consequence, not disclosed as a Tier 1 PSE, and resulting in one or more of the following consequences:

- An employee, contractor or subcontractor recordable injury;
- A fire or explosion resulting in greater than or equal to $2,500 in direct costs to the Company;
- A pressure relief device (PRD) discharge to atmosphere whether directly or via a downstream destructive device that results in one or more of the following four consequences:
    - liquid carryover
    - discharge to a potentially unsafe location
    - an onsite shelter-in-place
    - public protective measures (e.g., road closure) and a PRD discharge quantity greater than the threshold quantities specified in Table 2 of ANSI/API RP-754 in any one-hour period.
- A release of material greater than the threshold quantities specified in Table 2 of ANSI/API RP-754 in any one-hour period.

.56 The Tier 1 PSE Rate shall be calculated as: (Total Tier 1 PSE Count / Total Hours Worked) * 200,000.

.57 The Tier 2 PSE Rate shall be calculated as: (Total Tier 2 PSE Count / Total Hours Worked) * 200,000.

.58 Total work hours includes employees and contractors.

NR0103-12. Challenges to Safety Systems indicator rate (Tier 3), as defined by ANSI/API RP-754.

.59 The registrant shall disclose a rate of Tier 3 "challenges to safety systems" using terms, definitions, and guidance from the ANSI/API RP-754 (Section 7.2).

- Tier 3 indicators may alternatively be referred to as "near miss" events or "high learning value" events

.60 A Tier 3 operational situation is defined as a flaw or weakness within internal technical safety systems that led to consequences that fall below the Tier 1 and Tier 2 LOPC impact threshold, such as:

- Demands on safety systems, which are activations (non-manual) of safety systems designed to prevent or mitigate impacts from losses of primary containment, such as mechanical shutdown equipment or pressure relief devices.
- Safe operating limit excursions, which are breaches of safe operating limits for processes beyond which manual or automatic systems return the process to a predetermined safe state.
- Primary containment inspections or testing results outside acceptable limits, which occur when inspection or testing shows that safe primary containment operating limits have been exceeded and require repairs, replacement, or further testing of equipment.
- Near miss incidents, which are incidents that had the potential to result in an LOPC, but that were avoided by circumstance.

.61 Disclosure may include situations with no actual consequences but the recognition that, in other circumstances, further barriers could have been breached and results in a Tier 1 or Tier 2 PSE.

.62 The registrant shall calculate and disclose a Tier 3 indicator rate as: (Total Tier 3 Indicator Count / Total Hours Worked) * 200,000.

.63 Total work hours includes employees and contractors.

NR0103-13. Discussion of measurement of Operating Discipline and Management System Performance through Tier 4 Indicators, as defined by ANSI/API RP-754.

.64 The registrant shall describe its approach to identifying, measuring, and managing "Operating Discipline and Management System Performance" or Tier 4 key performance indicators (KPIs).

.65 Tier 4 indicators are metrics developed by the registrant – specific to its facilities, operations, and safety priorities – that measure leading, proactive measures to maintain and improve safety and manage risk.

.66 Relevant Tier 4 KPIs may be focused on:

- engineering and inherently safe design
- equipment maintenance, inspection and testing
- process hazard and major incident risk assessments
- quality of, and adherence to, operating procedures
- contractor capability and management
- audit improvement actions
- asset integrity and process safety initiatives
- workforce and management training and development
- technical competence assessment and assurance

.67 Discussion may include the use of specific Tier 4 key performance indicators (KPI) such as those suggested in ANSI/API RP-754. Examples of Tier 4 KPIs are:

- Number of process area retrospective and revalidation hazard evaluations completed on time
- Percentage and/or number of past-due process safety actions
- Percentage of process safety required training sessions completed with skills verification

.68 It is not recommended that the registrant disclose quantitative data or figures for its Tier 4 KPIs because they are generally not suitable for peer-to-peer benchmarking and may not be relevant at a corporate level (i.e., they may be refinery-specific). It may be relevant, however, to discuss:

- Trends in Tier 4 KPIs over time and how they are correlated with the frequency of Tier 1, Tier 2, and Tier 3 indicator rates (e.g., that an increase in the focus on Tier 4 performance can be correlated with a decrease in the Tier 1 PSE rate)
- Application and topical focus of Tier 4 KPIs for different facilities, business units, geographies, employee categories, etc.

Notes

Definitions:

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Additional References:

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Product Specifications & Clean Fuel Blends

Description

Human health risks and emerging environmental trends such as climate change have raised concerns about the use of end products such as gasoline from the R&M industry, which also faces related regulatory requirements and legal actions. Increasingly stringent regulations related to product specifications and renewable fuel blends pose significant compliance and operational risks for R&M companies. At the same time, companies face potential reductions in demand for, and therefore revenues from, refined petroleum products in the medium- to long-term due to customer and regulatory concerns and competition from alternative energy technologies. Managing such risks could require lifecycle assessments of products, and strategic decisions related to the purchase of Renewable Identification Numbers, sourcing or producing renewable fuels, or investing in alternative energy infrastructure.

Accounting Metrics

NR0103-14. Percentage of Renewable Volume Obligation (RVO) for fuel blends and exports under the expanded Renewable Fuel Standards met through:
(1) Production of qualifying renewable fuels
(2) Purchase of "separated" renewable identification numbers (RIN).

.69 The registrant shall disclose the percentage of its RVO met through the production of biofuels (e.g., cellulosic, ethanol, advanced biofuels, etc.).

.70 The registrant shall disclose the percentage of its RVO met through purchase of "separated" renewable identification numbers (RIN).

- A separated RIN is defined as one that is no longer associated with a physical product and may be traded on an open market.

.71 The registrant may choose to provide a break down and analysis of its RVO by fuel type: cellulosic biofuels, ethanol equivalent for biomass-based diesel, or advanced biofuels.

NR0103-15. Initiatives designed to improve the commercialization of advanced biofuels, such as through retail options at gas stations, investments in joint ventures with primary producers, or through partnerships with transportation-related entities (e.g., air, ground, or marine fleet operators; vehicle manufacturers).

.72 The registrant shall describe its efforts to commercialize advanced biofuels, defined according to Section 201 of the Energy Independence and Security Act of 2007 (EISA) as biofuels other than ethanol derived from corn starch (kernels) having 50% lower lifecycle greenhouse gas emissions relative to gasoline.

.73 Relevant initiatives to discuss include promoting availability for retail consumers (e.g., through retail infrastructure, fuel blends, etc.), joint ventures with primary producers, or partnerships (e.g., pilot projects, research and development projects).

.74 Partnerships include those with fleet operators (air, ground, or marine transportation), airlines, vehicle manufacturers, and governmental agencies (e.g., USDA, DOE, armed forces, etc.)

Notes

Definitions:

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Additional References:

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Pricing Integrity & Transparency

Description

Concerned about the impacts of oil and gas market distortions on American consumers and businesses, regulators such as the U.S. Federal Trade Commission (FTC), and the U.S. Commodity Futures Trading Commission (CFTC), have focused on and investigated market manipulation by oil and gas companies, including R&M companies, in recent years. Regulatory agencies focusing on refineries are investigating utilization and maintenance decisions, product supply decisions, product margins, and capital planning, creating uncertainty regarding future enforcement. The focus of enforcement actions thus far has been on reporting prices to price index publishers, and on distortion of prices using trading positions in physical transactions, and swaps, futures, and derivatives. Regulatory actions might result in higher compliance costs in the short term, or might require long-term changes in the compliance policies of the company, adding to operating costs.

Accounting Metrics

NR0103-16. Dollar amount of legal and regulatory fines and settlements associated with fraud, such as price gouging, price fixing, or market manipulation, including those with the U.S. Commodities Futures Trade Commission and Federal Trade Commission. Description of fines and settlements and corrective actions implemented in response to events.

.75 The registrant shall disclose the amount (excluding legal fees) of all fines or settlements associated with fraud, such as price gouging, price fixing, or market manipulation, including those with the U.S. Commodities Futures Trade Commission and Federal Trade Commission.

.76 Disclosure shall include civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).

.77 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, non-prosecution agreement) and context (e.g., fraud, anti-trust, insider trading, etc.) of fines and settlements.

.78 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.

Notes

Definitions:

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Additional References:

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Management of the Legal & Regulatory Environment

Description

The interaction of companies in the R&M industry with their legal and regulatory environment can have material impacts on shareholder value, both when they spend significant amounts on related activities such as lobbying and campaign contributions, and as a result of changes in laws or policies that can affect operations. In particular, climate change and environmental laws and regulations can have material impacts on business. However, given the scientific consensus that human-induced climate change is occurring, efforts to delay climate-related policy or legislative changes may prove counterproductive to the industry in the long term by creating regulatory, and therefore investment, uncertainty, or imposing higher costs in the future. Efforts to influence environmental laws and regulations unfairly may affect companies' reputations and social license to operate. The oil and gas sub-sector, including R&M companies, is one of the largest contributors to lobbying efforts.

Accounting Metrics

NR0103-17. Amount of contributions (in U.S. dollars) to (1) political campaigns and (2) lobbyists or lobbying organizations; recipients of the five largest amounts.

.01 The registrant shall disclose its total monetary contributions to political campaigns at any level of government: federal, state, or local.
.02 The registrant shall disclose its total monetary contributions to lobbyists and lobbying organizations. This disclosure includes contributions made to trade organizations, which in turn contribute to political lobbying efforts.
.03 The registrant shall list the names of recipients (individuals or organizations) to which it contributed the five largest dollar amounts, considering the total contributions made during the fiscal year to such individuals or organizations.

NR0103-18. Description of position on environmental and climate change legislation and regulation, and strategy for managing associated risks and opportunities.

.04 The registrant shall discuss the position of company management regarding impending, new or amended legislation or regulations related to climate change and environmental impacts, which are likely to have a material impact on the registrant's operations; such disclosure should include a statement of whether management supports such legislation or regulations, and whether there are risks or opportunities emerging from certain provisions within such legislation or regulations (e.g., undue cost burden of certain provisions, ability to monetize greenhouse gas reduction activities, etc.).
.05 Climate change and environmental legislation and regulation material to the registrant's operations may include, but is not limited to, efforts to cap or tax greenhouse gas emissions, waste disposal rules, etc.
.06 The registrant shall discuss management strategy to manage such risks and opportunities; strategies may include activities such as lobbying, campaign contributions, changes to business structure or positioning in anticipation of regulations, etc.
.07 The registrant shall discuss the scope, such as if strategies pertain differently to different business units or geographies.
.08 The registrant shall discuss the activities and expenditures required to implement the strategy and any risks or limiting factors that might affect achievement of plans and/or targets.
.09 The registrant shall provide disclosure that is consistent with the Securities and Exchange Commission interpretive guidance regarding disclosure related to climate change (17 CFR Parts 211, 231 and 241).

Notes

Definitions:

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Additional References:

SEC interpretive guidance regarding disclosure related to climate change (17 CFR PARTS 211, 231 and 241).
http://www.sec.gov/rules/interp/2010/33-9106.pdf

Oil & Gas - Services

SICS™ #NR0104

Prepared by the
Sustainability Accounting Standards Board ®

January 2014
Exposure Draft for Public Comment

Oil & Gas - Services

Sustainability Accounting Standard

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The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly listed corporations in the U.S. in disclosing material sustainability issues 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 and is accredited to set standards by the American National Standards Institute (ANSI).

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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, January 14, 2014, and ending on Monday, April 14, 2014. This Standard is subject to change thereafter.

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SASB Sustainability Accounting Standard

Oil & Gas Services **(NR0104)**

Industry Description

Oil and Gas Service companies provide well drilling, cementing, monitoring, surveying, completion, and waste disposal products and services to their global customers in the primary exploration and production (E&P) industry. The activities mentioned are commonly provided on a contractual, site-by-site basis, and the customer will purchase or lease the well site, materials, and equipment used from the service provider. The contractual relationship between Oil and Gas Service companies and their customers plays a significant role in determining the material impacts of their sustainability performance. While E&P companies, as operators of upstream projects, are primarily responsible for environmental and social impacts, Oil and Gas Services companies may be held liable for environmental violations by regulators, E&P customers, or affected parties, particularly in cases of accidents or other significant incidents. Larger companies in the industry operate quarries and manufacture various materials and products, including drilling fluids and drill bits. The industry is characterized by technological advances in recent years that have contributed to rapid growth in unconventional oil and gas extraction.

Table 1. Activity-Level Metrics

Topic	Code	Activity Metric
Activity Level	NR0104-A	Number of active wells for which the registrant provided drilling, cementing, completion, fracturing, and/or decommissioning services during the fiscal year.[1]
	NR0104-B	Total footage (in meters) of drilling performed in the reporting period.

Table 2. Material Sustainability Topics & Accounting Metrics

Topic	Code	Accounting Metric
Emissions Reduction Services & Fuels Management	NR0104-01	Total annual fuel consumed (gigajoules) and percentage from natural gas, natural gas-diesel dual fuel, and renewable (e.g., solar, wind, biomass) sources: (1) on-road equipment and vehicles; and (2) off-road rigs, generators, mounted equipment, etc.
	NR0104-02	Description of long-term and short-term strategy or plans to address air emissions-related risks, opportunities, and impacts, including products, services, and technologies that reduce well and field operator's fuel consumption, emissions, and/or other efficiencies.
	NR0104-03	Percentage of engines in service that meet Tier 4 compliance for non-road diesel engine emissions.

[1] Rigs that are on location and involved in drilling, completions, cementing, fracturing, etc., are considered active. Rigs that are in transit from one location to another, or otherwise idled, are inactive.

Topic	Code	Accounting Metric
Water Management Services	NR0104-04	Average volume (m^3) of water consumed per volume of gas (MMcf) or oil (MMbbl) extracted and percentage recycled.
	NR0104-05	Description of long-term and short-term strategy or plans to address water consumption- or disposal-related risks, opportunities, and impacts, including products, services, and technologies that offer well and field operators reduced water consumption, water recycling, and/or other water impact reductions.
Chemicals Management	NR0104-06	Average amount of hydraulic fracturing fluid (in m^3) and proppant (in kilograms) consumed per volume of gas (in MMcf) or oil (MMbbl) extracted.
	NR0104-07	Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used, including those currently exempt from MSDS disclosure per Appendix E to 29 CFR Part §1910.1200.
Ecological Impact Management	NR0104-08	Average disturbed acreage per well site.
	NR0104-09	Description of long-term and short-term strategy or plan to address risks and opportunities related to ecological impacts from core activities, including products, services, and technologies that offer well and field operators a reduced ecological footprint.
Workforce Health, Safety & Well-being	NR0104-10	(1) Total Recordable Injury Rate (TRIR), (2) Near Miss Frequency Rate, and (3) Total Vehicle Incident Rate (TVIR) by employees (full-time and contract) and short-service employees (full-time and contract).
Employee Recruitment, Development, & Inclusion	NR0104-11	Discussion of efforts to address the skills gap through employee recruitment, development, and inclusion efforts such as through supporting STEM education, targeting diverse labor pools, training of local/indigenous talent, and/or innovative technological solutions.
Business Ethics & Payments Transparency	NR0104-12	Percentage of net revenue in countries that have the 20 lowest rankings in the Transparency International's Corruption Perception Index.
	NR0104-13	Description of the management system for prevention of corruption and bribery including due diligence procedures associated with business partners.
Process Safety & Emergency Preparedness & Response	NR0104-14	Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and project lifecycles.
Supply Chain Management & Materials Sourcing	NR0104-15	Discussion of existing or projected constraints with obtaining raw materials, including those related to human rights risks, conflict mineral regulation, or physical scarcity.
Management of the Legal & Regulatory Environment	NR0104-16	Amount of contributions (in U.S. dollars) to (1) political campaigns and (2) lobbyists or lobbying organizations; recipients of the five largest amounts.
	NR0104-17	Description of position on environmental and climate change legislation and regulation, and strategy for managing associated risks and opportunities.

Emissions Reduction Services & Fuels Management

Description

While direct emissions and associated regulatory risks are relatively low for Oil and Gas Services providers, emissions from upstream oil and gas E&P companies can be significant. E&P emissions stem primarily from fuel combustion in stationary and mobile internal combustion engines, gas processing equipment, and venting, flaring, and fugitive methane. Emissions include Greenhouse Gases that can contribute to climate change, and Hazardous Air Pollutants, Criteria Air Pollutants, and Volatile Organic Compounds that can have significant localized human health and environmental impacts. Increasing regulation of these emissions presents substantial risk to E&P companies, driving them to seek solutions to lower E&P emissions, including converting pumps and engines to run on natural gas instead of diesel fuel. Oil and Gas Services companies can gain a competitive advantage and earn higher revenues by selling services and equipment that reduce emissions and fuel consumption of E&P operations as well as capture saleable gas that may otherwise be flared or escape through leaks.

Accounting Metrics

NR0104-01. Total annual fuel consumed (gigajoules) and percentage from natural gas, natural gas-diesel dual fuel, and renewable (e.g., solar, wind, biomass) sources: (1) on-road equipment and vehicles; and (2) off-road rigs, generators, mounted equipment, etc.

.01 The registrant shall disclose fossil fuel consumption in terms of its energy content, using higher heating values (HHV), also known as gross calorific values (GCV), and 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).

.02 The registrant shall disclose renewable energy consumption as a percentage of its overall energy consumption, in terms of its energy content. For biofuels, the registrant shall use HHVs from the sources mentioned above. For solar or wind energy consumption, the registrant shall convert from electricity in kilowatt hours (kWh) to gigajoules (GJ).

.03 The registrant shall disclose renewable energy data for the renewable energy it directly produces, or that it purchases through renewable energy certificates (RECs) that are certified (i.e., through Green-e) or renewable power purchase agreements (PPAs). It shall not disclose the renewable portion of the energy drawn from electricity grids.

.04 The registrant shall separately disclose the amount of energy (in gigajoules) used in:

(1) On-road, mobile vehicles and equipment.

(2) Off-road, stationary rigs, generators, and mounted equipment.

.05 The scope of disclosure includes combustion sources owned and/or operated by the registrant regardless of which entity bears the cost of fuel and/or considers greenhouse gas emissions from these sources to be part of its Scope 1 inventory.

NR0104-02. Description of long-term and short-term strategy or plans to address air emissions-related risks, opportunities, and impacts, including products, services, and technologies that reduce well and field operator's fuel consumption, emissions, and/or other efficiencies.

.06 The registrant shall discuss the scope of its strategies, plans, and/or reduction activities, such as if they pertain differently to different business units, geographies, or emissions sources.

.07 The registrant shall discuss 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.

.08 Short-term strategies may include fuel substitution (e.g., drop-in biodiesel), use of dual fuel equipment, or engine maintenance.

.09 Long-term strategies may include alternative fuel equipment, process, or equipment redesigns and innovations, carbon capture, and storage.

.10 The scope of reductions may relate to the following specific emissions sources:

- combustion emissions (e.g., fuel use in gas compression, power generation, etc.);
- flaring of hydrocarbons (e.g., in depressurizing, start-up/shut-down, well testing and well work-over, etc.);
- process emissions (e.g., vessel loading, tank storage, and flushing, etc.);
- venting of hydrocarbons, defined as the intentional (or designed), controlled release of gas to the atmosphere during normal operations;

- fugitive emissions of GHG gases (including equipment leaks); and
- non-routine events (e.g., gas releases or equipment maintenance).

.11 The registrant shall discuss risks and opportunities it may face relating to being able to offer its customers services, technologies, or solutions that enhance energy efficiency and reduce air emissions, including of greenhouse gases.

NR0104-03. Percentage of engines in service that meet Tier 4 compliance for non-road diesel engine emissions.

.12 The registrant shall disclose the percentage of its new and in-use non-road diesel engines (e.g., in equipment, pumps, compressors, generators, etc.) that are in compliance with the U.S. EPA's Tier 4 emissions standards for non-road diesel engines.

.13 The registrant shall calculate the percentage as the fiscal year's new and in-use number of non-road diesel engine families that are in full compliance with the Tier 4 emissions standards, divided by the total number of non-road diesel engine families active for the fiscal year, where engine families are defined as engine product lines that are expected to have similar emissions characteristics, as defined by CFR§1039.230.

.14 An engine family is considered in compliance with the Tier 4 emission standards if all emission-data engines representing that family have test results showing official emission results and deteriorated emission levels at or below these standards, and the engine family has received a certificate of conformity from the EPA for that model year.

.15 Engines that are exempt from the EPA rules, such as certain marine engines, shall be exempt for the purposes of this disclosure.

.16 The scope of disclosure includes domestic and foreign operations, regardless of whether they are under U.S. EPA jurisdiction.

.17 The scope of disclosure includes non-road diesel engines manufactured, owned, and/or operated by the registrant, regardless of which entity bears the EPA compliance obligation.

Notes

Definitions:

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Additional References:

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Water Management Services

Description

Oil and gas extraction often requires large quantities of water, exposing producers to the risk of reduced water availability, regulations limiting usage, or related cost increases, particularly in water-stressed regions, as well as to risks and costs associated with wastewater disposal. Commonly, E&P companies provide the water used to fracture oil and gas wells, while Services companies are hired to dispose of waste, or "produced" water. Water is often disposed of in Class II injection wells or evaporation ponds. The Oil and Gas Services industry has developed technologies such as closed-loop water recycling systems to reduce customers' water consumption and disposal costs, offering companies in the industry the potential to gain market share and increase revenues, as management of drilling water has emerged as an area of growth in the industry.

Accounting Metrics

NR0104-04. Average volume (m^3) of water consumed per volume of gas (MMcf) or oil (MMbbl) extracted and percentage recycled.

.18 The registrant shall disclose the volume of water used per volume of hydrocarbons extracted, including fresh and recycled water.

.19 The registrant shall disclose the percentage of the volume of water used per volume of hydrocarbons extracted that was recycled water. This figure shall include the amount recycled in closed loop and open loop systems, and shall include recycled produced water or flowback.

- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.

.20 Produced water is defined according to the U.S. EPA (40 CFR 435.41) as water (brine) brought up from the hydrocarbon bearing formation strata during the extraction of oil and gas and can include formation water, injection water, and any chemicals added downhole or during the oil/water separation process.

.21 Flowback is defined as recovered hydraulic fracturing fluid that returns to the surface during a hydraulic fracturing operation that may often be mixed with produced water.

.22 The scope is limited to operations for which the registrant provides hydraulic fracturing, completion, drilling, and/or water management services (e.g., injection of produced water or flowback into a Class II injection well under the U.S. EPA's Underground Injection Control (UIC) program or equivalent, water treatment for reuse in drilling or hydraulic fracturing, reducing unwanted water in subsurface areas, etc.).

.23 Water is used in hydraulic fracturing fluids, drilling fluids, dust control, and drilling cement production.

NR0104-05. Description of long-term and short-term strategy or plans to address water consumption- or disposal-related risks, opportunities, and impacts, including products, services, and technologies that offer well and field operators reduced water consumption, water recycling, and/or other water impact reductions.

.24 The registrant shall discuss the scope of its strategies, plans, and/or reduction activities, such as if they pertain differently to different business units, geographies, or water sources.

.25 The registrant shall discuss 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.

.26 Short-term strategies may include adopting best practices in water recycling or water efficiency initiatives.

.27 Long-term strategies may include process redesigns or technological innovations that lower withdrawal of fresh water in constrained regions, reduce excess water production from wells, provide new water treatment or recycling systems, etc.

.28 The scope of impact reductions may relate to the following specific areas of water consumption or disposal:

- Hydraulic fracturing fluids
- Drilling fluids
- Dust control
- Cement production
- Produced water or flowback

.29 The registrant shall discuss risks and opportunities it may face relating to being able to offer its customers services, technologies, or solutions that enhance water use efficiency, treatment and reuse, and reduce water consumption or wastewater production.

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Definitions:

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Additional References:

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Chemicals Management

Description

Oil and Gas Services companies manufacture drilling and hydraulic fracturing fluids and sell them to E&P companies. While the risk of leaks from a properly drilled well is low, contamination of local water resources can result from contact with hydraulic fracturing fluids and produced water, particularly due to deficiencies in well casings. Concerns about certain chemicals used in hydraulic fracturing fluids have led to fracturing bans, regulation, and legislative proposals for disclosure of chemicals used in some regions, both domestically and abroad. The exact chemical composition of hydraulic fracturing fluids is often proprietary information, and companies compete on creating the most effective formulas. In the U.S., some companies are voluntarily disclosing hydraulic fracturing chemicals through an industry registry, FracFocus. Under increasing public and regulatory pressure against drilling fluid toxicity, companies that transparently produce effective, non-hazardous chemical formulas may increase their market share and revenues and lower the risk of regulations affecting demand for their products.

Accounting Metrics

NR0104-06. Average amount of hydraulic fracturing fluid (in m^3) and proppant (in kilograms) consumed per volume of gas (in MMcf) or oil (MMbbl) extracted.

.30 The registrant shall disclose the amount of proppant (in kilograms) used per volume of hydrocarbons extracted.
.31 Proppant is defined as fine particles (often fine mesh sand or ceramic materials) mixed with fracturing fluid to hold open fractures created during a hydraulic fracturing operation.
.32 The registrant shall disclose the total volume of hydraulic fracturing fluid (in m^3), including water and chemical additives used to open and enlarge fractures within the rock formation, per volume of hydrocarbons extracted.
.33 The average amounts shall be calculated as the aggregate amount of fluid and proppant consumed divided by the aggregate amount of gas and/or oil extracted from hydraulically fractured wells.
.34 The scope includes wells for which the registrant supplies hydraulic fracturing fluids and proppant, regardless of whether it conducts the hydraulic fracturing.
.35 The registrant may choose to provide discussion around how the amount of hydraulic fracturing fluid, and proppant used may be influenced by the fracturing technique implemented, independent of the nature of the fluid or proppant and outside of the registrant's control.

NR0104-07. Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used, including those currently exempt from MSDS disclosure per Appendix E to 29 CFR Part §1910.1200.

.36 The registrant shall calculate the percentage as the number of wells where hydraulic fracturing has taken place for which it provides public disclosure of all of the chemical content of fracturing fluid divided by the total number of hydraulically fractured wells.
.37 The scope includes wells for which the registrant supplies hydraulic fracturing fluids, regardless of whether it conducts the hydraulic fracturing.
.38 The registrant shall count only wells for which all fluid chemicals are publicly disclosed, including those chemicals that meet the definition of a trade secret according to Appendix E to 29 CFR Part §1910.1200 and may be exempt from disclosure on a material safety data sheet (MSDS).
.39 Public disclosure includes but is not limited to posting to a publicly accessible corporate website or fracfocus.org.

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Definitions:

Additional References:

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Ecological Impact Management

Description

Oil and gas extraction activities can have significant impacts on biodiversity and ecosystems, particularly when companies operate in ecologically sensitive areas or have resource-intensive operations, such as oil sands extraction. These can occur through disposal of drilling and associated wastes, well decommissioning, land use, and fuel spills. Producers face regulatory risks from legislation and permitting to protect ecosystems in the U.S. and abroad, and from regulations specifically related to well decommissioning or underground waste injection. These risks lie mainly with E&P companies—customers of Oil and Gas Services companies. Services companies that offer cost-effective and efficient production technologies to lower land use and allow extraction from ecologically sensitive areas without harming biodiversity and ecosystems can lower associated risks for their customers and gain competitive advantage.

Accounting Metrics

NR0104-08. Average disturbed acreage per well site.

.40 The registrant shall disclose the total acreage of disturbed land per well site, broken down by oil well sites and gas well sites.

.41 The scope includes land in the exploration, development, production, or decommissioning project phase, but is limited to those sites where the registrant provides drilling, completion, fracturing, and/or decommissioning services.

- This disclosure shall be a cumulative total of all currently active sites, recently decommissioned sites, or sites being restored; it is not limited to land newly disturbed during the fiscal year.
- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.42 Disturbed acreage may result from well pads, drilling and production facilities, pipelines, access roads, equipment storage, reserve pits, tailings, produced water impoundments, etc.

NR0104-09. Description of long-term and short-term strategy or plan to address risks and opportunities related to ecological impacts from core activities, including products, services, and technologies that offer well and field operators a reduced ecological footprint.

.43 The registrant shall discuss the scope of its strategies, plans, and/or reduction activities, such as if they pertain differently to different business units, geographies, or impact sources.

.44 The registrant shall discuss 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.

.45 Short-term strategies may include efficient use of materials or equipment, use of multi-well pads, and increased production efficiencies that reduce drilling and associated wastes.

.46 Long-term strategies may include process redesigns, new rig and equipment designs, advances in geological engineering, and further advances in directional and multilateral drilling that require lower land use and reduce noise and waste generation, natural resource consumption, hazardous chemical usage, ecological and biodiversity impacts, etc.

.47 The scope of impact reductions may relate to the following specific areas of service provision:

- Drilling or completion
- Hydraulic fracturing
- Water management
- Decommissioning

.48 The registrant may choose to provide discussion around technologies and innovations to reduce ecological impacts that allow their customers access to sites that would not normally be accessible due to their ecological sensitivity.

.49 The registrant may choose to provide discussion around specific plans or strategies to reduce ecological impacts in areas with a High Conservation Value or in the Arctic. Areas are considered to be of a high conservation value if they are:

- Located within a WWF Global 200 terrestrial ecoregion[2].

[2] Olson, D. M., Dinerstein, E. 2002. The Global 200: Priority ecoregions for global conservation. Annals of the Missouri Botanical Garden 89(2):199-224

- Located within International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI), listed in the World Database of Protected Areas (WDPA), and mapped on ProtectedPlanet.net.
- Areas with additional ecological, biodiversity, or conservation designations, such as those listed by the A–Z Guide of Areas of Biodiversity Importance prepared by the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC).

.50 The registrant shall discuss risks and opportunities it may face relating to being able to offer its customers services, technologies, or solutions that lower ecological impacts, including land use and biodiversity impacts.

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Definitions:

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Additional References:

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Workforce Health, Safety, & Well-being

Description

Maintaining the health and safety of the workforce is especially challenging in the Oil and Gas Services industry due to the harsh working environments and hazards of handling oil and gas. In addition to acute impacts, workers may develop chronic health conditions, including from silica or dust inhalation, as well as mental health problems. A company's ability to protect employee health and safety and to create a culture of safety and well-being among employees at all levels can help prevent accidents, mitigating costs and operational downtime, and enhance workforce productivity. High accident or fatality rates can lead to lost business, as worker safety performance is one of the criteria typically used by customers to hire Services companies. Additional health and safety protocols may be needed to protect women and minorities, particularly when they operate in regions where they continue to face discrimination.

Accounting Metrics

NR0104-10. (1) Total Recordable Injury Rate (TRIR), (2) Near Miss Frequency Rate, and (3) Total Vehicle Incident Rate (TVIR) by employees (full-time and contract) and short-service employees (full-time and contract).

.51 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its total recordable injury rate (TRIR), as calculated and reported in the Occupational Safety and Health Administration's (OSHA) Form 300.

- OSHA guidelines provide details on determination of whether an event is a recordable occupational incident and definitions for exemptions for incidents that occurred in the work environment but are not occupational.

.52 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its total recordable injury rate according to the U.S. Bureau of Labor Statistics guidance and/or using the U.S. Bureau of Labor Statistics calculator.

.53 The registrant shall disclose its near miss frequency rate (NMFR), where a near miss is defined as an incident where no property or environmental damaged or personal injury occurred, but where damage or personal injury easily could have occurred but for a slight circumstantial shift.

- The registrant should refer to organizations such as the National Safety Council (NSC) for guidance on implementing near miss reporting.
- The registrant should disclose its process for classifying, identifying, and reporting near miss incidents.

.54 The registrant shall disclose its total vehicle incident rate (TVIR) according to definitions and guidance from the American Petroleum Institute (API).

.55 The registrant shall disclose its TRIR, NMFR, and TVIR for its direct employees (full-time and contract), and it shall disclose its TRIR, NMFR, and TVIR for short-service employees (full-time and contract).

.56 Short service employees (SSEs) are defined as a newly placed full-time or temporary employee or subcontractor with less than six months' experience in an assigned job.

.57 The scope includes all employees, both domestic and foreign.

.58 Rates shall be calculated as: (statistic count / total hours worked)*200,000.

Notes

Definitions:

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Additional References:

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Employee Recruitment, Development, & Inclusion

Description

The Oil and Gas Services industry, which has global operations, is facing a shortage of experienced and skilled workers, with a significant proportion of the workforce close to retirement and a need for more workers due to rapid growth in the industry. With technological advancements, the industry needs more highly educated workers. Despite this shortage and the availability of a diverse talent pool, studies show that oil and gas companies have relatively much lower representation of women and minorities in the workforce and on their Boards compared to other industries. Gender-based discrimination within the industry, family care responsibilities, and societal conditioning, among other factors, are cited as making the work environment at oil and gas companies less attractive for women. In this context, companies that have a comprehensive recruitment and development strategy, including recruiting from a diverse talent base, ensuring equal career advancement opportunities, partnering with educational institutions, and employing and training local hires in international operations, could face improved efficiencies and lower disruptions to operations and are also likely to be more profitable companies.

Accounting Metrics

NR0104-11. Discussion of efforts to address the skills gap through employee recruitment, development, and inclusion efforts such as through supporting STEM education, targeting diverse labor pools, training of local/indigenous talent, and/or innovative technological solutions.

.59 The registrant shall discuss its efforts to recruit and retain skilled workers through, where relevant:

- Supporting science, technology, engineering, and math (STEM) education programs, partnerships, workshops, etc.
- Recruiting efforts targeted at diverse labor supply pools (such as women and workers with disabilities), who are traditionally underrepresented in the Oil and Gas industry.
- Increasing collaboration between other industry members (e.g., national oil companies, services companies, etc.), workers' organizations, and other stakeholders to improve retention, improve training, and develop new technologies.
- Local content initiatives that include training and skills transfer for local and/or indigenous populations.
- Addressing aspects of industry culture that may be unappealing to workers (e.g., long hours, work away from home, etc.).

.60 The registrant should describe challenges in recruiting and retaining its workforce due to lack of availability of a qualified and experienced talent pool, including specific regions, positions, and business units where it faces these challenges.

Notes

Definitions:

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Additional References:

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Business Ethics & Payments Transparency

Description

With operations across the globe, Oil and Gas Services companies interact with many government and local officials, either directly or through agents, in order to secure contracts with state-owned oil companies and multinational corporations. Bribery and corruption are common in some regions, and in others, taxes and other payments to governments may not be used for the benefit of the local population. Enforcement of anti-corruption, anti-bribery, and payments-transparency laws and initiatives in the U.S. and abroad could lead to significant one-time costs, or higher ongoing costs, and even affect a company's social license to operate. Oil and Gas Services companies are under pressure to ensure that their governance structures and practices can address corruption and willful or unintentional participation in illegal or unethical payments to government officials or private persons or in unfairly influencing them through gifts or other means. Operating in corruption-prone countries can exacerbate the risk.

Accounting Metrics

NR0104-12. Percentage of net revenue in countries that have the 20 lowest rankings in the Transparency International's Corruption Perception Index.

.61 The registrant shall disclose the amount of its net revenue from activities located in the 20 countries ranking lowest in Transparency International's Corruption Perception Index (CPI).

- In the event that that two or more countries share the 20th lowest ranking, all shall be included in the scope of disclosure.

.62 The registrant shall use the most current version of the CPI via Transparency International's publicly accessible website.

NR0104-13. Description of the management system for prevention of corruption and bribery including due diligence procedures associated with business partners.

.63 Relevant aspects of a management system include employee awareness programs, internal mechanisms for reporting and following up on suspected violations, anti-corruption policies, and participation in the Extractive Industry Transparency Coalition (EITI).

.64 The registrant shall discuss its due diligence procedures for assessing and managing corruption and bribery risks associated with its business partners (e.g., suppliers, contractors, and JV partners).

.65 The registrant may choose to discuss the implementation of one or more of the following:

- Key Organisation for Economic Co-operation and Development (OECD) guidelines;
- International Chamber of Commerce (ICC): Rules of Conduct against Extortion and Bribery;
- Transparency International: Business Principles for Countering Bribery;
- United Nations Global Compact: 10th Principle;
- World Economic Forum (WEF): Partnering Against Corruption Initiative (PACI).

Notes

Definitions:

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Additional References:

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Process Safety & Emergency Preparedness & Response

Description

The risk of technical failures during oil and gas extraction is high due to inherent operational complexities and hazards, exposing companies to significant potential liability, related to both the environment and human health. Analysis of the cause of major accidents, such as large oil spills and space exploration accidents, often point to a lack of organizational structures to flag, communicate, and take actions on risks, a lack of a safety culture in the organization, inadequate learning from prior events, and a lack of internal communication due to operational silos. Oil and Gas Services providers compete on the ability to perform activities on a consistently safe basis, with instances of spills, leaks, injuries, and fatalities closely monitored. A strong safety culture and emergency management systems can help reduce the occurrence of and financial and reputational risk of accidents.

Accounting Metrics

NR0104-14. Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and project lifecycles.

.66 Discussion shall include how the registrant integrates a culture of safety and emergency preparedness throughout its value chain, such as through training, joint management by the workforce and leadership, rules and guidelines, and use of technology.

.67 The registrant shall include description of how emergency preparedness is coordinated amongst business partners (e.g., contractors and sub-contractors).

.68 Disclosure may focus broadly on safety and emergency management systems, but shall specifically address the systems to avoid and manage emergencies, accidents, and incidents that could have catastrophic human health, local community, and environmental impacts.

.69 Project lifecycles may include one or more of the following stages: geological and seismic surveys, site surveys, exploratory drilling, appraisal drilling, site development, production, and decommissioning.

Notes

Definitions:

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Additional References:

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Supply Chain Management & Materials Sourcing

Description

Oil and Gas Services companies manufacture equipment, including drill bits, using tungsten and tantalum, which are rare metals mined in only a few locations globally, some of which are regions subject to armed conflict and human rights abuses. Supply constraints of these important materials due to political, social, or environmental reasons within producing regions could have a materially adverse financial impact on the industry. Furthermore, the procurement of such materials raises regulatory and compliance cost risk under Section 1502 of the U.S. Dodd-Frank Act of 2010, which requires companies to detail the sourcing of these "conflict minerals" in their products. Implementing systems to trace the origin of such minerals could prove costly to the industry.

Accounting Metrics

NR0104-15. Discussion of existing or projected constraints with obtaining raw materials, including those related to human rights risks, conflict mineral regulation, or physical scarcity.

.70 The registrant shall discuss existing constraints or risks of future constraints (both actual and potential) that directly affect its access to raw materials or components or that indirectly affect it through impacts on its suppliers.

.71 Actual constraints include those that affected the registrant during the fiscal year, are currently affecting the registrant, or have a very high likelihood of affecting the registrant in the near term (e.g., those for which the registrant currently has inventoried material but has already enacted a contingency plan).

.72 Potential constraints include, but are not limited to, physical limits to natural resources globally and constraints due to regulatory efforts, such as the Dodd-Frank Section 1502 or other requirements related to conflict minerals.

.73 It is relevant for the registrant to discuss shortfalls in production that were caused by constraints in the supply chain. This includes any deviation of actual production versus planned production that directly resulted from materials constraints.

- The registrant shall indicate the cause for the shortfall, and the relative impact of the reduced production capacity as a percent of total annual production.

Notes

Definitions:

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Additional References:

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Management of the Legal & Regulatory Environment

Description

The interaction of companies in the oil and gas services industry with their legal and regulatory environment can have material impacts on shareholder value, both when they spend significant amounts on related activities, such as lobbying and campaign contributions, and as a result of changes in laws or policies that can affect operations. In particular, climate change and environmental laws and regulations can have material impacts on the oil & gas services business. However, given the scientific consensus that human-induced climate change is occurring, efforts to delay climate-related policy or legislative changes may prove counterproductive to the industry in the long term by creating regulatory and therefore investment uncertainty, or imposing higher costs in the future. Efforts to influence environmental laws and regulations unfairly may affect companies' reputations and social licenses to operate. The oil and gas sub-sector, including oil & gas services companies, is one of the largest contributors to lobbying efforts.

Accounting Metrics

NR0104-16. Amount of contributions (in U.S. dollars) to (1) political campaigns and (2) lobbyists or lobbying organizations; recipients of the five largest amounts.

.01 The registrant shall disclose its total monetary contributions to political campaigns at any level of government: federal, state, or local.
.02 The registrant shall disclose its total monetary contributions to lobbyists and lobbying organizations. This disclosure includes contributions made to trade organizations, which in turn contribute to political lobbying efforts.
.03 The registrant shall list the names of recipients (individuals or organizations) to which it contributed the five largest dollar amounts, considering the total contributions made during the fiscal year to such individuals or organizations.

NR0104-17. Description of position on environmental and climate change legislation and regulation, and strategy for managing associated risks and opportunities.

.04 The registrant shall discuss the position of company management regarding impending, new or amended legislation or regulations related to climate change and environmental impacts, which are likely to have a material impact on the registrant's operations; such disclosure should include a statement of whether management supports such legislation or regulations, and whether there are risks or opportunities emerging from certain provisions within such legislation or regulations (e.g., undue cost burden of certain provisions, ability to monetize greenhouse gas reduction activities, etc.).
.05 Climate change and environmental legislation and regulation material to the registrant's operations may include, but is not limited to, efforts to cap or tax greenhouse gas emissions, permitting of deep-water off-shore drilling, waste disposal rules, etc.
.06 The registrant shall discuss management strategy to manage such risks and opportunities; strategies may include activities such as lobbying, campaign contributions, changes to business structure or positioning in anticipation of regulations, etc.
.07 The registrant shall discuss the scope, such as if strategies pertain differently to different business units or geographies.
.08 The registrant shall discuss the activities and expenditures required to implement the strategy and any risks or limiting factors that might affect achievement of plans and/or targets.
.09 The registrant shall provide disclosure that is consistent with the Securities and Exchange Commission interpretive guidance regarding disclosure related to climate change (17 CFR Parts 211, 231 and 241).

Notes

Definitions:

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Additional References:

SEC interpretive guidance regarding disclosure related to climate change (17 CFR PARTS 211, 231 and 241).
http://www.sec.gov/rules/interp/2010/33-9106.pdf

Coal Operations

SICS™ #NR0201

Prepared by the
Sustainability Accounting Standards Board ®

January 2014
Exposure Draft for Public Comment

Coal Operations
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 issues 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 and is accredited to set standards by the American National Standards Institute (ANSI).

SASB is developing standards for more than 80 industries in 10 sectors. SASB's standards-setting process includes evidence-based analysis with in-depth industry research and engagement with a broad range of stakeholders. The end result of this process is the creation of a complete, industry-specific accounting standard which accurately reflects the material issues for each industry.

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 Tuesday, January 14, 2014 and ending Monday, April 14, 2014. This Standard is subject to change thereafter.

For instructions on providing comments to SASB please click here.

For an introduction to SASB Standards please click here.

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SASB Sustainability Accounting Standard

Coal Operations **(NR0201)**

Industry Description

The Coal Operations industry includes companies that mine coal and those that manufacture coal products and provide specialized support services for coal-mining companies. Mining activity covers both thermal and metallurgical coal.

Table 1. Activity Level Metrics

Topic	Code	Activity Metric
Activity Level	NR0201-A	Production of coal (in millions of metric tons) separated into thermal and metallurgical[1] coal categories.
	NR0201-B	Proven and probable reserves of coal (in millions of metric tons).[2]

Table 2. Material Sustainability Topics & Accounting Metrics

Topic	Code	Accounting Metric
Greenhouse Gas Emissions	NR0201-01	Gross global Scope 1 emissions (in metric tons CO_2-e), percentage covered under a regulatory program.
	NR0201-02	Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including emissions reduction target for Scope 1 emissions, that was active in the fiscal year, and an analysis of performance against those targets.
Air Quality	NR0201-03	Air emissions (in metric tons) for the following pollutants: NO_x (excluding N_2O), SO_x, particulate matter (PM), and volatile organic compounds (VOCs).
Water Management	NR0201-04	Total water withdrawn (m^3), returned to watershed (m^3), internally recycled (m^3); and percentage in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas.
	NR0201-05	Number of incidents of non-compliance with water-quality permits, standards, and regulations, such as total maximum daily load (TMDL) exceedances.
Waste Management	NR0201-06	Number of tailings impoundments, broken down by MSHA hazard potential.

[1] Including pulverized coal injection.

[2] Reserves are defined by U.S. Securities and Exchange Commission (SEC) Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations.

Topic	Code	Accounting Metric
Land Use and Biodiversity Impacts	NR0201-07	Percentage of proved and probable reserves in sites with high conservation value.
	NR0201-08	Total acreage of land disturbed; description of best-practice biodiversity management plan used throughout the project lifecycle, and the percentage of sites (by acreage) to which it was applied; impacted area (by acreage) that was restored.
	NR0201-09	Percentage (by annual production output) of mine sites where acid rock drainage is: (1) predicted to occur (2) actively mitigated (3) under treatment or remediation
Community Relations	NR0201-10	Discussion of due diligence practices relating to the community rights comprising economic rights, social and cultural rights, and environmental rights, including how these practices are applied to business partners.
	NR0201-11	Estimated value at risk (in U.S. dollars) to capital expenditure projects due to country, regional, and/or community risks, including a description of the valuation model or risk approach used.
Security, Human Rights, and Rights of Indigenous Peoples	NR0201-12	Discussion of due-diligence practices with respect to human rights, indigenous rights, and operating in conflict zones.
Workforce Health, Safety, and Well-being	NR0201-13	(1) MSHA All-Incidence Rate and (2) Near-Miss Frequency Rate, by employees (full time and contract).
	NR0201-14	Discussion of management of accident and safety risks (e.g., acute incidents such as mine collapse) and long-term health and safety risks (e.g., chronic lung disease).
Labor Relations	NR0201-15	Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees.
	NR0201-16	Number of strikes and lockouts resulting in work stoppages of at least one day, including the number, duration, and reason for the stoppage (in days).
Reserves Valuation and Capital Expenditures	NR0201-17	Sensitivity of coal reserve levels (in metric tons) to future price projection scenarios that account for a price on carbon emissions.
	NR0201-18	Estimated greenhouse gas emissions potential (in metric tons CO_2-e) embedded in proved coal reserves.
	NR0201-19	Discussion of how price and demand for coal and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets.

Greenhouse Gas Emissions

Description

Coal operations are energy-intensive and generate significant direct Greenhouse Gas (GHG) emissions, including carbon dioxide from fuel use, and methane released from coal beds during mining and post-mining activities. The relative magnitude of GHG emissions from the industry exposes it to higher operating and capital expenditures from emissions regulations at the state, national, and regional levels, with a high degree of uncertainty about future emissions regulations. Companies that cost-effectively reduce the GHG intensity of their operations can create operational efficiency, and mitigate the effect of increased fuel costs, and regulations that cap, or put a put a price on, carbon emissions.

Accounting Metrics

NR0201-01. Gross global Scope 1 emissions (in metric tons CO_2-e), percentage covered under a regulatory program.

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

- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalents (CO_2-e) calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the IPCC's Second Assessment Report (1995).
- 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 and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

.02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) 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, coal transportation (marine, road, rail), and fugitive emissions from coal seam gas.

.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").[3]
- The approach detailed in Section 4.23 "Organizational boundary setting for GHG emissions reporting" of Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).[4]

.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, and thus any updates made year-on-year shall be considered updates to this guidance.

.05 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory program.

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[3] "An organization has financial control over an operation if it has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities. Generally an organization has financial control over an operation for GHG accounting purposes if the operation is treated as a group company or subsidiary for the purposes of financial consolidation" *Guidance for companies reporting on climate change on behalf of investors & supply chain members 2013* (p. 95).

[4] This is based on the requirements of International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting and is consistent with how information relating to entities within a group or interest in joint ventures/associates would be included on consolidated financial statements. *Climate Change Reporting Framework*, CDSB.

- Regulatory programs include cap-and-trade schemes and carbon tax/fee system.
- Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).

.06 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.

.07 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.

.08 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

NR0201-02. Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including emissions reduction target for Scope 1 emissions, that was active in the fiscal year, and an analysis of performance against those targets.

.09 The registrant shall discuss the following where relevant:
- The scope, such as if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, emissions sources;
- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU 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.

.10 For emission reduction targets the registrants shall disclose:
- The percentage of emissions within the scope of the reduction plan;
- The percentage reduction from base year
  - The base year is the first or starting year against which emissions are evaluated towards the achievement of the target;
- If 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;
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

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

.12 Disclosure corresponds with:
- CDSB Section 4, "Management actions"[5]
- CDP questionnaire "CC3. Targets and Initiatives"

Notes

Definitions:

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Additional References:

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[5] 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

Air Quality

Description

Coal operations and coal-fired power plants downstream of the Coal Operations industry emit nitrogen oxides, sulfur dioxides, and particulate matter (PM) – including from fugitive dust. These emissions can have significant, localized human health and environmental impacts, and have been the focus of regulations in the U.S., including national ambient air quality standards (NAAQS) and new rules limiting PM emissions from coal preparation and processing plants. Coal Operations companies can be materially affected directly, due to regulatory fines, permitting requirements and capital expenditures towards process improvements, and indirectly, due to lower demand for coal from downstream customers. Companies that are able to maintain air emissions below regulatory limits cost-effectively are likely to enjoy improved competitiveness in an environment of increasing regulatory and public concerns about air quality, in the U.S. and globally.

Accounting Metrics

NR0201-03. Air emissions (in metric tons) for the following pollutants: NO_x (excluding N_2O), SO_x, particulate matter (PM), and volatile organic compounds (VOCs).

.13 The registrant shall disclose its emissions released to the atmosphere of air pollutants associated with its activities (e.g., refining through primary production):

- Direct air emissions from stationary or mobile sources that include, but are not limited to, equipment at mining sites, smelters and refineries, primary production facilities, chemical plants, office buildings, marine vessels transporting products, truck fleets, and moveable equipment at mining and production facilities.

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

- Oxides of nitrogen (including NO and NO_2 and excluding N_2O) reported as NO_x;
- Oxides of sulfur (SO_2 and SO_3) reported at SO_x;
- Particulate matter (PM); reported as the sum of PM_{10} and $PM_{2.5}$, or all particulates less than 10 micrometers in diameter;
- Non-methane 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, which participates in atmospheric photochemical reactions, except those designated by the EPA as having negligible photochemical reactivity.

.15 This scope does not include CO_2, methane, and nitrous oxide, which are disclosed in NR0201-01, as Scope 1 GHG emissions.

.16 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 NR0201-01.

.17 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

Notes

Definitions:

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Additional References:

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Water Management

Description

Coal operations have impacts on both the quality and quantity of local water resources. Use of water in coal washing to remove sulfur and in the transport of coal in slurry pipelines can strain resources in water-stressed regions. Companies increasing efficiencies in water use could mitigate the risk of reduced water availability, regulations limiting water use, community protests disrupting production, or related cost increases. Water contamination can occur as a result of acid mine drainage from overburden, sometimes to levels where the water can no longer support life. Federal and state laws mandate treatment of wastewater prior to discharge into water bodies. Violating limits on selenium, sulfate, and dissolved solids could affect Coal Operations companies through significant penalties, compliance costs, or delays in coal production, or could increase costs related to mine closure.

Accounting Metrics

NR0201-04. Total water withdrawn (m^3), returned to watershed (m^3), internally recycled (m^3); and percentage in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas.

.18 The registrant shall disclose the amount of water (in thousands of cubic meters) that was withdrawn from freshwater sources for use in operations.

- 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.

.19 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was returned to the environment during the fiscal year. This figure shall include the amount discharged directly to the environment or indirectly discharged through a third party, such as a local wastewater treatment plant.

.20 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was recycled during the fiscal year. This figure shall include the amount recycled in closed-loop and open-loop systems. Water recycled for purposes other than coal mining and production operations (e.g., grey water reuse) shall not be included in this figure.

- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.

.21 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online here), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

NR0201-05. Number of incidents of non-compliance with water-quality permits, standards, and regulations, such as total maximum daily load (TMDL) exceedances.

.22 The registrant shall disclose the total number of instances of non-compliance, including violations of a technology based standard or exceedances of a quality-based standard.

.23 The scope of disclosure includes incidents related to statutory permits and regulations or voluntary agreements, standards, or guidelines.

.24 Voluntary standards include the registrant's own water quality standards (parameters) or "effluent guidelines" from the International Finance Corporation (IFC) "Environmental, Health and Safety Guidelines for Mining."

- Typical parameters of concern include selenium, total dissolved solids (TDS), sulfate, total suspended solids (TSS), and pH.

.25 An incident of non-compliance shall be disclosed regardless of whether it received 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 discharges, limitations, standards, and prohibitions that are generally expressed as maximum daily, weekly average, and monthly average.

- 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.

Notes

Definitions:

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Additional References:

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Waste Management

Description

Handling of solid rock and clay waste, process refuse, and liquid coal waste containing toxins like mercury, arsenic, and cadmium, poses operational and regulatory challenges for Coal Operations companies. Coal slurry or tailings ponds can present a significant threat if the impoundments burst, collapse, or leak, leading to destruction of lives, property, and ecosystems, and ultimately to costs for companies from regulatory penalties, compensation, and remediation or compliance obligations. Permitting of mining operations may be affected, lowering a company's revenue-earning potential, or requiring additional expenditures prior to approval. Companies' ability to lower the number and size of tailings ponds, and ensure the structural integrity of impoundments can help minimize such impacts.

Accounting Metrics

NR0201-06. Number of tailings impoundments, broken down by MSHA hazard potential.

.27 The registrant shall disclose the number of tailings impoundments according to the following U.S. Mine Safety and Health Administration (MSHA) hazard potential classification:
- High hazard potential
- Significant hazard potential
- Low hazard potential

.28 The hazard potential shall be determined based on the following:
- As determined by Mine Safety and Health enforcement personnel (Metal and Nonmetal) during regular (E01) inspections by verifying that the mine operator has appropriately classified the dam or by assigning a hazard classification if the existing one does not appear reasonable or if no classification has been assigned.
- For locations not under the auspices of the MSHA, as determined by a third party following MSHA Procedure Instruction Letter No. I13-IV-01 guidance.

.29 High hazard potential impoundments are dams, regardless of their condition or size, whose failure will probably cause loss of life;
- High hazard potential facilities are those whose failure could reasonably be expected to cause loss of human life, serious damage to houses, industrial and commercial buildings, important utilities, highways, and railroads.

.30 Significant hazard potential impoundments are dams, regardless of their condition or size, whose failure would result in no probable loss of life but would disrupt important utilities or cause significant economic loss or significant environmental damage; or
- Moderate Hazard Potential: Facilities in predominately rural areas where failure may damage isolated homes or minor railroads, disrupting services or important facilities.

.31 Low hazard potential impoundments are dams meeting one of the two criteria below whose failure would not be expected to cause loss of life, disrupt important utilities, or cause significant economic loss or significant environmental damage. The dam must either:
- Equal or exceed 25 feet in height and can or does store a volume of more than 15 acre-feet, or
- Exceed 6 feet in height and can or does store 50 or more acre-feet.
- Low Hazard Potential: Facilities in rural areas where failure would cause only slight damage, such as to farm buildings, forest, agricultural land, or minor roads.

.32 Hazard potential classification depends solely on the consequences of failure of the dam and not on the condition of the dam.

.33 Hazard potential classification can change over time.

Notes

Definitions:

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Land Use and Biodiversity Impacts

Description

Surface mining and mountain top removal have a range of ecological impacts, including altering the landscape, and removing vegetation and wildlife habitats, which can be particularly significant in ecologically sensitive areas of operation such as those rich in biodiversity. Extensive reclamation is required to return land to a productive state when a mine is decommissioned. Coal Operations companies face related regulatory risks, as they need to follow specific state standards for restoring mined property according to a prior, approved reclamation plan. Furthermore, their operations might result in the violation of laws protecting endangered species, or they may face difficulties in obtaining mining permits and permit renewals. Material costs arise from removing or covering refuse piles, water treatment obligations, and dismantling infrastructure at the end of life. Companies that are able to minimize land use and associated biodiversity impacts, and plan infrastructure and operations with a view to restoration needs at the end-of-life could minimize their compliance costs and legal liabilities, face less resistance in developing new mines, and avoid delays in project completion.

Accounting Metrics

NR0201-07. Percentage of proved and probable reserves in sites with high conservation value.

.34 The registrant shall calculate the percentage as the amount of proved and probable reserves (in metric tons) in sites with high conservation-value areas divided by the registrant's net proved and probable reserves.

.35 Reserves are considered to be in a high conservation area if they are:

- Located within a WWF Global 200 terrestrial ecoregion.[6]
- Located within International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI), listed in the World Database of Protected Areas (WDPA), and mapped on ProtectedPlanet.net.

.36 Reserves are defined by the U.S. Securities and Exchange Commission (SEC) Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations:

- Reserves, as that part of a mineral deposit that could be economically and legally extracted or produced at the time of the reserve determination.
- Proven (or measured) reserves, as reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the results of detailed sampling and (b) the sites for inspection, sampling and measurement are spaced so close and the geographic character is so well-defined that size, shape, depth, and mineral content of reserves are well-established.
- Probable (or indicated) reserves, as reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.

.37 The registrant may choose to separately identify reserves in areas with additional ecological, biodiversity, or conservation designations, such as those listed by the A-Z Guide of Areas of Biodiversity Importance prepared by the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC).

.38 The registrant may choose to provide discussion concerning reserves that are located in high conservation value areas but present low biodiversity or ecosystem services risks; the registrant may choose to provide similar discussion for reserves located in areas of low biodiversity concern but present high biodiversity or ecosystem services risks.

NR0201-08. Total acreage of land disturbed; description of best-practice biodiversity management plan used throughout the project lifecycle, and the percentage of sites (by acreage) to which it was applied; impacted area (by acreage) that was restored.

.39 The registrant shall disclose the total acreage of disturbed land, where the scope includes land in the mining and production, or mine closure and post-closure project phases.

[6] Olson, D. M., Dinerstein, E. 2002. The Global 200: Priority ecoregions for global conservation. Annals of the Missouri Botanical Garden 89(2):199-224.

- This disclosure shall be a cumulative total of all currently active sites, recently closed sites, or sites being restored; it is not limited to land newly disturbed during the fiscal year.
- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.40 The registrant shall provide a brief description of its best-practice environmental management plan(s) implemented, including where relevant:

- Lifecycle stages to which the plan(s) apply, such as: exploration, mining, construction, production, closure, and post-closure (e.g., restoration).
- The topics addressed by the plan(s) such as: ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, and hazardous chemical usage.
- The underlying references for its plan(s) including whether they are codes, guidelines, standards, regulations, and if they were developed by the registrant, an industry organization, a third-party organization (e.g., a non-governmental organization), a governmental agency, or some combination of these groups.
- Its rationale for determining that the plan(s) identified constitutes a best practice.

.41 The registrant shall calculate the percentage as the acreage of sites to which it applied its best-practice environmental management plan divided by the total acreage of disturbed land.

- If environmental management plans differ significantly by mineral activities then the registrant shall calculate the percentage separately by the appropriate resource.
- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.42 The registrant shall disclose the acreage of land impacted by operations that was restored during the fiscal year, where, at a minimum, restoration meets the Society for Ecological Restoration definition: "the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed."

- Restoration may be further defined by local, state, or national laws; industry standards; or the registrant's own guidelines.
- The registrant shall disclose the definition of restoration and accompanying practices it follows in its description of its best-practice environmental management plan.

.43 Relevant references may include:

- "Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: Oil Fields and Mines: A Toolkit to Assist Government Agencies", DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative.

NR0201-09. Percentage (by annual production output) of mine sites where acid rock drainage is:
(1) predicted to occur
(2) actively mitigated
(3) under treatment or remediation

.44 The registrant shall disclose the percentage of its sites (by annual production output from mines in metric tons) where acid generating seepage into surrounding surface water and/or groundwater is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation.

.45 Acid Rock Drainage (ARD) is predicted to occur if, based on computer simulations, chemical evaluations, and/or acid-base accounting, it is biochemically likely that ARD could form at the mine site.

.46 ARD is considered actively mitigated if the registrant is preventing the formation of ARD through one or more of the following: storing or covering sulfite-bearing minerals to prevent oxidation, flood prevention and mine sealing, mixing of acid buffering materials with acid-producing materials, or chemical treatment of sulfide wastes (e.g., organic chemicals designed to kill sulfide-oxidizing bacteria).

.47 ARD is considered under treatment or remediation, if the acidic water discharged from the mine area is captured and undergoes a wastewater treatment process (active or passive).

.48 ARD may also be referred to as acid generating seepage or acid mine drainage.

Notes

Definitions:

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Additional References:

The International Network for Acid Prevention (INAP) Global Acid Rock Drainage (GARD) Guide

http://www.gardguide.com/index.php/Chapter_1

http://www.miningfacts.org/Environment/What-is-acid-rock-drainage/

Community Relations

Description

Coal mining activities take place over a number of years, and companies may be involved in multiple projects in an area that can have a wide range of community impacts, including those related to land acquisition, construction of facilities, air and water emissions from operations, decommissioning impacts, and accidents. If managed inadequately, such impacts impinge on the economic, social, environmental, and cultural rights of community members. Without due diligence regarding community or regional impacts throughout a project's lifecycle, companies may expose themselves to class action lawsuits, project delays and disruptions, and higher costs, creating financial risk and potentially higher costs of capital. Conversely, where communities are not necessarily affected negatively due to company operations, companies may benefit from addressing associated community concerns related to health, employment, and education, among others. Coal Operations companies that provide a valuable product or service to the community (such as preventive vaccination) could generate value for themselves (for example, through lower absenteeism of the workforce). Companies that are perceived as engaging in rent-seeking and exploiting a country or community's resources without providing any benefits in return, may be exposed to the risk of resource nationalism actions by host governments and communities that restrict their activities or impose additional costs.

Accounting Metrics

NR0201-10. Discussion of due diligence practices relating to the community rights comprising economic rights, social and cultural rights, and environmental rights, including how these practices are applied to business partners.

.49 The registrant shall describe its procedure and practice for due diligence with regard to the rights of communities in areas where it conducts business, intends to conduct business, or previously conducted business. Rights include:

- Economic rights, including the right to employment, fair wages, payment transparency, and respect of infrastructure and agricultural land.
- Environmental rights, including the right to clean local air and water, safe discharge, and disposal of waste.
- Social rights, including the right to adequate health care, education, and housing.
- Cultural rights, including the right to protection of places of cultural significance (e.g., sacred sites or burial sites).

.50 The discussion shall include due diligence processes employed during all stages of project development (i.e., prior, during, and post).

.51 Discussion shall include how practices apply to business partners, such as contractors, sub-contractors, suppliers, and joint venture partners.

.52 The registrant should describe its efforts to eliminate or mitigate community risks and/or address community concerns, including, but not limited to:

- The use of social impact assessments (SIA) that evaluate, manage, and mitigate risks.
- Efforts to engage with stakeholders, build consensus, and collaborate with communities.
- "Shared" or "blended" value projects that provide quantifiable benefits to the community and the registrant.
- Meeting the standards of financial and aid institutions such as the International Finance Corporation.

NR0201-11. Estimated value at risk (in U.S. dollars) to capital expenditure projects due to country, regional, and/or community risks, including a description of the valuation model or risk approach used.

.53 The registrant shall calculate the aggregate estimated value at risk (in U.S. dollars) to its capital expenditure projects, as the difference in value (in U.S. dollars) between a project free from country, regional, and/or community risks (hereafter, country risk) and the value of a project adjusted for these risks.

.54 This calculation shall be conducted using an appropriate valuation model; variations of the Capital Asset Pricing Model (CAPM) are commonly used to assess country risk.

- Value at risk can be calculated by applying an additional discount rate premium when calculating the net present value of a project using discounted cash flow analysis (DCF).

- Value at risk can be expressed as a reduction in the expected cash flows of a project due to country risk when calculating the net present value of a project using DCF analysis.
- If a project is insured for country risks, the value at risk can be expressed as a reduction in the cash flows of a project due to the cost of insurance when calculating the net present value of a project using DCF analysis.

.55 Country, regional, and/or community risks include, but are not limited to, corruption, business legal structure, political stability, regulation, ethnic conflict, stability of the local market, labor force (skills) availability, resettlement and access to land, quality of access to infrastructure (e.g., ports, roads, shipping channels), and/or general license to operate.

- These risks are likely to manifest differently at the country (national), regional (state), community (local level), and project level.
- This risk differs from sovereign risk, which is the potential that a central bank or government-backed entity will willingly or unwillingly default on debt obligations, or significantly alter key economic variables such as foreign exchange rates, import ratios, and money supply.

.56 The registrant shall describe the model or approach used to value capital expenditure projects, such as via adjusted discount rate, expected cash flow, or by another method.

.57 The registrant should identify and describe country risks specific to its projects and unique operating context.

- This may include the identification of country, regional, and community risks and/or the discussion of specific projects.
- This may include discussion of how the registrant has mitigated these risks through community engagement partnerships, blended value projects, etc.; the registrant shall quantify this reduction in risk according to the methods described above.
- Discussion should be additional to broad country risk classification (e.g., OECD Prevailing Country Risk classification, Standard & Poor's Country Risk ratings, World Economic Form Global Competitiveness Index, etc.)

Notes

Definitions:

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Additional References:

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Security, Human Rights, and Rights of Indigenous Peoples

Description

Coal-mining companies face additional community-related risks when operating in areas with weak or absent governance institutions, rule of law, and legislation to protect human rights, or in areas with vulnerable communities such as indigenous people. Companies using private or government security forces to protect their workers and assets may knowingly or unknowingly contribute to extreme cases of human rights violations, including use of excessive force. Indigenous people are often the most vulnerable sections of the population, with limited capacity to defend their unique rights and interests. Companies perceived as contributing to human rights violations or failing to account for indigenous peoples' rights may be affected due to protests, riots, or suspension of permits, and they could face substantial costs related to compensation or settlement payments. In the absence of country laws to address such cases, several international instruments have emerged to provide guidelines for companies, including obtaining the free, prior, and informed consent of indigenous peoples for decisions affecting them. With greater awareness, several countries are also beginning to implement specific laws protecting indigenous peoples' rights, creating increasing regulatory risk for companies.

Accounting Metrics

NR0201-12. Discussion of due-diligence practices with respect to human rights, indigenous rights, and operating in conflict zones.

.58 The registrant shall describe its due-diligence practices and procedures with respect to indigenous rights of communities in which it operates or intends to operate, including:
- Upholding International Labour Organization (ILO) Convention No. 169
- Use of free, prior, and informed consent (or consultation) processes

.59 The registrant shall describe its due-diligence practices and procedures with respect to human rights, including:
- Upholding the fundamental ILO conventions on freedom of association (No. 87), collective bargaining (No. 98), forced labor (No. 29, No. 105), child labor (No. 138, No. 182), fair wages (No. 100), and discrimination (No. 111)
- Implementation of the UN Guiding Principles on Business and Human Rights, and specifically Human Rights Due Diligence (Principle 17a-c)
- Implementation of the Voluntary Principles on Security and Human Rights

.60 The registrant shall discuss its practices and procedures while operating in zones of conflict, such as:
- Describing its approach according to best practices described in the International Institute for Sustainable Development's (IISD) Conflict-Sensitive Business Practice: Guidance for Extractive Industries.

.61 The discussion shall include due-diligence processes employed during all stages or project development (i.e., prior, during, and post).

.62 Discussion shall include how practices apply to business partners, such as contractors, sub-contractors, suppliers, and joint venture partners.

.63 The registrant should describe its efforts to eliminate or mitigate community risks and/or address community concerns, including, but not limited to:
- The use of social impact assessments (SIA) that evaluate, manage, and mitigate risks.
- Efforts to engage with stakeholders, build consensus, and collaborate with communities.
- "Shared" or "blended" value projects that provide quantifiable benefits to the community and the registrant.
- Meeting the standards of financial and aid institutions such as the International Finance Corporation.

Notes

Definitions:

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Workforce Health, Safety, and Well-being

Description

Although coal-mining processes have become increasingly automated, companies continue to rely on miners to operate critical machinery. Accidents at the coal mine, including cave-ins, explosions, or flooding often have the greatest impact on workers, with the industry having relatively high fatality and injury rates compared to other industries. Serious injuries and illnesses result in higher-than-average days away from work for coal miners compared to workers in other industries. Coal miners are also susceptible to long-term health risks such as chronic lung disease, commonly known as black lung disease, as well as mental health problems. Specific federal health and safety laws protect coal mining workers and make provisions for compensation for black lung disease. These can impose additional costs on companies or lead to regulatory penalties. Changes in legislation (such as the 2010 healthcare reforms) can result in additional liabilities. A company's ability to protect employee health and safety, and to create a culture of safety and well-being among employees at all levels, can help prevent accidents, mitigating costs and operational downtime, and enhance workforce productivity.

Accounting Metrics

NR0201-13. (1) MSHA All-Incidence Rate and (2) Near-Miss Frequency Rate, by employees (full time and contract).

.64 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its All Incidence Rate (AIR), as calculated and reported through the Mine Safety and Health Administration's (MSHA) Form 7000-1 (as required under 30 CFR, Part 50), where incidents include:

- Fatalities, or work-related injuries resulting in death to employees on active mine property;
- Nonfatal, Days Lost (NFDL) cases, or occupational injuries that result in loss of one or more days from the registrant's scheduled work, or days of limited or restricted activity while at work;
- No Days Lost (NDL) cases, or occurrences requiring only medical treatment (beyond first aid); that is, nonfatal-injury occurrences resulting only in loss of consciousness or medical treatment other than first aid.

.65 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its AIR according to the MSHA instructions and definitions.

.66 The registrant shall disclose its near miss frequency rate (NMFR), where a near miss is defined as an incident where no property or environmental damage or personal injury occurred, but where damage or personal injury easily could have occurred but for a slight circumstantial shift.

- The registrant should refer to organizations such as the National Safety Council (NSC) for guidance on implementing near miss reporting.
- The registrant should disclose its process for classifying, identifying, and reporting near miss incidents.

.67 The registrant shall disclose its AIR and NMFR for its direct employees (by full time and contract).

.68 The scope includes all employees, domestic and foreign.

.69 Rates shall be calculated as: (statistic count / total hours worked)*200,000.

NR0201-14. Discussion of management of accident and safety risks (e.g., acute incidents such as mine collapse) and long-term health and safety risks (e.g., chronic lung disease).

.70 The registrant shall discuss how it manages safety and emergency preparedness throughout its value chain, such as through training, joint management by the workforce and leadership, rules and guidelines (and their enforcement), and use of technology.

- The registrant shall include a description of how emergency preparedness is coordinated amongst business partners (e.g., contractors and sub-contractors).
- Disclosure may focus broadly on safety and emergency management systems, but shall specifically address the systems to avoid and manage emergencies, accidents, and incidents that could have catastrophic human health, local community, and environmental impacts.

.71 The registrant shall discuss how it manages long-term health and safety risks associated with coal mining (e.g., coal worker's pneumoconiosis) such as through training, rules and guidelines (and their enforcement), use of personal protective equipment, and use of technology.

.72 The registrant may choose to discuss implementation of relevant management systems such as CORESafety (developed by the National Mining Association), including progress towards tracking safety and health (S&H) metrics, management system (MS) metrics, and obtaining third-party verification.

Notes

Definitions:

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Additional References:

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Labor Relations

Description

Coal mining companies face inherent conflict between the need to lower the cost of labor to remain price-competitive, and to manage human resources to ensure long-term performance. Working conditions related to coal operations are usually physically demanding and hazardous. Labor unions play a key role in representing workers' interests and managing collective bargaining for better wages and working conditions. This makes the management of labor relations critical, as conflict with workers can result in labor strikes and other disruptions that can delay or stop production, and result in significant lost revenue and reputational damage. Continued labor stresses can impact the long-term profitability of the business.

Accounting Metrics

NR0201-15. Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees.

.73 The registrant shall indicate the percentage of U.S. employees and the percentage of foreign employees in the active workforce who are covered under collective-bargaining agreements during any part of the fiscal year, where:

- "Active workforce" refers to the maximum number of unique employees employed at any time during the fiscal year.
- "U.S. employees" refers to employees that do not need a visa to work in the U.S.
- "Foreign employees" refers to employees that do need a visa to work in the U.S.

NR0201-16. Number of strikes and lockouts resulting in work stoppages of at least one day, including the number, duration, and reason for the stoppage (in days).

.74 The registrant shall indicate the number of strikes and lockouts that resulted in work stoppages of at least one day in duration.
.75 For each work stoppage, the registrant shall indicate the duration in days.
.76 For each work stoppage, the registrant shall indicate the nature of the strike or lockout that caused the work stoppage, including specifically the reason stated by labor.

Notes

Definitions:

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Additional References:

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Reserves Valuation and Capital Expenditures

Description

Estimates suggest that Coal Operations companies are unlikely to be able to extract a significant proportion of their coal reserves if GHG emissions are to be controlled to limit global temperature increases to two degrees Celsius. Stewardship of capital resources while taking into account medium- to long-term trends, particularly related to climate change mitigation actions, is critical to prevent asset impairment, and maintain profitability and creditworthiness. In the U.S. and international markets, regulations and policies are already being put into place to limit GHG emissions from coal-fired power plants, the customers of Coal Operations companies, lowering demand for, and subsequently prices of, coal. GHG-mitigation regulations are likely to expand in scope and magnitude of impacts in the medium- to long-term, and along with improved competitiveness of alternative energy technologies, this poses a long-term risk for the reserves and capital expenditures of Coal Operations companies.

Accounting Metrics

NR0201-17. Sensitivity of coal reserve levels (in metric tons) to future price projection scenarios that account for a price on carbon emissions.

.77 The registrant shall conduct an analysis of its reserves to determine how several future scenarios may affect its determination of whether the reserves are proven or probable.

.78 Reserves are defined by U.S. Securities and Exchange Commission (SEC) Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations:

- Reserves, as that part of a mineral deposit that could be economically and legally extracted or produced at the time of the reserve determination.
- Proven (or measured) reserves, as reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the results of detailed sampling and (b) the sites for inspection, sampling, and measurement are spaced so closely and the geographic character is so well defined that size, shape, depth, and mineral content of reserves are well established.
- Probable (or indicated) reserves, as reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.

.79 The registrant shall base its analysis on price projections derived from the following scenarios conducted by the International Energy Agency (IEA) annually in its World Energy Outlook publication:

- New Policies Scenario, which assumes that broad policy commitments and plans that have been announced by countries, including national pledges to reduce greenhouse gas emissions and plans to phase out fossil-energy subsidies occur, even if the measures to implement these commitments have yet to be identified or announced. This broadly serves as the IEA baseline scenario.
- 450 Scenario, which assumes that an energy pathway occurs that is consistent with the goal of limiting the global increase in temperature to 2°C by limiting concentration of greenhouse gases in the atmosphere to around 450 parts per million of CO_2.

.80 The registrant shall follow guidance published by the Securities and Exchange Commission (SEC) in its Oil and Gas Reporting Modernization (Section §229.1202 (Item 1202) Disclosure of Reserves) for conducting a reserves sensitivity analysis.

.81 The registrant shall summarize its findings in the following table format:

Table. 1 Sensitivity of Reserves to Prices By Principal Product Type and Price Scenario

Price Case	Proved Reserves		Probable Reserves	
(Scenario)	Coal	Product A	Coal	Product A
	tons	measure	tons	measure
Current (base)				
New Policies Scenario*				
450 Scenario*				

* using 2035 price projections

NR0201-18. Estimated greenhouse gas emissions potential (in metric tons CO_2-e) embedded in proved coal reserves.

.82 The registrant shall calculate and disclose an estimate of the greenhouse gas emissions possible from the downstream use of proven coal reserves.

.83 The registrant shall make reasonable assumptions about the downstream use of hydrocarbon products, such as the projected amount that will be used in:

- Utility electricity generation
- Industrial uses (heating and electricity generation)
- Residential heating and cooling
- Transportation (road, air, water, and rail transportation)
- Other end uses (petrochemicals, agrochemicals, asphalt, lubricants, etc.)

.84 In the absence of primary data, the registrant should refer to sources such as the U.S. Energy Information Agency (EIA) or the International Energy Agency (IEA) for assumptions about downstream use of coal (i.e., the percentage to utilities for electricity generation, percentage for industrial energy generation, percentage for coking).

.85 In its calculations, the registrant shall use fuel emissions factors, national average emissions factors, transportation and mobile emission factors, and global warming potential values referenced by the Greenhouse Gas Protocol.

- Calculation shall exclude lifecycle energy and emissions associated with the extraction, refining, and transportation.

.86 The registrant should reference the approach and methodology described in Greenhouse Gas Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

NR0201-19. Discussion of how price and demand for coal and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets.

.87 The registrant shall discuss how projections for price, demand, and the path of climate regulation (including findings from NR0201-17 and NR0201-18) influence the registrant's capital expenditure (CAPEX) strategy.

.88 The registrant shall discuss the implications of price and demand scenario planning (i.e., NR0201-17) and how they may affect decisions to explore, acquire, and develop new reserves.

- The registrant may choose to discuss its use of other price and demand scenarios in addition to those disclosed in NR0101-17, particularly if these scenarios differ depending on the type of coal reserves, country or region where exploration occurs, technological attributes of capital expenditure projects, or other factors.

.89 It may be relevant for the registrant to discuss which factors materially influence its CAPEX decision making including, for example:

- How the scope of climate change regulation – such as which countries, regions, and/or industries are likely to be impacted – may influence where the registrant focuses its exploration and development.
- Its view of the alignment between the time horizon over which price and demand for coal may be affected by climate regulation and time horizons for returns on capital expenditures on reserves.
- How the structure of climate regulation – i.e., a carbon tax versus cap-and-trade – may differently affect price and demand and thus the registrant's capital expenditure decision making.

.90 The registrant should discuss how these trends affect decision making in the context of different types of reserve expenditures, including development of assets, acquisition of properties with proved reserves, acquisition of properties with unproved resources, and exploration activities.

Notes

Definitions:

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Additional References:

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Iron & Steel Production

SICS™ #NR0301

Prepared by the
Sustainability Accounting Standards Board ®

January 2014
Exposure Draft for Public Comment

Iron & Steel Production

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 issues 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 and is accredited to set standards by the American National Standards Institute (ANSI).

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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 Tuesday, January 14, 2014 and ending Monday, April 14, 2014. This Standard is subject to change thereafter.

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SASB Sustainability Accounting Standard

Iron and Steel Production **(NR0301)**

Industry Description

Companies in this industry produce iron and steel goods including rolled sheets, plates, pipes, bars, and beams. Steel production occurs via two primary methods: the Basic Oxygen Furnace, whereby steel is produced from raw iron ore, and the Electric Arc Furnace, whereby scrap steel is melted to form new steel. Many companies in the industry operate on an international scale.

Note: With a few exceptions, most companies do not mine their own ore to manufacture steel and iron products. There are separate SASB standards for the Metals and Mining industry (NR0302).

Table 1. Activity Level Metrics

Topic	Code	Activity Metric
Activity Level	NR0301-A	Raw steel and iron production, in metric tons.

Table 2. Material Sustainability Topics & Accounting Metrics

Topic	Code	Accounting Metric
Greenhouse Gas Emissions	NR0301-01	Gross global Scope 1 emissions (in metric tons CO_2-e), percentage covered under a regulatory program, and percentage of total from: (1) integrated steel making processes, (2) electric arc furnace processes, (3) coke-making process.
	NR0301-02	Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including emissions reduction target for Scope 1 emissions, that was active, in fiscal year, and an analysis of performance against those targets.
Air Quality	NR0301-03	Air emissions (in metric tons) for the following pollutants: CO, NO_x (excluding N_2O), SO_x, particulate matter (PM), manganese (Mn), lead (Pb), volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs).
Energy Management	NR0301-04	Total annual energy consumed (gigajoules), percentage from purchased electricity, percentage from onsite power production or fuel consumption, and percentage renewable (e.g., wind, biomass, solar).
Water Management	NR0301-05	Total fresh water withdrawals (m^3), returned to watershed (m^3), and percentage of withdrawals in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas; percentage of process water recycled.

Topic	Code	Accounting Metric
Waste Management	NR0301-06	Amount of waste from operations (metric tons) generated; percentage recycled, hazardous and non-hazardous.
Employee Health, Safety, Well-being	NR0301-07	(1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate, by employees (full time and contract).
Supply Chain Management	NR0301-08	Discussion of the process for managing environmental and social risks within the supply chain, including those that could constrain access to and/or availability of iron ore or coking coal.

Greenhouse Gas Emissions

Description

Iron and steel production is energy-intensive and generates significant direct greenhouse gas (GHG) emissions, primarily of carbon dioxide, from on-site fuel combustion using coking coal and natural gas. While technological improvements have reduced the GHG emissions per ton produced, overall output is growing rapidly and steel production remains carbon-intensive relative to other industries. The relative magnitude of GHG emissions from the industry exposes it to higher operating and capital expenditures from emissions regulations at the state, national, and regional levels, with a high degree of uncertainty about future emissions regulations. Companies that cost-effectively reduce the GHG-intensity of their operations can create operational efficiency, and mitigate the effect of increased fuel costs and regulations that cap, or put a put a price on, carbon emissions.

Accounting Metrics

NR0301-01. Gross global Scope 1 emissions (in metric tons CO_2-e), percentage covered under a regulatory program, and percentage of total from: (1) integrated steel making processes, (2) electric arc furnace processes, (3) coke-making process.

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

- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalents (CO_2-e) calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the IPCC's Second Assessment Report (1995).
- 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 and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

.02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) 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 mobiles sources that include, but are not limited to, production facilities, office buildings, and iron and steel transportation (marine, road, 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").[1]
- The approach detailed in Section 4.23 "Organizational boundary setting for GHG emissions reporting" of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).[2]

.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, and thus any updates made year-on-year shall be considered updates to this guidance.

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[1] "An organization has financial control over an operation if it has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities. Generally an organization has financial control over an operation for GHG accounting purposes if the operation is treated as a group company or subsidiary for the purposes of financial consolidation" *Guidance for companies reporting on climate change on behalf of investors & supply chain members 2013* (p. 95).

[2] This is based on the requirements of International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting and is consistent with how information relating to entities within a group or interest in joint ventures/associates would be included on consolidated financial statements. *Climate Change Reporting Framework*, CDSB.

.05 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory program.

- Regulatory programs include cap-and-trade schemes and carbon tax/fee system.
- Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).

.06 The registrant shall disclose the percentage of emissions from each of the following activities:

(1) integrated steel-making processes
(2) electric arc furnace processes
(3) coke-making process

.07 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.

.08 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.

.09 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.

NR0301-02. Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including emissions reduction target for Scope 1 emissions, that was active, in fiscal year, and an analysis of performance against those targets.

.10 The registrant shall discuss the following where relevant:

- The scope, such as if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources;
- If strategies, plans, and/or reduction targets are related to, or associated with, an emissions disclosure (reporting) or reduction program (e.g., EU 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.

.11 For emissions reduction targets the registrants shall disclose:

- The percentage of emissions within the scope of the reduction plan;
- The percentage reduction from base year
  - The base year is the first or starting year against which emissions are evaluated towards the achievement of the target;
- If 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.

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

.13 Disclosure corresponds with:

- CDSB Section 4, "Management actions"[3]
- CDP questionnaire "CC3. Targets and Initiatives"

Notes

Definitions:

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[3] 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

Air Quality

Description

The Iron and Steel industry generates air emissions, including Hazardous Air Pollutants, Criteria Air Pollutants, and Volatile Organic Compounds, which can have significant, localized human health and environmental impacts. Financial impacts on companies from air emissions will vary depending on the specific location of operations and the prevailing local air emissions regulations, and include higher operating or capital expenditures and regulatory or legal penalties. Companies that are able to limit emissions are likely to enjoy improved competitiveness in an environment of increasing regulatory and public concerns about air quality, in the U.S. and globally.

Accounting Metrics

NR0301-03. Air emissions (in metric tons) for the following pollutants: CO, NO_x (excluding N_2O), SO_x, particulate matter (PM), manganese (Mn), lead (Pb), volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs).

.14 The registrant shall disclose its emissions released to the atmosphere of air pollutants associated with its activities (e.g., refining through primary production):
- Direct air emissions from stationary or mobile sources that include, but are not limited to, primary production facilities, office buildings, marine vessels transporting products, truck fleets, and moveable equipment at production facilities.

.15 The registrant shall disclose emissions released to the atmosphere by emissions type. Substances include:
- Carbon monoxide (CO)
- Oxides of nitrogen (including NO and NO_2 and excluding N_2O) reported as NO_x
- Oxides of sulfur (SO_2 and SO_3) reported at SO_x
- Particulate matter (PM), reported as the sum of PM_{10} and $PM_{2.5}$, or all particulates less than 10 micrometers in diameter
- Manganese (Mn)
- Lead (Pb)
- Non-methane 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, which participates in atmospheric photochemical reactions, except those designated by the U.S. Environmental Protection Agency (EPA) as having negligible photochemical reactivity
- Polycyclic aromatic hydrocarbons (PAHs), at a minimum, include those listed in Table 1 of the European Commission Joint Research Centre's Institute for Reference Materials and Measurements PAH Factsheet.
    - These include compounds frequently monitored by the Scientific Committee for Food (SCF), the European Union (EU), and the U.S. EPA.

.16 This scope does not include CO_2, methane, and nitrous oxide, which are disclosed in NR0301-01 as Scope 1 GHG emissions.

.17 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 NR0301-01.

.18 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

Notes

Definitions:

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Additional References:

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Energy Management

Description

Despite gains in energy efficiency in recent years, the production of steel requires vast quantities of energy, sourced primarily from direct combustion of fossil fuels and the electrical grid. Energy represents between 20 and 40 percent of the cost of production. Long-term prospects of increased energy demand from emerging markets, and energy security, geopolitical, and climate change concerns indicate upward pressure on the price and constraints on the availability of conventional sources of energy. Affordable and easily accessible energy is essential for competitive advantage in this industry. The way in which a company manages its overall energy efficiency and intensity, its reliance on different types of energy and associated sustainability risks, and its ability to access alternative source of energy, can therefore be material.

Accounting Metrics

NR0301-04. Total annual energy consumed (gigajoules), percentage from purchased electricity, percentage from onsite power production or fuel consumption, and percentage renewable (e.g., wind, biomass, solar).

.19 The registrant shall convert the amount of electricity it consumed from kilowatt hours (kWh) to gigajoules (GJ).

.20 The registrant shall disclose fossil fuel consumption in terms of its energy content, using higher heating values (HHV), also known as gross calorific values (GCV), and 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).

.21 The registrant shall disclose renewable energy consumption as a percentage of its overall energy consumption, in terms of its energy content. For biofuels, the registrant shall use HHVs from the sources mentioned above. For solar or wind energy consumption, the registrant shall convert from electricity production (kWh) to gigajoules (GJ).

.22 The registrant shall disclose renewable energy data for renewable energy it directly produces, or which it purchases through renewable energy certificates (RECs) that are certified (i.e., through Green-e), or renewable power purchase agreements (PPAs). It shall not disclose the renewable portion of the energy drawn from electricity grids.

Notes

Definitions:

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Additional References:

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Water Management

Description

The substantial water requirements of steel production present a material risk to the industry, especially in regions of water scarcity, due to potential water availability constraints and price volatility. Water disposal costs are generally not significant, however, because water discharge is relatively low due to widespread use of closed-loop recycling systems and evaporative loss in cooling processes. However, companies that are unable to secure a stable water supply could face production disruptions, while rising water prices directly increase production costs. Consequently, adoption of technologies and processes that reduce water consumption can lower operating risks and costs for companies and create a competitive advantage.

Accounting Metrics

NR0301-05. Total fresh water withdrawals (m^3), returned to watershed (m^3), and percentage of withdrawals in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas; percentage of process water recycled.

.23 The registrant shall disclose the amount of water (in thousands of cubic meters) that was withdrawn from freshwater sources for use in operations.

- 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.

.24 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was returned to the environment during the fiscal year. This figure shall include the amount discharged directly to the environment or indirectly discharged through a third party, such as a local wastewater treatment plant.

.25 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was recycled during the fiscal year. This figure shall include the amount recycled in closed-loop and open-loop systems. Water recycled for purposes other than iron and steel production operations (e.g., grey water reuse) shall not be included in this figure.

- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.

.26 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online here), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

Notes

Definitions:

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Additional References:

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Waste Management

Description

While waste reclamation rates in steel production are high, more than half of the industry's hazardous waste stream is disposed of in landfill. Process wastes such as electric arc furnace dust, which is regulated as a hazardous material in the U.S. due to heavy metal content, can have significant environmental and human health impacts, present a regulatory risk, and can raise operating costs. Steel companies that reduce waste streams, in particular of hazardous wastes, can lower regulatory risks and costs.

Accounting Metrics

NR0301-06. Amount of waste from operations (metric tons) generated; percentage recycled, hazardous and non-hazardous.

.27 The registrant shall calculate and disclose the amount of waste (in metric tons) that is generated, including slags, dusts, and sludges.

- Waste also includes scrap steel; reject coal, used oil, and other solid wastes and excludes gaseous wastes.

.28 The percentage recycled shall be calculated as the amount of this waste that was sold as a by-product (e.g., granulated slag sold for use in cementitious products) plus the amount of waste recycled (through processing) by the registrant plus the amount sent externally for further recycling divided by the total amount of waste generated.

- Materials disposed of in landfills, both internal and external, and incinerated materials are classified as waste.
- Materials reused internally by the registrant are classified neither as a waste nor as a recycled material and shall be excluded from calculations.

Notes

Definitions:

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Additional References:

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Employee Health, Safety & Well-being

Description

Employees of steel companies face significant health and safety risks due in large part to exposure to heavy equipment and high temperatures. A company's ability to protect employee health and safety, and to create a culture of safety and well-being among employees at all levels can help prevent accidents, mitigating costs and operational downtime, and enhance workforce productivity. Frequent injuries, or a high rate of fatalities, can lead to an increase in regulatory compliance costs, healthcare costs, or insurance premiums.

Accounting Metrics

NR0301-07. (1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate, by employees (full time and contract).

.29 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its total recordable injury rate (TRIR), as calculated and reported in the Occupational Safety and Health Administration's (OSHA) Form 300.

- OSHA guidelines provide details on the determination of whether an event is a recordable occupational incident, and definitions for exemptions for incidents that occurred in the work environment but are not occupational.

.30 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its total recordable injury rate according to the U.S. Bureau of Labor Statistics guidance and/or using the U.S. Bureau of Labor Statistics calculator.

.31 The registrant shall disclose its near miss frequency rate (NMFR), where a near miss is defined as an incident where no property or environmental damage or personal injury occurred, but where damage or personal injury easily could have occurred but for a slight circumstantial shift.

- The registrant should refer to organizations such as the National Safety Council (NSC) for guidance on implementing near miss reporting.
- The registrant should disclose its process for classifying, identifying, and reporting near miss incidents.

.32 The registrant shall disclose its TRIR and NMFR for its direct employees, by full time and contract employment.

.33 The scope includes all employees, domestic and foreign.

.34 Rates shall be calculated as: (statistic count / total hours worked)*200,000.

Notes

Definitions:

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Additional References:

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Supply Chain Management

Description

Steel producers require a stable supply of energy and raw material inputs, including coking coal, electricity, scrap steel, and iron ore. Managing relationships with diverse suppliers across international markets is critical, as difficulty with procuring these key inputs could severely limit production and increase costs. For example, labor strikes at coal or iron ore mines have in some instances increased input costs and caused significant production declines. Companies that effectively manage environmental, regulatory, and social factors within their supply chain can limit these risks.

Accounting Metrics

NR0301-08. Discussion of the process for managing environmental and social risks within the supply chain, including those that could constrain access to and/or availability of iron ore or coking coal.

.35 This includes screening, codes of conduct, audits, and certifications. Indicate if audits are internal (first party), independent (third party), or administered by peers (e.g. trade organizations).

.36 Discussion of any existing or projected risks or constraints in obtaining raw materials (e.g. iron ore, coking coal) within the supply chain, including those related to restricted/limited availability, political situations, local labor conditions, natural disasters, climate change, or regulations.

Notes

Definitions:

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Additional References:

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Metals & Mining

SICS™ #NR0302

Prepared by the
Sustainability Accounting Standards Board ®

January 2014
Exposure Draft for Public Comment

Metals & Mining
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 issues 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 and is accredited to set standards by the American National Standards Institute (ANSI).

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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 Tuesday, January 14, 2014 and ending Monday, April 14, 2014. This Standard is subject to change thereafter.

For instructions on providing comments to SASB please click here.

For an introduction to SASB Standards please click here.

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SASB Sustainability Accounting Standard

Metals and Mining **(NR0302)**

Industry Description

The Metals and Mining industry is involved in extracting all metals and minerals, producing ores and refining, quarrying stones, smelting and manufacturing metals, and providing mining-support activities. It also produces iron ores, rare earth metals, and precious metals and stones. Larger companies in this industry are vertically integrated – activities range from mining ores in several countries to wholesaling metals to customers.

Note: There is a separate SASB Standard for the Iron & Steel Producers industry (NR0301).

Table 1. Activity Level Metrics

Topic	Code	Activity Metric
Activity Level	NR0302-A	Production of (1) metal ores and (2) finished metal products (in metric tons).

Table 2. Material Sustainability Topics & Accounting Metrics

Topic	Code	Accounting Metric
Greenhouse Gas Emissions	NR0302-01	Gross global Scope 1 emissions (in metric tons CO_2-e), percentage covered under a regulatory program, and by mineral or business unit where applicable.
	NR0302-02	Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including the emissions reduction target for Scope 1 emissions, that was active in the fiscal year, and an analysis of performance against those targets.
Air Quality	NR0302-03	Air emissions (in metric tons) for the following pollutants: CO, SO_x, NO_x (excluding N_2O), particulate matter (PM), mercury (Hg), lead (Pb), and volatile organic compounds (VOCs), by mineral or business unit where applicable.
Energy Management	NR0302-04	Total annual energy consumed (gigajoules), percentage from purchased electricity, percentage from onsite power production or fuel consumption, and percentage renewable (e.g., wind, biomass, solar).
Water Management	NR0302-05	Total fresh water withdrawn (m^3), returned (m^3), recycled (m^3) and percentage in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas.
	NR0302-06	Number of incidents of non-compliance with water-quality permits, standards, and regulations, such as total maximum daily load (TMDL) exceedances.

Topic	Code	Accounting Metric
Waste & Hazardous Materials Management	NR0302-07	Total weight of mining waste (in metric tons) and percentage recycled.
	NR0302-08	Total weight of processing (smelting and refining) waste (in metric tons) and percentage recycled.
	NR0302-09	Number of tailings impoundments, broken down by MSHA hazard potential.
Land Use & Biodiversity Impacts	NR0302-10	Percentage of proved and probable reserves in sites with high conservation value.
	NR0302-11	Total acreage of land disturbed; description of best-practice biodiversity management plan used throughout the project lifecycle, and the percentage of sites (by acreage) to which it was applied; impacted area (by acreage) that was restored.
	NR0302-12	Percentage (by annual production output) of mine sites where acid rock drainage is: (1) predicted to occur (2) actively mitigated (3) under treatment or remediation
Community Relations	NR0302-13	Discussion of due-diligence practices relating to the community rights comprising economic rights, social and cultural rights, and environmental rights, including how these practices are applied to business partners.
	NR0302-14	Estimated value at risk (in U.S. dollars) to capital-expenditure projects due to country, regional, and/or community risks, including a description of the valuation model or risk approach used.
Security, Human Rights, & Rights of Indigenous Peoples	NR0302-15	Discussion of due-diligence practices with respect to human rights, indigenous rights, and operating in conflict zones.
Workforce, Health, Safety, & Well-being	NR0302-16	(1) MSHA All-Incidence Rate and (2) Near-Miss Frequency Rate, by employees (full time and contract).
Employee Recruitment, Development, & Inclusion	NR0302-17	Discussion of efforts to recruit and retain highly skilled employees and foster workforce inclusion, such as through supporting STEM education, recruiting from diverse labor pools, training of local and indigenous populations, and/or innovative technological solutions.
Labor Relations	NR0302-18	Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees.
	NR0302-19	Number of strikes and lockouts resulting in work stoppages of at least one day, including the number and duration of the stoppage (in days).
Business Ethics & Payments Transparency	NR0302-20	Description of the management system for prevention of corruption and bribery, and due diligence procedures applicable to business partners.
	NR0302-21	Percentage of proved and probable reserves in countries that have the 20 lowest rankings in the Transparency International's Corruption Perception Index.

Greenhouse Gas Emissions

Description

Mining operations are energy-intensive and generate significant direct greenhouse gas (GHG) emissions, including carbon dioxide from fuel use during mining, ore processing, and smelting activities. Aluminum smelting releases perfluorocarbons (PFCs), with a greater global warming potential than carbon dioxide. Depending on the size of operations, transport-related emissions from the Metals and Mining industry may be substantial. The relative magnitude of GHG emissions from the industry exposes it to higher operating and capital expenditures from emissions regulations at the state, national, and regional levels, with a high degree of uncertainty about future emissions regulations. Companies that cost-effectively reduce the GHG intensity of their operations can create operational efficiency and mitigate the effect of increased fuel costs, and regulations that cap, or put a put a price on, carbon emissions.

Accounting Metrics

NR0302-01. Gross global Scope 1 emissions (in metric tons CO_2-e), percentage covered under a regulatory program, and by mineral or business unit where applicable.

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

- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalents (CO_2-e) calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the IPCC's Second Assessment Report (1995).
- 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 and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

.02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) 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 mobiles sources that include, but are not limited to, equipment, production facilities, office buildings, metal transportation (marine, road, 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").[1]
- The approach detailed in Section 4.23 "Organizational boundary setting for GHG emissions reporting" of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).[2]

.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 may choose, where relevant, to provide a breakdown of its emissions by mineral or business unit.

- Minerals or business units may include, for example: aluminum, copper, zinc, iron ore, precious metals, diamonds, etc.

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[1] "An organization has financial control over an operation if it has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities. Generally an organization has financial control over an operation for GHG accounting purposes if the operation is treated as a group company or subsidiary for the purposes of financial consolidation" *Guidance for companies reporting on climate change on behalf of investors & supply chain members 2013* (p. 95).

[2] This is based on the requirements of International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting and is consistent with how information relating to entities within a group or interest in joint ventures/associates would be included on consolidated financial statements. *Climate Change Reporting Framework*, CDSB.

.06 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory program.

- Regulatory programs include cap-and-trade schemes and carbon tax/fee system.
- Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).

.07 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.

.08 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.

.09 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions-monitoring systems (CEMS), engineering calculations, mass-balance calculations, etc.

NR0302-02. Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including the emissions reduction target for Scope 1 emissions, that was active in the fiscal year, and an analysis of performance against those targets.

.10 The registrant shall discuss the following where relevant:

- The scope, such as if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources;
- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU 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.

.11 For emission-reduction targets the registrants shall disclose:

- The percentage of emissions within the scope of the reduction plan;
- The percentage reduction from base year
  - The base year is the first or starting year against which emissions are evaluated towards the achievement of the target;
- If 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;
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

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

.13 Disclosure corresponds with:

- CDSB Section 4, "Management actions"[3]
- CDP questionnaire "CC3. Targets and Initiatives"

Notes

Definitions:

Additional References:

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[3] 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities, and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

Air Quality

Description

Other air emissions from mining and metal production include Hazardous Air Pollutants, Criteria Air Pollutants, and Volatile Organic Compounds, which can have significant, localized human health and environmental impacts. Depending on the metal, uncaptured sulfur dioxide, lead, mercury, cadmium, and arsenic are among the chief pollutants, along with particulate matter. The Metals and Mining industry is a significant source of some of these pollutants relative to other industries. Financial impacts on companies from air emissions will vary depending on the specific location of operations and the prevailing air-emissions regulations, and can include higher operating or capital expenditures, remediation costs, and penalties from regulatory agencies or legal actions from the local population or businesses. Companies that are able to limit emissions are likely to enjoy improved competitiveness in an environment of increasing regulatory and public concerns about air quality, in the U.S. and globally.

Accounting Metrics

NR0302-03. Air emissions (in metric tons) for the following pollutants: CO, SO_x, NO_x (excluding N_2O), particulate matter (PM), mercury (Hg), lead (Pb), and volatile organic compounds (VOCs), by mineral or business unit where applicable.

.14 The registrant shall disclose its emissions released to the atmosphere of air pollutants associated with its activities (e.g., refining through primary production):

- Direct air emissions from stationary or mobiles sources that include, but are not limited to, equipment at mining sites, smelters and refineries, primary production facilities, chemical plants, office buildings, marine vessels transporting products, truck fleets, and moveable equipment at mining and production facilities.

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

- Carbon monoxide (CO);
- Oxides of nitrogen (including NO and NO_2 and excluding N_2O) reported as NO_x;
- Oxides of sulfur (SO_2 and SO_3) reported at SO_x;
- Particulate matter (PM); reported as the sum of PM_{10} and $PM_{2.5}$, or all particulates less than 10 micrometers in diameter;
- Mercury (Hg);
- Lead (Pb);
- Non-methane 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, which participates in atmospheric photochemical reactions, except those designated by the EPA as having negligible photochemical reactivity.

.16 This scope does not include CO_2, methane, and nitrous oxide, which are disclosed in NR0302-01, as Scope 1 GHG emissions.

.17 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 NR0302-01.

.18 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions-monitoring systems (CEMS), engineering calculations, mass-balance calculations, etc.

Notes

Definitions:

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Additional References:

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Energy Management

Description

About half of energy consumption and GHG emissions in the Metals and Mining industry are a result of purchased electricity, leading to significant operating costs for companies. Energy intensity of operations is likely to increase with decreasing grades of deposits and increasing depth and scale of mining operations. Long-term prospects of increased energy demand from emerging markets, and energy security, geopolitical, and climate change concerns indicate upward pressure on the price and constraints on the availability of conventional sources of energy. Affordable and easily accessible energy is essential for competing in a commodity market driven by global competition. The way in which a company manages its overall energy efficiency and intensity, its reliance on different types of energy and associated sustainability risks, and its ability to access alternative sources of energy, can therefore be material.

Accounting Metrics

NR0302-04. Total annual energy consumed (gigajoules), percentage from purchased electricity, percentage from onsite power production or fuel consumption, and percentage renewable (e.g., wind, biomass, solar).

.19 The registrant shall convert the amount of electricity it consumed from kilowatt hours (kWh) to gigajoules (GJ).

.20 The registrant shall disclose fossil fuel consumption in terms of its energy content, using higher heating values (HHV), also known as gross calorific values (GCV), and 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).

- Include fuel used for power production and for other uses (e.g., vehicles).

.21 The registrant shall disclose renewable energy consumption as a percentage of its overall energy consumption in terms of its energy content. For biofuels, the registrant shall use HHVs from the sources mentioned above. For solar or wind energy consumption, the registrant shall convert from electricity production (kWh) to gigajoules (GJ).

.22 The registrant shall disclose renewable energy data for renewable energy it directly produces, or which it purchases through renewable energy certificates (RECs) that are certified (i.e., through Green-e), or renewable power-purchase agreements (PPAs). It shall not disclose the renewable portion of the energy drawn from electricity grids.

Notes

Definitions:

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Additional References:

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Water Management

Description

Mining and metals production have impacts on both the quantity and the quality of local water resources, with water-contamination risks remaining after mines have been closed. Water contamination can occur as a result of acid mine drainage from overburden, sometimes to levels at which the water can no longer support life. Metals and Mining companies face physical, regulatory, and reputational risks due to water scarcity, regulations on effluents or amount of water used, and competition with local communities and other industries for limited water sources. Impacts include higher costs, lost revenues due to curtailment or suspension of operations, and higher cost of capital. The severity of these risks can vary depending on the region's water resources and regulatory environment. Companies in the industry are addressing risks by increasingly using new technologies, including desalination, water recirculation, and innovative waste-disposal solutions.

Accounting Metrics

NR0302-05. Total fresh water withdrawn (m^3), returned (m^3), recycled (m^3) and percentage in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas.

.23 The registrant shall disclose the amount of water (in thousands of cubic meters) that was withdrawn from freshwater sources for use in operations.

- 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.

.24 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was returned to the environment during the fiscal year. This figure shall include the amount discharged directly to the environment or indirectly discharged through a third party, such as a local wastewater treatment plant.

.25 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was recycled during the fiscal year. This figure shall include the amount recycled in closed-loop and open-loop systems. Water recycled for purposes other than mining and production operations (e.g., grey water reuse) shall not be included in this figure.

- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.

.26 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online here), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

NR0302-06. Number of incidents of non-compliance with water-quality permits, standards, and regulations, such as total maximum daily load (TMDL) exceedances.

.27 The registrant shall disclose the total number of instances of non-compliance, including violations of a technology-based standard or exceedances of a quality-based standard.

.28 The scope of disclosure includes incidents related to statutory permits and regulations or voluntary agreements, standards, or guidelines.

.29 Voluntary standards include the registrant's own water-quality standards (parameters) or "effluent guidelines" from the International Finance Corporation (IFC) "Environmental, Health and Safety Guidelines for Mining."

- Typical parameters of concern include arsenic, copper, lead, nickel, zinc, cyanide, radium-226, total suspended solids, pH, and toxicity.

.30 An incident of non-compliance shall be disclosed regardless of whether it received an enforcement action (e.g., fine, warning letter, etc.).

.31 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 average, and monthly average.

- For non-continuous discharges, limitation that are generally expressed in terms of frequency, total mass, maximum rate of discharge, and mass or concentrations of specified pollutants.

Notes

Definitions:

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Additional References:

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Waste and Hazardous Materials Management

Description

Metals and Mining operations require construction of impoundments for tailings associated with mills, which cover large areas of land. Slurry or tailings ponds can present a significant threat if the impoundments burst, collapse, or leak, leading to destruction of lives, property, and ecosystems, and ultimately to costs for companies from regulatory penalties, compensation, difficulty obtaining permits, and remediation or compliance obligations. Additionally, tailings can contain toxic chemicals used in extraction and processing operations. Companies face associated regulatory risks from the use of such chemicals. Companies' ability to manage the sourcing, transport, use, and disposal of chemicals used in processing can lower the risk of regulatory and legal liabilities. In addition, companies that lower the number and size of tailings ponds through efficient operations and recycling and ensure the structural integrity of impoundments can benefit from lower costs and risks to value.

Accounting Metrics

NR0302-07. Total weight of mining waste (in metric tons) and percentage recycled.

.32 The registrant shall calculate and disclose the amount of waste (in metric tons) that it generated from mining activities, including tailings, spent chemicals, and overburden.

.33 The percentage recycled shall be calculated as the amount of this waste that was sold as a by-product plus the amount of waste recycled (through processing) by the registrant plus the amount sent externally for further recycling, divided by the total amount of waste generated.

- Materials disposed of in landfills, both internal and external, and incinerated materials are classified as waste.
- Materials reused internally by the registrant are classified neither as a waste nor as a recycled material and shall be excluded from calculations.

NR0302-08. Total weight of processing (smelting and refining) waste (in metric tons) and percentage recycled.

.34 The registrant shall calculate and disclose the amount of waste (in metric tons) that it generated during metals processing (e.g., smelting and refining), including slags, dusts, sludges, and spent solvents.

- Waste also includes scrap steel, reject coal, used oil, and other solid wastes and excludes gaseous wastes.

.35 The percentage recycled shall be calculated as the amount of this waste that was sold as a by-product plus the amount of waste recycled (through processing) by the registrant plus the amount sent externally for further recycling, divided by the total amount of waste generated.

- Materials disposed of in landfills, both internal and external, and incinerated materials are classified as waste.
- Materials reused internally by the registrant are classified neither as a waste nor as a recycled material and shall be excluded from calculations.

NR0302-09. Number of tailings impoundments, broken down by MSHA hazard potential.

.36 The registrant shall disclose the number of tailings impoundments according to the following U.S. Mine Safety and Health Administration (MSHA) hazard potential classification:

- High hazard potential
- Significant hazard potential
- Low hazard potential

.37 The hazard potential shall be determined based on the following:

- As determined by Mine Safety and Health enforcement personnel (Metal and Nonmetal) during regular (E01) inspections by verifying that the mine operator has appropriately classified the dam or by assigning a hazard classification if the existing one does not appear reasonable or if no classification has been assigned.
- For locations not under the auspices of the MSHA, as determined by a third party following MSHA Procedure Instruction Letter No. I13-IV-01 guidance.

.38 High hazard potential impoundments are dams, regardless of their condition or size, whose failure will probably cause loss of life;

- High hazard potential facilities are those whose failure could reasonably be expected to cause loss of human life, serious damage to houses, industrial and commercial buildings, important utilities, highways, and railroads.

.39 Significant hazard potential impoundments are dams, regardless of their condition or size, whose failure would result in no probable loss of life but would disrupt important utilities or cause significant economic loss or significant environmental damage; or

- Moderate Hazard Potential: Facilities in predominately rural areas where failure may damage isolated homes or minor railroads, disrupting services or important facilities.

.40 Low hazard potential impoundments are dams meeting one of the two criteria below whose failure would not be expected to cause loss of life, disrupt important utilities, or cause significant economic loss or significant environmental damage. The dam must either:

- Equal or exceed 25 feet in height and can or does store a volume of more than 15 acre-feet, or
- Exceed 6 feet in height and can or does store 50 or more acre-feet.
- Low Hazard Potential: Facilities in rural areas where failure would cause only slight damage, such as to farm buildings, forest, agricultural land, or minor roads.

.41 Hazard potential classification depends solely on the consequences of failure of the dam and not on the condition of the dam.

.42 Hazard potential classification can change over time.

Notes

Definitions:

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Additional References:

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Land Use and Biodiversity Impacts

Description

Both the development and closure of mines can have a range of ecological impacts, including altering the landscape and removing vegetation and wildlife habitats, which can be particularly significant in ecologically sensitive areas of operation, such as those rich in biodiversity. Extensive reclamation is required to return land to a productive state when a mine is decommissioned. Metals and Mining companies face related regulatory risks, as they need to follow specific state standards for restoring mined property according to a prior, approved reclamation plan. Furthermore, their operations might result in the violation of laws protecting endangered species, or they may face difficulties in obtaining mining permits and permit renewals. Material costs arise from removing or covering refuse piles, water-treatment obligations, and dismantling infrastructure at the end-of-life. Companies that are able to minimize land use and associated biodiversity impacts and that plan infrastructure and operations with a view to restoration needs at the end-of-life could minimize their compliance costs and legal liabilities, face less resistance in developing new mines, and avoid delays in project completion.

Accounting Metrics

NR0302-10. Percentage of proved and probable reserves in sites with high conservation value.

.43 The registrant shall calculate the percentage as the amount of proved and probable reserves (in metric tons) in sites with high conservation-value areas divided by the registrant's net proved and probable reserves.

.44 Reserves are considered to be in a high conservation-value area if they are:

- Located within a WWF Global 200 terrestrial ecoregion.[4]
- Located within International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI), listed in the World Database of Protected Areas (WDPA), and mapped on ProtectedPlanet.net.

.45 Reserves are defined by the U.S. Securities and Exchange Commission (SEC) Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations:

- Reserves, as that part of a mineral deposit that could be economically and legally extracted or produced at the time of the reserve determination.
- Proven (or measured) reserves, as reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the results of detailed sampling and (b) the sites for inspection, sampling and measurement are spaced so close and the geographic character is so well-defined that size, shape, depth, and mineral content of reserves are well-established.
- Probable (or indicated) reserves, as reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.

.46 The registrant should follow the Combined Reserves International Reporting Standards Committee (CRIRSCO) guidance for classifying ore reserves and mineral resources, including the use of a "competent person" to compile information.

.47 The registrant shall, where relevant, provide a breakdown of calculations by mineral or business unit.

- Minerals or business units may include, for example: aluminum, copper, zinc, iron ore, precious metals, diamonds, etc.

.48 The registrant may choose to separately identify reserves in areas with additional ecological, biodiversity, or conservation designations, such as those listed by the A-Z Guide of Areas of Biodiversity Importance prepared by the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC).

.49 The registrant may choose to provide discussion concerning reserves that are located in high conservation-value areas but present low biodiversity or ecosystem services risks; the registrant may choose to provide similar discussion for reserves located in areas of low biodiversity concern but that present high biodiversity or ecosystem-services risks.

[4] Olson, D. M., Dinerstein, E. 2002. The Global 200: Priority ecoregions for global conservation. Annals of the Missouri Botanical Garden 89(2):199-224

NR0302-11. Total acreage of land disturbed; description of best-practice biodiversity management plan used throughout the project lifecycle, and the percentage of sites (by acreage) to which it was applied; impacted area (by acreage) that was restored.

.50 The registrant shall disclose the total acreage of disturbed land, where the scope includes land in the mining and production, or mine closure and post-closure project phases.

- This disclosure shall be a cumulative total of all currently active sites, recently closed sites, or sites being restored; it is not limited to land newly disturbed during the fiscal year.
- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.51 The registrant shall provide a brief description of its best-practice environmental management plan(s) implemented, including where relevant:

- Lifecycle stages to which the plan(s) apply, such as: exploration, mining, construction, production, closure, and post-closure (e.g., restoration).
- The topics addressed by the plan(s), such as: ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, and hazardous chemical usage.
- The underlying references for its plan(s), including whether they are codes, guidelines, standards, regulations, and if they were developed by the registrant, an industry organization, a third-party organization (e.g., a non-governmental organization), a governmental agency, or some combination of these groups.
- Its rationale for determining that the plan(s) identified constitutes a best practice.

.52 The registrant shall calculate the percentage as the acreage of sites to which it applied its best-practice environmental management plan divided by the total acreage of disturbed land.

- If environmental-management plans differ significantly by metal or mineral activities then the registrant shall calculate the percentage separately by appropriate resource.
- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.53 The registrant shall disclose the acreage of land impacted by operations that was restored during the fiscal year, where, at a minimum, restoration meets the Society for Ecological Restoration definition: "the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed."

- Restoration may be further defined by local, state, or national laws; industry standards; or the registrant's own guidelines.
- The registrant shall disclose the definition of restoration and accompanying practices it follows in its description of its best-practice environmental-management plan.

.54 Relevant references may include:

- "Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: Oil Fields and Mines: A Toolkit to Assist Government Agencies", DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative.

NR0302-12. Percentage (by annual production output) of mine sites where acid rock drainage is:
(1) predicted to occur
(2) actively mitigated
(3) under treatment or remediation

.55 The registrant shall disclose the percentage of its sites (by annual production output from mines in metric tons) where acid generating seepage into surrounding surface water and/or groundwater is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation.

.56 Acid Rock Drainage (ARD) is predicted to occur if, based on computer simulations, chemical evaluations, and/or acid-base accounting, it is biochemically likely that ARD could form at the mine site.

.57 ARD is considered actively mitigated if the registrant is preventing the formation of ARD through one or more of the following: storing or covering sulfite-bearing minerals to prevent oxidation, flood prevention and mine sealing, mixing of acid-buffering materials with acid-producing materials, or chemical treatment of sulfide wastes (e.g., organic chemicals designed to kill sulfide-oxidizing bacteria).

.58 ARD is considered under treatment or remediation if the acidic water discharged from the mine area is captured and undergoes a wastewater treatment process (active or passive).

.59 The registrant may choose, where relevant, to provide a breakdown by mineral or business unit.

- Minerals or business units may include, for example: aluminum, copper, zinc, iron ore, precious metals, diamonds, etc.

.60 ARD may also be referred to as acid generating seepage or acid mine drainage.

Notes

Definitions:

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Additional References:

The International Network for Acid Prevention (INAP) Global Acid Rock Drainage (GARD) Guide

http://www.gardguide.com/index.php/Chapter_1

http://www.miningfacts.org/Environment/What-is-acid-rock-drainage/

Community Relations

Description

Mining activities take place over a number of years, and companies may be involved in multiple projects in an area that can have a wide range of community impacts, including those related to land acquisition, construction of facilities, air and water emissions from operations, decommissioning impacts, and accidents. If managed inadequately, such impacts impinge on the economic, social, environmental, and cultural rights of community members. Without due diligence regarding community or regional impacts throughout a project's lifecycle, companies may expose themselves to class-action lawsuits, project delays and disruptions, and higher costs, creating financial risk and potentially higher costs of capital. Conversely, where communities are not necessarily affected negatively due to company operations, companies may benefit from addressing associated community concerns related to health, employment, and education, among others. Mining companies that provide a valuable product or service to the community (such as preventive vaccination) could generate value for themselves (for example, through lower absenteeism of the workforce). Mining companies that are perceived as engaging in rent-seeking and exploiting a country or community's resources without providing any benefits in return may be exposed to the risk of resource nationalism actions by host governments and communities that restrict their activities or impose additional costs.

Accounting Metrics

NR0302-13. Discussion of due-diligence practices relating to the community rights comprising economic rights, social and cultural rights, and environmental rights, including how these practices are applied to business partners.

.61 The registrant shall describe its procedure and practice for due diligence with regards to the rights of communities in areas where it conducts business, intends to conduct business, or previously conducted business. Rights include:

- Economic rights, including the right to employment, fair wages, payment transparency, and respect of infrastructure and agricultural land.
- Environmental rights, including the right to clean local air and water, safe discharge and disposal of waste.
- Social rights, including the right to adequate health care, education, and housing.
- Cultural rights, including the right to protection of places of cultural significance (e.g., sacred sites or burial sites).

.62 The discussion shall include due-diligence processes employed during all stages of project development (i.e., prior, during, and post).

.63 The discussion shall include how practices apply to business partners, such as contractors, sub-contractors, suppliers, and joint-venture partners.

.64 The registrant should describe its efforts to eliminate or mitigate community risks and/or address community concerns, including, but not limited to:

- The use of social impact assessments (SIA) that evaluate, manage, and mitigate risks.
- Efforts to engage with stakeholders, build consensus, and collaborate with communities.
- "Shared" or "blended" value projects that provide quantifiable benefits to the community and the registrant.
- Meeting the standards of financial and aid institutions, such as the International Finance Corporation.

NR0302-14. Estimated value at risk (in U.S. dollars) to capital-expenditure projects due to country, regional, and/or community risks, including a description of the valuation model or risk approach used.

.65 The registrant shall calculate the aggregate estimated value at risk (in U.S. dollars) to its capital-expenditure projects as the difference in value (in U.S. dollars) between a project free from country, regional, and/or community risks (hereafter, country risk) and the value of a project adjusted for these risks.

.66 This calculation shall be conducted using an appropriate valuation model; variations of the Capital Asset Pricing Model (CAPM) are commonly used to assess country risk.

- Value at risk can be calculated by applying an additional discount rate premium when calculating the net present value of a project using discounted cash flow (DCF) analysis.

- Value at risk can be expressed as a reduction in the expected cash flows of a project due to country risk when calculating the net present value of a project using DCF analysis.
- If a project is insured for country risks, the value at risk can be expressed as a reduction in the cash flows of a project due to the cost of insurance when calculating the net present value of a project using DCF analysis.

.67 Country, regional, and/or community risks include, but are not limited to, corruption, business legal structure, political stability, regulation, ethnic conflict, stability of the local market, labor-force (skills) availability, resettlement and access to land, quality of access to infrastructure (e.g., ports, roads, shipping channels), and/or general license to operate.

- These risks are likely to manifest differently at the country (national), regional (state), community (local), and project levels.
- This risk differs from sovereign risk, which is the potential that a central bank or government-backed entity will willingly or unwillingly default on debt obligations, or significantly alter key economic variables such as foreign exchange rates, import ratios, and money supply.

.68 The registrant shall describe the model or approach used to value capital expenditure projects, such as via adjusted discount rate, expected cash flow, or by another method.

.69 The registrant should identify and describe country risks specific to its projects and unique operating context.

- This may include the identification of country, regional, and community risks and/or the discussion of specific projects.
- This may include a discussion of how the registrant has mitigated these risks through community engagement partnerships, blended value projects, etc.; the registrant shall quantify this reduction in risk according to the methods described above.
- The discussion should be additional to broad country risk classification (e.g., OECD Prevailing Country Risk classification, Standard & Poor's Country Risk ratings, World Economic Form Global Competitiveness Index, etc.).

Notes

Definitions:

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Additional References:

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Security, Human Rights, and Rights of Indigenous Peoples

Description

Mining companies face additional community-related risk when operating in conflict zones, in areas with weak or absent governance institutions, rule of law, and legislation to protect human rights, or in areas with vulnerable communities such as indigenous people. Companies using private or government security forces to protect their workers and assets may knowingly or unknowingly contribute to extreme cases of human-rights violations, including use of excessive force. Indigenous people are often the most vulnerable sections of the population, with limited capacity to defend their unique rights and interests. Companies perceived as contributing to human-rights violations or failing to account for indigenous peoples' rights may be affected due to protests, riots, or suspension of permits, and they could face substantial costs related to compensation or settlement payments. In the absence of country laws to address such cases, several international instruments have emerged to provide guidelines for companies, including obtaining the free, prior, and informed consent of indigenous peoples for decisions affecting them. With greater awareness, several countries are also beginning to implement specific laws protecting indigenous peoples' rights, creating increasing regulatory risk for companies.

Accounting Metrics

NR0302-15. Discussion of due-diligence practices with respect to human rights, indigenous rights, and operating in conflict zones.

.70 The registrant shall describe its due-diligence practices and procedures with respect to indigenous rights of communities in which it operates or intends to operate, including:
- Upholding International Labour Organization (ILO) Convention No. 169
- Including use of free, prior, and informed consent (or consultation) processes

.71 The registrant shall describe its due-diligence practices and procedures with respect to human rights, including:
- Upholding the fundamental ILO conventions on freedom of association (No. 87), collective bargaining (No. 98), forced labor (No. 29, No. 105), child labor (No. 138, No. 182), fair wages (No. 100), and discrimination (No. 111)
- Implementation of the UN Guiding Principles on Business and Human Rights, and specifically Human Rights Due Diligence (Principle 17a-c)
- Implementation of the Voluntary Principles on Security and Human Rights

.72 The registrant shall discuss its practices and procedures while operating in zones of conflict, such as:
- Describing its approach according to the Five-Step Framework outlined in the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.

.73 The discussion shall include due-diligence processes employed during all stages of project development (i.e., prior, during, and post).

.74 The discussion shall include how practices apply to business partners, such as contractors, sub-contractors, suppliers, and joint-venture partners.

.75 The registrant should describe its efforts to eliminate or mitigate community risks and/or address community concerns, including, but not limited to:
- The use of social impact assessments (SIA) that evaluate, manage, and mitigate risks.
- Efforts to engage with stakeholders, build consensus, and collaborate with communities.
- "Shared" or "blended" value projects that provide quantifiable benefits to the community and the registrant.
- Meeting the standards of financial and aid institutions, such as the International Finance Corporation.

Notes

Definitions: --

Workforce Health, Safety, and Well-being

Description

Safety is critical to mining operations and accidents often have the greatest impact on workers. The Metals and Mining industry has relatively high fatality rates compared to other industries, and miners' deaths or injuries can result from accidents that include powered-haulage and machinery accidents and mine cave-ins. Poor health and safety records can result in fines and penalties, and an increase in regulatory compliance costs from more stringent oversight. A company's ability to protect employee health and safety and to create a culture of safety and well-being among employees at all levels can enhance workforce productivity, help prevent accidents, and reduce days away from work, mitigating costs and operational downtime.

Accounting Metrics

NR0302-16. (1) MSHA All-Incidence Rate and (2) Near-Miss Frequency Rate, by employees (full time and contract).

.76 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its All-Incidence Rate (AIR), as calculated and reported through the Mine Safety and Health Administration's (MSHA) Form 7000-1 (as required under 30 CFR, Part 50), where incidents include:

- Fatalities, or work-related injuries resulting in death to employees on active mine property;
- Nonfatal, Days Lost (NFDL) cases, or occupational injuries that result in loss of one or more days from the registrant's scheduled work, or days of limited or restricted activity while at work;
- No Days Lost (NDL) cases, or occurrences requiring only medical treatment (beyond first aid); that is, nonfatal-injury occurrences resulting only in loss of consciousness or medical treatment other that first aid.

.77 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its AIR according to the MSHA instructions and definitions.

.78 The registrant shall disclose its near-miss frequency rate (NMFR), where a near miss is defined as an incident where no property or environmental damage or personal injury occurred, but where damage or personal injury easily could have occurred but for a slight circumstantial shift.

- The registrant should refer to organizations such as the National Safety Council (NSC) for guidance on implementing near-miss reporting.
- The registrant should disclose its process for classifying, identifying, and reporting near-miss incidents.

.79 The registrant shall disclose its AIR and NMFR for its direct employees (by full time and contract).

.80 The scope includes all employees, domestic and foreign.

.81 Rates shall be calculated as: (statistic count / total hours worked)*200,000.

Notes

Definitions:

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Additional References:

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Employee Recruitment, Development, and Inclusion

Description

The Metals and Mining industry, which has global operations, is facing a shortage of experienced and skilled workers, with a significant proportion of the workforce close to retirement, and a need for more workers due to rapid growth in the industry. With technological advancements, the industry needs more highly-educated workers. Despite this shortage, and the availability of a diverse talent pool, the industry has low representation of women and minorities in the workforce. Not only are there few women in the workforce and on the Boards of Metals and Mining companies, but there is also a pay gap between men and women at similar levels of responsibility. Remote locations of mining operations, among other factors, make mining activities less attractive for not only women but also younger workers looking for more flexibility in working conditions. In this context, companies that have a comprehensive recruitment and development strategy, including recruiting from a diverse talent base, ensuring equal career advancement opportunities, partnering with educational institutions, and employing and training local hires in international operations, could face improved efficiencies and lower disruptions to operations, and are also likely to be more profitable companies.

Accounting Metrics

NR0302-17. Discussion of efforts to recruit and retain highly skilled employees and foster workforce inclusion, such as through supporting STEM education, recruiting from diverse labor pools, training of local and indigenous populations, and/or innovative technological solutions.

.82 The registrant shall discuss its efforts to recruit and retain skilled workers, including where relevant, through:

- Supporting science, technology, engineering, and math (STEM) education programs, partnerships, workshops, etc.
- Recruiting efforts targeted at diverse labor-supply pools (such as women, workers with disabilities, etc.), who are traditionally underrepresented in the Metals and Mining industry
- Increasing collaboration between other industry members (e.g., services companies, etc.), workers' organizations, and other stakeholders to improve retention, improve training, and develop new technologies
- Local content initiatives that include training and skills transfer for local and/or indigenous populations
- Addressing aspects of industry culture that may be unappealing to workers (e.g. long hours, fly-in/fly-out work, etc.).

.83 The registrant should describe challenges in recruiting and retaining its workforce due to lack of availability of a qualified and experienced talent pool, including specific regions, positions, or business units where it faces these challenges.

Notes

Definitions:

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Additional References:

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Labor Relations

Description

Metals and Mining companies face inherent conflict between the need to lower the cost of labor to remain price-competitive and to manage human resources to ensure long-term performance. Working conditions related to mining and metal operations are usually physically demanding and hazardous. Labor unions play a key role in representing workers' interests and managing collective bargaining for better wages and working conditions. At the same time, Metals and Mining companies often operate in areas where worker rights are not adequately protected. The nuances of both domestic and international worker concerns make management of labor relations critical for Metals and Mining companies, as conflict with workers can result in labor strikes and other disruptions that can delay or stop production and result in significant lost revenue and reputational damage. Continued labor stresses can impact the long-term profitability of the business.

Accounting Metrics

NR0302-18. Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees.

.84 The registrant shall indicate the percentage of U.S. employees and the percentage of foreign employees in the active workforce who are covered under collective-bargaining agreements during any part of the fiscal year, where:

- "Active workforce" refers to the maximum number of unique employees employed at any time during the fiscal year
- "U.S. employees" refers to employees that do not need a visa to work in the U.S.
- "Foreign employees" refers to employees that do need a visa to work in the U.S.

NR0302-19. Number of strikes and lockouts resulting in work stoppages of at least one day, including the number and duration of the stoppage (in days).

.85 The registrant shall indicate the number of strikes and lockouts that resulted in work stoppages of at least one day in duration.
.86 For each work stoppage, the registrant shall indicate the duration in days.
.87 For each work stoppage, the registrant shall indicate the nature of the strike or lockout that caused the work stoppage, including specifically the reason stated by labor.

Notes

Definitions:

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Additional References:

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Business Ethics and Payments Transparency

Description

Business ethics and transparency in payments to governments or individuals are material to this industry due to the importance of government relations for the conduct of business and gaining access to mining reserves, and the emergence of several anti-corruption, anti-bribery, and payments-transparency laws and initiatives in the U.S. and abroad. Enforcement of these could lead to significant one-time costs, or higher ongoing compliance costs and even affect a company's social license to operate. Companies are under pressure to ensure that their governance structures and practices can address corruption and wilful or unintentional participation in illegal or unethical payments to government officials or private persons, or in unfairly influencing them through gifts or other means. Operating in corruption-prone countries can exacerbate the risk.

Accounting Metrics

NR0302-20. Description of the management system for prevention of corruption and bribery, and due-diligence procedures applicable to business partners.

.88 Relevant aspects of a management system include employee awareness programs, internal mechanisms for reporting and following up on suspected violations, anti-corruption policies, and participation in the Extractive Industries Transparency Initiative (EITI).

.89 The registrant shall discuss its due-diligence procedures for assessing and managing corruption and bribery risks associated with its business partners (e.g., suppliers, contractors, and Joint-Venture partners).

.90 The registrant may choose to discuss the implementation of one or more of the following:

- Key Organisation for Economic Co-operation and Development (OECD) guidelines
- International Chamber of Commerce (ICC): Rules of Conduct against Extortion and Bribery
- Transparency International: Business Principles for Countering Bribery
- United Nations Global Compact: 10th Principle
- World Economic Forum (WEF): Partnering Against Corruption Initiative (PACI)

NR0302-21. Percentage of proved and probable reserves in countries that have the 20 lowest rankings in the Transparency International's Corruption Perception Index.

.91 The registrant shall disclose the percentage (in metrics tons) of its proved and probable reserves that are located in the 20 countries ranking lowest in Transparency International's Corruption Perception Index (CPI).

- In the event that two or more countries share the 20th lowest ranking, all shall be included in the scope of disclosure.

.92 The registrant shall use the most current version of the CPI via Transparency International's publicly accessible website.

.93 Reserves are defined by the SEC Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations:

- Reserves, as that part of a mineral deposit which could be economically and legally extracted or produced at the time of the reserve determination.
- Proven (or measured) reserves, as reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings or drill holes; grade and/or quality are computed from the results of detailed sampling and (b) the sites for inspection, sampling and measurement are spaced so closely and the geographic character is so well-defined that size, shape, depth and mineral content of reserves are well-established.
- Probable (or indicated) reserves, as reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less-adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.

.94 The registrant should follow the Combined Reserves International Reporting Standards Committee (CRIRSCO) guidance for classifying ore reserves and mineral resources, including the use of a "competent person" to compile information.

.95 The registrant shall, where relevant, provide a breakdown of calculations by mineral or business unit.

- Minerals or business units may include, for example: aluminum, copper, zinc, iron ore, precious metals, diamonds, etc.

Notes

Definitions:

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Additional References:

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Construction Materials

SICS™ #NR0401

Prepared by the
Sustainability Accounting Standards Board ®

January 2014
Exposure Draft for Public Comment

Construction Materials
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 issues 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 and is accredited to set standards by the American National Standards Institute (ANSI).

SASB is developing standards for more than 80 industries in 10 sectors. SASB's standards-setting process includes evidence-based analysis with in-depth industry research and engagement with a broad range of stakeholders. The end result of this process is the creation of a complete, industry-specific accounting standard which accurately reflects the material issues for each industry.

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 Tuesday, January 14, 2014 and ending Monday, April 14, 2014. This Standard is subject to change thereafter.

For instructions on providing comments to SASB please click here.

For an introduction to SASB Standards please click here.

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SASB Sustainability Accounting Standard

Construction Materials **(NR0401)**

Industry Description

Construction Materials companies have global operations and mine, process, and produce materials, primarily cement and aggregates, but also glass, plasterboard, insulation, bricks, and roofing material. Materials producers operate their own quarries or purchase raw materials from the mining and petroleum industries and sell to construction firms or wholesale distributors.

Note: Companies producing wood building products are classified in the Forestry and Paper industry (RR0201) within the Sustainable Industry Classification System (SICS)™.

Table 1. Activity Level Metrics

Topic	Code	Activity Metric
Activity Level	NR0401-A	Production (in metric tons) by major product line.[1]

Table 2. Material Sustainability Topics & Accounting Metrics

Topic	Code	Accounting Metric
Greenhouse Gas Emissions	NR0401-01	Gross global Scope 1 emissions (in metric tons CO_2-e), percentage covered under a regulatory program.
	NR0401-02	Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including emissions reduction target for Scope 1 emissions, that was active in the fiscal year, and an analysis of performance against those targets.
Air Quality	NR0401-03	Air emissions, in metric tons, for the following pollutants: NO_x (excluding N_2O), SO_x, particulate matter (PM), dioxins/furans, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and heavy metals.
Energy Management	NR0401-04	Total annual energy consumed (gigajoules), percentage from purchased electricity, and percentage from alternative sources (e.g., used tires, municipal solid waste, agricultural waste) and renewable sources (e.g., wind, biomass, solar).
Water Management	NR0401-05	Total fresh water withdrawn (m^3), returned (m^3), recycled (m^3); and percentage in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas.

[1] Major product line (e.g., cement and aggregates, composites, roofing materials, fiberglass, brick, and tile, etc.) should be based on material revenue generation, and may include a category of "other" construction materials products that combines multiple smaller revenue streams.

Topic	Code	Accounting Metric
Waste Management	NR0401-06	Amount of waste from operations (metric tons) by: (1) RCRA non-exempt characteristic hazardous waste, (2) RCRA exempt; percentage recycled.
Land Use & Biodiversity Impacts	NR0401-07	Total acreage of land for extractive use; percentage with high conservation value designation.
	NR0401-08	Total acreage of land disturbed; description of best practice environmental management plan used throughout the project lifecycle, and the percentage of sites (by acreage) to which it was applied; impacted area (by acreage) that was restored.
Community Relations	NR0401-09	Number of lawsuits and complaints from individuals or organizations in areas surrounding existing or proposed facilities that relate to impacts, accidents, or chronic exposure.
Employee Health, Safety & Well-being	NR0401-10	(1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate, by employees (full time and contract).
	NR0401-11	Number of reported incidents of silicosis (chronic, acute, or accelerated) and discussion of efforts to minimize workers' exposure to crystalline silica, such as respirator programs, engineering controls, or safety training programs.
Product Innovation	NR0401-12	Percentage of products (by annual sales revenue) that can be used for credits in sustainable building design and construction certifications such as Green Globes®, ICC-700 National Green Building Standard, LEED®, or BREEAM®.
	NR0401-13	Description of efforts to reduce the environmental impacts – related to energy, water, and materials – of products during manufacturing and product usage.
Pricing Integrity & Transparency	NR0401-14	Dollar amount of legal and regulatory fines and settlements associated with cartel activities, price fixing, and market manipulations. Description of fines and settlements and corrective actions implemented in response to events.

Greenhouse Gas Emissions

Description

The production of construction materials is energy-intensive and generates significant direct Greenhouse Gas (GHG) emissions from on-site fuel combustion of coal and diesel. While the industry has achieved emissions reductions through gains in efficiency, overall output is growing rapidly and the production of construction materials, in particular cement, remains carbon-intensive relative to other industries. The relative magnitude of GHG emissions from the industry exposes it to higher operating and capital expenditures from emissions regulations at the state, national, and regional levels, with a high degree of uncertainty about future emissions regulations. Companies that cost-effectively reduce the GHG-intensity of their operations can create operational efficiency, and mitigate the effect of increased fuel costs and regulations that cap, or put a put a price on, carbon emissions.

Accounting Metrics

NR0401-01. Gross global Scope 1 emissions (in metric tons CO_2-e), percentage covered under a regulatory program.

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

- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalents (CO_2-e) calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the IPCC's Second Assessment Report (1995).
- 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 and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

.02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) 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 mobiles sources that include, but are not limited to, production facilities, office buildings, and products transportation (marine, road, 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").[2]
- The approach detailed in Section 4.23 "Organizational boundary setting for GHG emissions reporting" of Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).[3]

.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, and thus any updates made year-on-year shall be considered updates to this guidance.

.05 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory program.

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[2] "An organization has financial control over an operation if it has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities. Generally an organization has financial control over an operation for GHG accounting purposes if the operation is treated as a group company or subsidiary for the purposes of financial consolidation" *Guidance for companies reporting on climate change on behalf of investors & supply chain members 2013* (p. 95).

[3] This is based on the requirements of International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting and is consistent with how information relating to entities within a group or interest in joint ventures/associates would be included on consolidated financial statements. *Climate Change Reporting Framework*, CDSB.

- Regulatory programs include cap-and-trade schemes and carbon tax/fee system.
- Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).

.06 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.

.07 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.

.08 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

NR0401-02. Description of long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including emissions reduction target for Scope 1 emissions, that was active in the fiscal year, and an analysis of performance against those targets.

.09 The registrant shall discuss the following where relevant:

- The scope, such as if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, emissions sources;
- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU 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.

.10 For emission reduction targets the registrants shall disclose:

- The percentage of emissions within the scope of the reduction plan;
- The percentage reduction from base year
  - The base year is the first or starting year against which emissions are evaluated towards the achievement of the target;
- If 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.
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

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

.12 Disclosure corresponds with:

- CDSB Section 4, "Management actions"[4]
- CDP questionnaire "CC3. Targets and Initiatives"

Notes

Definitions:

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Additional References:

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[4] 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

Air Quality

Description

The Construction Materials industry generates air pollutants including Hazardous Air Pollutants, Criteria Air Pollutants, and Volatile Organic Compounds, which can have significant, localized human health and environmental impacts. Financial impacts on companies from air emissions will vary depending on the specific location of operations and the prevailing air emissions regulations, and include higher operating or capital expenditures and regulatory or legal penalties. Companies that are able to limit emissions are likely to enjoy improved competitiveness in an environment of increasing regulatory and public concerns about air quality, in the U.S. and globally.

Accounting Metrics

NR0401-03. Air emissions, in metric tons, for the following pollutants: NO_x (excluding N_2O), SO_x, particulate matter (PM), dioxins/furans, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and heavy metals.

.13 The registrant shall disclose its emissions released to the atmosphere of air pollutants associated with its activities:
- Direct air emissions from stationary or mobiles sources that include, but are not limited to, production facilities, office buildings, marine vessels transporting products, truck fleets, and moveable equipment at production facilities.

.14 The registrant shall disclose emissions released to the atmosphere by emissions type. Substances include:
- Oxides of nitrogen (including NO and NO_2 and excluding N_2O) reported as NO_x
- Oxides of sulfur (SO_2 and SO_3) reported at SO_x
- Particulate matter (PM); reported as the sum of PM_{10} and $PM_{2.5}$, or all particulates less than 10 micrometers in diameter
- Dioxins/furans, reported, at a minimum, as the sum of the 17 congeners of polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) that contain chlorine
- Non-methane 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, which participates in atmospheric photochemical reactions, except those designated by the U.S. Environmental Protection Agency (EPA) as having negligible photochemical reactivity
- Heavy metal emissions include: Lead (Pb), mercury (Hg), and cadmium (Cd)
- Polycyclic aromatic hydrocarbons (PAHs), at a minimum, include those listed in Table 1 of the European Commission Joint Research Centre's Institute for Reference Materials and Measurements PAH Factsheet.
    - These include compounds frequently monitored by the Scientific Committee for Food (SCF), the European Union (EU), and the U.S. EPA.

.15 This scope does not include CO_2, methane, and nitrous oxide, which are disclosed in NR0401-01, as Scope 1 GHG emissions.

.16 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 NR0401-01.

.17 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

Notes

Definitions:

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Additional References:

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Energy Management

Description

Despite gains in energy efficiency in recent years, the production of construction materials requires vast quantities of energy, sourced primarily from direct combustion of fossil fuels and the electrical grid. Energy is a significant cost to the industry; for example, energy inputs are approximately one third of the cost of cement production. Long-term prospects of increased energy demand from emerging markets, and energy security, geopolitical, and climate change concerns indicate upward pressure on the price and constrains on the availability of conventional sources of energy. Affordable and easily accessible energy is essential for competitive advantage in this industry. The way in which a company manages its overall energy efficiency and intensity, its reliance on different types of energy and associated sustainability risks, and its ability to access alternative source of energy, can therefore be material. A relatively recent development in the Construction Materials industry is the rise of hazardous solid wastes as an alternative fuel input for kilns. While this practice curbs waste-to-landfill volumes, hazardous air emissions from waste may diminish the value of this development.

Accounting Metrics

NR0401-04. Total annual energy consumed (gigajoules), percentage from purchased electricity, and percentage from alternative sources (e.g., used tires, municipal solid waste, agricultural waste) and renewable sources (e.g., wind, biomass, solar).

.18 The registrant shall convert the amount of electricity it consumed from kilowatt hours (kWh) to gigajoules (GJ).

.19 The registrant shall disclose fossil fuel consumption in terms of its energy content, using higher heating values (HHV), also known as gross calorific values (GCV), and 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).

.20 The registrant shall disclose alternative energy source consumption as a percentage of its overall energy consumption, in terms of its energy content.

.21 Alternative sources of energy include: used tires, spent solvents and waste oils, processed municipal solid waste, household wastes, agricultural wastes such as rice, peanut shells and coffee husks, and animal meal, and sewage sludge.

.22 The registrant shall disclose renewable energy consumption as a percentage of its overall energy consumption, in terms of its energy content. For biofuels, the registrant shall use HHVs from the sources mentioned above. For solar or wind energy consumption, the registrant shall convert from electricity production (kWh) to gigajoules (GJ).

.23 The registrant shall disclose renewable energy data for renewable energy it directly produces, or which it purchases through renewable energy certificates (RECs) that are certified (i.e., through Green-e), or renewable power purchase agreements (PPAs). It shall not disclose the renewable portion of the energy drawn from electricity grids.

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Definitions:

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Additional References:

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Water Management

Description

The large water requirement of construction materials production presents a material risk to the industry, especially in regions of water scarcity, due to potential water availability constraints and price volatility. Water disposal costs generally do not present a material cost because water discharge at typical facilities is relatively low due to widespread use of closed-loop recycling systems and evaporative loss in cooling processes. However, companies that are unable to secure a stable water supply could face production disruptions, while rising water prices directly increase production costs. Consequently, adoption of technologies and processes that reduce water consumption can lower operating risks and costs for companies, and possibly produce a competitive advantage.

Accounting Metrics

NR0401-05. Total fresh water withdrawn (m^3), returned (m^3), recycled (m^3); and percentage in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas.

.24 The registrant shall disclose the amount of water (in thousands of cubic meters) that was withdrawn from freshwater sources for use in operations.

- 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.

.25 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was returned to the environment during the fiscal year. This figure shall include the amount discharged directly to the environment or indirectly discharged through a third party, such as a local wastewater treatment plant.

.26 The registrant shall disclose the total amount of water by volume (in thousands of cubic meters) that was recycled during the fiscal year. This figure shall include the amount recycled in closed loop and open loop systems. Water recycled for purposes other than materials production operations (e.g., grey water reuse) shall not be included in this figure.

- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.

.27 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online here), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

Notes

Definitions:

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Additional References:

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Waste Management

Description

While recycling rates in construction materials production are high, process waste presents a regulatory risk and can raise operating costs. In the U.S., environmental law currently temporarily exempts kiln dusts, the largest waste category in the industry, from federal laws governing hazardous waste disposal. However, the EPA is currently working to establish rules governing appropriate handling of cement kiln dust. Regulatory risk remains at a state level and for other waste streams, and improper disposal of waste can lead to costly environmental and human health impacts that can create litigation risks. Companies that reduce waste streams, in particular hazardous wastes, can lower associated regulatory and legal risks.

Accounting Metrics

NR0401-06. Amount of waste from operations (metric tons) by: (1) RCRA non-exempt characteristic hazardous waste, (2) RCRA exempt; percentage recycled.

.28 The registrant shall calculate and disclose the amount of waste (in metric tons) that meets the definition of hazardous waste under Subtitle C of the U.S. Environmental Protection Agency's (EPA) Resource Conservation and Recovery Act (RCRA).
- This includes wastes that display the following characteristics: ignitability, corrosivity, reactivity, or toxicity.
- This excludes wastes that are classified as exempt by the U.S. EPA, such as certain oil-bearing hazardous secondary materials.

.29 The registrant shall calculate and disclose the amount of waste (in metric tons) that does not meet the definition of hazardous waste or is exempt from classification as hazardous waste under RCRA Subtitle C.

.30 The percentage recycled shall be calculated as the amount of this waste that was sold as a by-product plus the amount of waste recycled (through processing) by the registrant plus the amount sent externally for further recycling divided by the total amount of waste generated.
- Materials disposed of in landfills, both internal and external, and incinerated materials are classified as waste.
- Materials reused internally by the registrant are classified neither as a waste nor as a recycled material and shall be excluded from calculations.

Notes

Definitions:

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Additional References:

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Land Use & Biodiversity Impacts

Description

The extraction and processing of construction materials can impact the natural environment through land disturbance. Due to the large scale of operations, land use and remediation present significant operating risks and costs to the industry. Companies must also consider the impact of their operations on biodiversity, especially in sensitive habitats. Minimizing land use and implementing strong environmental remediation plans can reduce regulatory risks and operating costs.

Accounting Metrics

NR0401-07. Total acreage of land for extractive use; percentage with high conservation value designation.

.31 The registrant shall calculate percentage as the acreage of land owned, operated, or managed for extractive use in high conservation value areas divided by the registrant's total owned, operated, or managed land for extractive use.

.32 Land is considered to be in a high conservation area if it is:

- Located within a WWF Global 200 terrestrial ecoregion[5].
- Located within International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI), listed in the World Database of Protected Areas (WDPA), and mapped on ProtectedPlanet.net.

.33 The registrant may choose to separately identify sites in areas with additional ecological, biodiversity, or conservation designations, such as those listed by the A-Z Guide of Areas of Biodiversity Importance prepared by the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC).

.34 The registrant may choose to provide discussion around sites that are located in high conservation value areas but present low biodiversity or ecosystem services risks; the registrant may choose to provide similar discussion for sites located in areas of low biodiversity concern but present high biodiversity or ecosystem services risks.

NR0401-08. Total acreage of land disturbed; description of best practice environmental management plan used throughout the project lifecycle, and the percentage of sites (by acreage) to which it was applied; impacted area (by acreage) that was restored.

.35 The registrant shall disclose the total acreage of disturbed land, where the scope includes land in in the exploration, development and production, or quarry/mine closure and post-closure project phases.

- This disclosure shall be a cumulative total of all currently active sites, recently closed sites, or sites being restored; it is not limited to land newly disturbed during the fiscal year.
- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.36 The registrant shall provide a brief description of its best-practice environmental management plan(s) implemented, including where relevant:

- Lifecycle stages to which the plan(s) apply, such as: exploration, design and development, construction, production, closure, and post-closure (e.g., restoration).
- The topics addressed by the plan(s) such as: ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, and hazardous chemical usage.
- The underlying references for its plan(s) including whether they are codes, guidelines, standards, regulations, and if they were developed by the registrant, an industry organization, a third-party organization (e.g., a non-governmental organization), a governmental agency, or some combination of these groups.
- Its rationale for determining that the plan(s) identified constitutes a best practice.

.37 The registrant shall calculate the percentage as the acreage of sites to which it applied its best-practice environmental management plan divided by the total acreage of disturbed land.

- If environmental management plans differ significantly by resource or mineral (e.g., gypsum vs. silica) then the registrant shall calculate the percentage separately by appropriate resource.

[5] Olson, D. M., Dinerstein, E. 2002. The Global 200: Priority ecoregions for global conservation. Annals of the Missouri Botanical Garden 89(2):199-224

- Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).

.38 The registrant shall disclose the acreage of land impacted by operations that was restored during the fiscal year, where, at a minimum, restoration meets the Society for Ecological Restoration definition: "the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed."

- Restoration may be further defined by local, state, or national laws, industry standards, or the registrant's own guidelines.
- The registrant shall disclose the definition of restoration and accompanying practices it follows in its description of its best-practice environmental management plan.

Notes

Definitions:

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Additional References:

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Community Relations

Description

Due to their global presence, construction materials producers commonly interact with local populations through employment and physical presence in communities. Since materials production often requires large tracts of land, a company's social license to operate can heavily influence business outcomes. Improper management of community relations could lead to production delays or increased operating costs.

Accounting Metrics

NR0401-09. Number of lawsuits and complaints from individuals or organizations in areas surrounding existing or proposed facilities that relate to impacts, accidents, or chronic exposure.

.39 The registrant shall disclose the number of lawsuits and complaints from individuals or organizations relating to impacts from existing or proposed facilities.

.40 The scope of complaints includes those for which the grievance was formally communicated to the registrant, which includes, but is not limited to, petition, request for public hearing, and protests.

.41 Complaints may relate to:

- Impacts, or releases to air or water, waste discharges, traffic, noise, etc.
- Accidents, such as fires, explosions, spills, leaks
- Chronic exposure, such as long-term effects from air emissions

.42 The registrant should discuss the scope, impact, and context of the lawsuits or complaints, including whether operations were materially impacted.

.43 The registrant should describe any actions it took as a result of incidents, which include, but are not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.

Notes

Definitions:

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Additional References:

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Employee Health, Safety, & Well-being

Description

Employees of construction materials companies face significant health and safety risks due in large part to exposure to heavy equipment and dangerous quarrying operations. In addition to acute impacts, workers can develop chronic health conditions, including from silica dust inhalation. A company's ability to protect employee health and safety, and to create a culture of safety and well-being among employees at all levels, can help prevent accidents, mitigating costs and operational downtime, and enhance workforce productivity. Frequent injuries, or a high rate of fatalities, can lead to an increase in regulatory compliance costs, healthcare costs, or insurance premiums.

Accounting Metrics

NR0401-10. (1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate, by employees (full time and contract).

.44 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its total recordable injury rate (TRIR), as calculated and reported in the Occupational Safety and Health Administration's (OSHA) Form 300.

- OSHA guidelines provide details on determination of whether an event is a recordable occupational incident, and definitions for exemptions for incidents that occurred in the work environment but are not occupational.

.45 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its total recordable injury rate according to the U.S. Bureau of Labor Statistics guidance and/or using the U.S. Bureau of Labor Statistics calculator.

.46 The registrant shall disclose its near miss frequency rate (NMFR), where a near miss is defined as an incident where no property or environmental damage or personal injury occurred, but where damage or personal injury easily could have occurred but for a slight circumstantial shift.

- The registrant should refer to organizations such as the National Safety Council (NSC) for guidance on implementing near miss reporting.
- The registrant should disclose its process for classifying, identifying, and reporting near miss incidents.

.47 The registrant shall disclose its TRIR and NMFR for its direct employees, by full time and contract employment.

.48 The scope includes all employees, domestic and foreign.

.49 Rates shall be calculated as: (statistic count / total hours worked)*200,000.

NR0401-11. Number of reported incidents of silicosis (chronic, acute, or accelerated) and discussion of efforts to minimize workers' exposure to crystalline silica, such as respirator programs, engineering controls, or safety training programs.

.50 The registrant shall disclose the number of reported incidents of silicosis (exposure to crystalline silica).

.51 The registrant shall describe its processes (e.g., rules and their enforcement), procedures, trainings, and technologies used to minimize its workforce's exposure to crystalline silica.

- This may include systems for maintaining compliance with OSHA Standards for General Industry (29 CFR 1910), including sections on ventilation (1910.94) and air contaminants (1910.1000), and focusing on mineral dusts within the OSHA standards (Table Z-3).

.52 The registrant may choose to discuss exposure standards it follows such as:

- The U.S. Mine Safety and Health Administration (MSHA) and OSHA permissible exposure limit (PEL) for respirable crystalline silica (quartz), which is 100 $\mu g/m^3$ as an 8-hour time-weighted average.
- The National Institute for Occupational Safety and Health (NIOSH)'s recommended exposure limit (REL) of 0.05 $\mu g/m^3$ as a 10-hour time-weighted average.

Notes

Definitions:

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Product Innovation

Description

Innovations in building materials are a key component in the growth of sustainable construction. Consumer trends are largely driving adoption of sustainable building materials and processes, creating new business drivers for construction materials companies. Furthermore, some new products require less energy to produce, or use largely recycled inputs, cutting down on production costs. Sustainable construction materials are likely to be a long-term driver of value in the industry.

Accounting Metrics

NR0401-12. Percentage of products (by annual sales revenue) that can be used for credits in sustainable building design and construction certifications such as Green Globes®, ICC-700 National Green Building Standard, LEED®, or BREEAM®.

.53 The registrant shall calculate the percentage as the revenue during the fiscal year from products that can be used for credits in recognized sustainable design and construction certifications divided by the total revenue from building products.

- The scope of products excludes raw or intermediate materials that would require additional manufacturing before being incorporated into a building; the registrant shall exclude these products from the numerator and denominator of its calculations.

.54 Recognized sustainable building design and construction certifications and guidelines include: BREEAM® (BRE Global), Green Globes ® (Green Building Initiative), LEED® (U.S. Green Building Council), ICC-700 National Green Building Standard® (National Association of Home Builders).[6]

- If the registrant's products can be used to obtain credits in certifications other than those described above, it shall provide the name of the certification and evidence of why it is equal to or more rigorous than those standards listed here.

.55 The registrant may choose to disclose and discuss which specific products contribute to sustainable building practices and future plans to address market demand for these types of products.

NR0401-13. Description of efforts to reduce the environmental impacts – related to energy, water, and materials – of products during manufacturing and product usage.

.56 The registrant shall describe its efforts to reduce the environmental impact of its products at various lifecycle stages including during: material sourcing, manufacturing, and product usage.

.57 The registrant should describe where relevant:

- Design innovations that lower carbon emissions during manufacturing, such as use of renewable fuels, energy efficiency improvements, the use of materials requiring less processing, etc.
- Product attributes that reduce energy consumption or increase energy efficiency for users, such as by providing improved insulation as compared to typical products.
- Process or product attributes that reduce the amount water required in manufacturing, during product assembly, or product usage.
- The use of secondary or recycled materials in place of virgin materials such that upstream impacts are reduced.

Notes

Definitions:

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[6] SASB is not affiliated with any of the standards or organization listed, and listing should not be taken as an endorsement of any standard or organization. Listing of standards is not meant to imply that standards are identical in scope, underlying requirements, or criteria, or that standards are interchangeable.

Pricing Integrity & Transparency

Description

The highly competitive construction materials market has been subject to instances of anti-competitive behavior, such as maintaining artificially high prices through unsanctioned cartel activity. Most countries and political unions have well-established fair business practice laws in place. Such business activity can lead to material legal fines or business disruption. Managing anti-competitive behavior within an organization can effectively mitigate regulatory risks and compliance costs.

Accounting Metrics

NR0401-14. Dollar amount of legal and regulatory fines and settlements associated with cartel activities, price fixing, and market manipulations. Description of fines and settlements and corrective actions implemented in response to events.

.58 The registrant shall disclose the amount (excluding legal fees) of all fines or settlements associated with cartel activities, price fixing, and market manipulations.

.59 Disclosure shall include civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).

.60 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, non-prosecution agreement) and context (e.g., fraud, cartel activities, price fixing, etc.) of fines and settlements.

.61 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.

Notes

Definitions:

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Additional References:

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