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Industry-based Guidance on implementing Climate-related Disclosures

Volume 10—Metals & Mining



International Sustainability Standards Board

IFRS S2 CLIMATE-RELATED DISCLOSURES–JUNE 2023

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IFRS S2 INDUSTRY-BASED GUIDANCE

Introduction

This volume is part of the Industry-based Guidance on Implementing IFRS S2 Climate-related Disclosures. This guidance suggests possible ways to apply some of the disclosure requirements in IFRS S2 but does not create additional requirements.

This volume suggests possible ways to identify, measure and disclose information about climate-related risks and opportunities that are associated with particular business models, economic activities and other common features that characterise participation in this industry.

This industry-based guidance has been derived from Sustainability Accounting Standards Board (SASB) Standards, which are maintained by the International Sustainability Standards Board (ISSB). The metric codes used in SASB Standards have been included for ease of reference. For additional context regarding the industry-based guidance contained in this volume, including structure and terminology, application and illustrative examples, refer to Section III of the Accompanying Guidance to IFRS S2.

Volume 10—Metals & Mining

Industry Description

The Metals & Mining industry is involved in extracting metals and minerals, producing ores, quarrying stones, smelting and manufacturing metals, refining metals, and providing mining support activities. Entities also produce iron ores, rare earth metals, and precious metals and stones. Larger entities in this industry are integrated vertically – from mining across global operations to wholesaling metals to customers.

Note: There exists a separate standard for the Iron & Steel Producers (EM-IS) industry.

Sustainability Disclosure Topics & Metrics

Table 1. Sustainability Disclosure Topics & Metrics

TOPIC	METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	Quantitative	Metric tons (t) CO ₂ -e, Percentage (%)	EM-MM-110a.1
	Discussion of long- and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	EM-MM-110a.2
Energy Management	(1) Total energy consumed, (2) percentage grid electricity and (3) percentage renewable	Quantitative	Gigajoules (GJ), Percentage (%)	EM-MM-130a.1
Water Management	(1) Total water withdrawn, (2) total water consumed; percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Thousand cubic metres (m ³), Percentage (%)	EM-MM-140a.1
	Number of incidents of non-compliance associated with water quality permits, standards and regulations	Quantitative	Number	EM-MM-140a.2

Table 2. Activity Metrics

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Production of (1) metal ores and (2) finished metal products	Quantitative	Metric tons (t) saleable	EM-MM-000.A
Total number of employees, percentage contractors	Quantitative	Number, Percentage (%)	EM-MM-000.B

Greenhouse Gas Emissions

Topic Summary

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. The extent and type of GHG emissions can vary depending on the metal mined and processed. Regulatory efforts to reduce GHG emissions in response to climate change-related risks may result in additional regulatory compliance costs and risks for metals and mining entities. Entities can achieve operational efficiencies through the cost-effective reduction of GHG emissions. Such efficiencies can mitigate the potential financial effect of increased fuel costs from regulations to limit—or put a price on—GHG emissions.

Metrics

EM-MM-110a.1. Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations

- 1 The entity shall disclose its gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the seven GHGs covered under the Kyoto Protocol—carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆), and nitrogen trifluoride (NF₃).
 - 1.1 Emissions of all GHGs shall be consolidated and disclosed in metric tons of carbon dioxide equivalent (CO₂-e) and calculated in accordance with published 100-year time horizon global warming potential (GWP) values. To date, the preferred source for GWP values is the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (2014).
 - 1.2 Gross emissions are GHGs emitted into the atmosphere before accounting for offsets, credits or other similar mechanisms that have reduced or compensated for emissions.
- 2 Scope 1 emissions are defined and shall be calculated according to the methodology contained in *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard* (GHG Protocol), Revised Edition, March 2004, published by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD).
 - 2.1 These emissions include direct emissions of GHGs from stationary or mobile sources that may include equipment at mine sites, refineries and smelting facilities, and office buildings, and equipment used in metal transportation (marine, road and rail).
 - 2.2 Acceptable calculation methodologies include those that conform to the GHG Protocol as the base reference, but provide additional guidance, such as industry- or region-specific guidance. Examples include:
 - 2.2.1 *GHG Reporting Guidance for the Aerospace Industry* published by the International Aerospace Environmental Group (IAEG)

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- 2.2.2 *Greenhouse Gas Inventory Guidance: Direct Emissions from Stationary Combustion Sources* published by the U.S. Environmental Protection Agency (EPA)
 - 2.2.3 India GHG Inventory Program
 - 2.2.4 ISO 14064-1
 - 2.2.5 *Petroleum Industry Guidelines for reporting GHG emissions*, 2nd edition, 2011, published by IPIECA
 - 2.2.6 *Protocol for the quantification of greenhouse gas emissions from waste management activities* published by Entreprises pour l'Environnement (EpE)
- 2.3 GHG emission data shall be consolidated according to the approach with which the entity consolidates its financial reporting data, which is generally aligned with the 'financial control' approach defined by the GHG Protocol and the approach provided by the Climate Disclosure Standards Board (CDSB) that is described in REQ-07, 'Organisational boundary,' of the *CDSB Framework for reporting environmental and social information*.
- 3 The entity shall disclose the percentage of its gross global Scope 1 GHG emissions covered under an emissions-limiting regulation or programme intended to limit or reduce emissions directly, such as cap-and-trade schemes, carbon tax/fee systems, and other emissions control (for example, command-and-control approach) and permit-based mechanisms.
 - 3.1 Examples of emissions-limiting regulations include:
 - 3.1.1 California Cap-and-Trade (California Global Warming Solutions Act)
 - 3.1.2 European Union Emissions Trading Scheme (EU ETS)
 - 3.1.3 Quebec Cap-and-Trade (Quebec Environment Quality Act)
 - 3.2 The percentage shall be calculated as the total amount of gross global Scope 1 GHG emissions (CO₂-e) covered under emissions-limiting regulations divided by the total amount of gross global Scope 1 GHG emissions (CO₂-e).
 - 3.2.1 For emissions subject to more than one emissions-limiting regulation, the entity shall not account for those emissions more than once.
 - 3.3 The scope of emissions-limiting regulations excludes emissions covered under voluntary emissions-limiting regulations (for example, voluntary trading systems), as well as reporting-based regulations.
- 4 The entity may discuss any change in its emissions from the previous reporting period, including whether the change was because of emissions reductions, divestment, acquisition, mergers, changes in output or changes in calculation methodology.

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- 5 In the case that current reporting of GHG emissions to the CDP or other entity (for example, a national regulatory disclosure programme) differs in terms of the scope and consolidation approach used, the entity may disclose those emissions. However, primary disclosure shall be according to the guidelines described above.
- 6 The entity may discuss the calculation methodology for its emissions disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations or mass balance calculations.
- 7 The entity may, where relevant, provide a breakdown of its emissions by mineral or business unit.
 - 7.1 Minerals or business units may include: aluminium, copper, zinc, iron ore, precious metals or diamonds.

EM-MM-110a.2. Discussion of long- and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets

- 1 The entity shall discuss its long- and short-term strategy or plan to manage its Scope 1 greenhouse gas (GHG) emissions.
 - 1.1 Scope 1 emissions are defined and shall be calculated according to the methodology contained in *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard* (GHG Protocol), Revised Edition, March 2004, published by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD).
 - 1.2 The scope of GHG emissions includes the seven GHGs covered under the Kyoto Protocol—carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆), and nitrogen trifluoride (NF₃).
- 2 The entity shall discuss its emission reduction target(s) and analyse its performance against the target(s), including, if relevant:
 - 2.1 The scope of the emission reduction target (for example, the percentage of total emissions to which the target is applicable);
 - 2.2 Whether the target is absolute or intensity-based, and the metric denominator if it is an intensity-based target;
 - 2.3 The percentage reduction against the base year, with the base year representing the first year against which emissions are evaluated towards the achievement of the target;
 - 2.4 The time lines for the reduction activity, including the start year, the target year and the base year;
 - 2.5 The mechanism(s) for achieving the target; and
 - 2.6 Any circumstances in which the target or base year emissions have been, or may be, recalculated retrospectively or the target or base year has been reset.

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- 3 The entity shall discuss the activities and investments required to achieve the plans or targets, and any risks or limiting factors that might affect achievement of the plans or targets.
- 4 The entity shall discuss the scope of its strategies, plans or reduction targets, such as whether they pertain differently to different business units, geographies or emissions sources.
- 5 The entity shall discuss whether its strategies, plans, or reduction targets are related to, or associated with, emissions limiting or emissions reporting-based programmes or regulations (for example, the EU Emissions Trading Scheme, Quebec Cap-and-Trade System, California Cap-and-Trade Program), including regional, national, international or sectoral programmes.
- 6 Disclosure of strategies, plans or reduction targets shall be limited to activities that were ongoing (active) or reached completion during the reporting period.

Energy Management

Topic Summary

Mining and metals production is often energy-intensive, with a significant proportion of energy consumption in the industry accounted for by purchased electricity. Although fuel combustion on-site contributes to the industry's direct (Scope 1) GHG emissions, electricity purchases from the grid can result in indirect, Scope 2 emissions. The energy intensity of operations may increase with decreasing grades of deposits and increasing depth and scale of mining operations. The choice between on-site versus grid-sourced electricity and the use of alternative energy can be important in influencing both the costs and reliability of energy supply. Affordable and easily accessible energy is an important competitive factor in a commodity market driven by global competition, and purchased fuels and electricity can account for a significant proportion of total production costs. The way in which an entity manages its overall energy efficiency and intensity, its reliance on different types of energy, and its ability to access alternative sources of energy, can therefore be a material factor.

Metrics

EM-MM-130a.1. (1) Total energy consumed, (2) percentage grid electricity and (3) percentage renewable

- 1 The entity shall disclose (1) the total amount of energy it consumed as an aggregate figure, in gigajoules (GJ).
 - 1.1 The scope of energy consumption includes energy from all sources, including energy purchased from external sources and energy produced by the entity itself (self-generated). For example, direct fuel usage, purchased electricity, and heating, cooling and steam energy are all included within the scope of energy consumption.
 - 1.2 The scope of energy consumption includes only energy directly consumed by the entity during the reporting period.

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- 1.3 In calculating energy consumption from fuels and biofuels, the entity shall use higher heating values (HHV), also known as gross calorific values (GCV), which are measured directly or taken from the Intergovernmental Panel on Climate Change (IPCC).
- 2 The entity shall disclose (2) the percentage of energy it consumed that was supplied from grid electricity.
 - 2.1 The percentage shall be calculated as purchased grid electricity consumption divided by total energy consumption.
- 3 The entity shall disclose (3) the percentage of energy it consumed that was renewable energy.
 - 3.1 Renewable energy is defined as energy from sources that are replenished at a rate greater than or equal to their rate of depletion, such as geothermal, wind, solar, hydro and biomass.
 - 3.2 The percentage shall be calculated as renewable energy consumption divided by total energy consumption.
 - 3.3 The scope of renewable energy includes renewable fuel the entity consumed, renewable energy the entity directly produced and renewable energy the entity purchased, if purchased through a renewable power purchase agreement (PPA) that explicitly includes renewable energy certificates (RECs) or Guarantees of Origin (GOs), a Green-e Energy Certified utility or supplier programme, or other green power products that explicitly include RECs or GOs, or for which Green-e Energy Certified RECs are paired with grid electricity.
 - 3.3.1 For any renewable electricity generated on-site, any RECs and GOs must be retained (not sold) and retired or cancelled on behalf of the entity in order for the entity to claim them as renewable energy.
 - 3.3.2 For renewable PPAs and green power products, the agreement shall explicitly include and convey that RECs and GOs be retained or replaced and retired or cancelled on behalf of the entity for the entity to claim them as renewable energy.
 - 3.3.3 The renewable portion of the electricity grid mix that is outside of the control or influence of the entity is excluded from the scope of renewable energy.
 - 3.4 For the purposes of this disclosure, the scope of renewable energy from biomass sources is limited to materials considered eligible sources of supply according to the *Green-e Framework for Renewable Energy Certification, Version 1.0* (2017) or Green-e regional standards, or materials eligible for an applicable jurisdictional renewable portfolio standard.
- 4 The entity shall apply conversion factors consistently for all data reported under this disclosure, such as the use of HHVs for fuel usage (including biofuels) and conversion of kilowatt hours (kWh) to GJ (for energy data including electricity from solar or wind energy).

Water Management

Topic Summary

Mining and metals production can affect both the availability and the quality of local water resources. Metals and mining entities face operational, regulatory and reputational risks because of water scarcity, costs of water acquisition, regulations on effluents or the amount of water used, and competition with local communities and other industries for limited water resources. Effects associated with water management may include higher costs, liabilities and lost revenues because of curtailment or suspension of operations. The severity of these risks may vary depending on the region's water availability and the regulatory environment. Entities in the industry may deploy new technologies to manage risks related to water risk, including desalination, water recirculation and innovative waste-disposal solutions. Reducing water use and contamination can create operational efficiencies for entities and reduce their operating costs.

Metrics

EM-MM-140a.1. (1) Total water withdrawn, (2) total water consumed; percentage of each in regions with High or Extremely High Baseline Water Stress

- 1 The entity shall disclose the amount of water, in thousands of cubic metres, withdrawn from all sources.
 - 1.1 Water sources include surface water (including water from wetlands, rivers, lakes and oceans), groundwater, rainwater collected directly and stored by the entity, and water and wastewater obtained from municipal water supplies, water utilities or other entities.
- 2 The entity may disclose portions of its supply by source if, for example, significant portions of withdrawals are from non-freshwater sources.
 - 2.1 Fresh water may be defined according to the local laws and regulations where the entity operates. If no legal definition exists, fresh water shall be considered to be water that has less than 1,000 parts per million of dissolved solids.
 - 2.2 Water obtained from a water utility in compliance with jurisdictional drinking water regulations can be assumed to meet the definition of fresh water.
- 3 The entity shall disclose the amount of water, in thousands of cubic metres, consumed in its operations.
 - 3.1 Water consumption is defined as:
 - 3.1.1 Water that evaporates during withdrawal, use and discharge
 - 3.1.2 Water that is directly or indirectly incorporated into the entity's product or service
 - 3.1.3 Water that does not otherwise return to the same catchment area from which it was withdrawn, such as water returned to another catchment area or the sea

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- 4 The entity shall analyse all its operations for water risks and identify activities that withdraw and consume water in locations with High (40–80%) or Extremely High (>80%) Baseline Water Stress as classified by the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct.
 - 4.1 The entity shall list its facilities or operations which are located in areas of High or Extremely High Baseline Water Stress.
- 5 The entity shall disclose water withdrawn in locations with High or Extremely High Baseline Water Stress as a percentage of the total water withdrawn.
- 6 The entity shall disclose water consumed in locations with High or Extremely High Baseline Water Stress as a percentage of the total water consumed.

EM-MM-140a.2. Number of incidents of non-compliance associated with water quality permits, standards and regulations

- 1 The entity shall disclose the total number of incidents of non-compliance, including violations of a technology-based standard and exceedances of quantity or quality-based standards.
- 2 The scope of disclosure includes incidents governed by applicable jurisdictional statutory permits and regulations, which include the discharge of a hazardous substance, violation of pre-treatment requirements or total maximum daily load (TMDL) exceedances.
 - 2.1 Typical parameters of concern include arsenic, copper, lead, nickel, zinc, cyanide, radium-226, total suspended solids, pH and toxicity.
- 3 The scope of disclosure shall only include incidents of non-compliance that resulted in a formal enforcement action(s).
 - 3.1 Formal enforcement actions are defined as governmental recognised actions that address a violation or threatened violation of water quantity or quality laws, regulations, policies or orders, and can result in administrative penalty orders, administrative orders and judicial actions, among others.
- 4 Violations shall be disclosed, regardless of their measurement methodology or frequency. These include violations for:
 - 4.1 Continuous discharges, limitations, standards and prohibitions that are generally expressed as maximum daily, weekly and monthly averages; and
 - 4.2 Non-continuous discharges, limitations that are generally expressed in terms of frequency, total mass, maximum rate of discharge and mass or concentration of specified pollutants.



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