SASB STANDARDS

Now part of IFRS Foundation

Coal Operations

Sustainability Accounting Standard

EXTRACTIVES & MINERALS PROCESSING SECTOR

Sustainable Industry Classification System® (SICS®) EM-CO

Under Stewardship of the International Sustainability Standards Board

INDUSTRY STANDARD | VERSION 2023-12

IFRS Sustainability

sasb.org

About the SASB Standards

As of August 2022, the International Sustainability Standards Board (ISSB) of the IFRS Foundation assumed responsibility for the SASB Standards. The ISSB has committed to maintain, enhance and evolve the SASB Standards and encourages preparers and investors to continue to use the SASB Standards.

IFRS S1 *General Requirements for Disclosure of Sustainability-related Financial Information* (IFRS S1) requires entities to refer to and consider the applicability of disclosure topics in the SASB Standards when identifying sustainability-related risks and opportunities that could reasonably be expected to affect an entity's prospects. Similarly, IFRS S1 requires entities to refer to and consider the applicability of metrics in the SASB Standards when determining what information to disclose regarding sustainability-related risks and opportunities.

In June 2023, the ISSB amended climate-related topics and metrics in the SASB Standards to align them with the industry-based guidance accompanying IFRS S2 *Climate-related Disclosures*. In December 2023, the ISSB amended the non-climate-related topics and metrics in connection with the International Applicability of SASB Standards project.

Effective Date

This version 2023-12 of the Standard is effective for all entities for annual periods beginning or after January 1, 2025. Early adoption is permitted for all entities.

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INTRODUCTION

Overview of SASB Standards

The SASB Standards are a set of 77 industry-specific sustainability accounting standards ("SASB Standards" or "Industry Standards"), categorised pursuant to the Sustainable Industry Classification System® (SICS®).

SASB Standards include:

1. **Industry descriptions** – which are intended to help entities identify applicable industry guidance by describing the business models, associated activities and other common features that characterise participation in the industry.

2. **Disclosure topics** – which describe specific sustainability-related risks or opportunities associated with the activities conducted by entities within a particular industry.

3. **Metrics** – which accompany disclosure topics and are designed to, either individually or as part of a set, provide useful information regarding an entity's performance for a specific disclosure topic.

4. **Technical protocols** – which provide guidance on definitions, scope, implementation and presentation of associated metrics.

5. **Activity metrics** – which quantify the scale of specific activities or operations by an entity and are intended for use in conjunction with the metrics referred to in point 3 to normalise data and facilitate comparison.

Entities using the SASB Standards as part of their implementation of ISSB Standards should consider the relevant ISSB application guidance.

For entities using the SASB Standards independently from ISSB Standards, the *SASB Standards Application Guidance* establishes guidance applicable to the use of all Industry Standards and is considered part of the Standards. Unless otherwise specified in the technical protocols contained in the Industry Standards, the guidance in the SASB Standards Application Guidance applies to the definitions, scope, implementation, compilation and presentation of the metrics in the Industry Standards.

Historically, the *SASB Conceptual Framework* set out the basic concepts, principles, definitions and objectives that guided the SASB Standards Board in its approach to setting standards for sustainability accounting.

Use of the Standards

SASB Standards are intended to aid entities in disclosing information about sustainability-related risks and opportunities that could reasonably be expected to affect the entity's cash flows, its access to finance or cost of capital over the short, medium or long term. An entity determines which Industry Standard(s) and which disclosure topics are relevant to its business, and which associated metrics to report. In general, an entity should use the SASB Standard specific to its primary industry as identified in SICS® . However, companies with substantial business in multiple SICS® industries should refer to and consider the applicability of the disclosure topics and associated metrics in additional SASB Standards.

The disclosure topics and associated metrics contained in this Standard have been identified as those that are likely to be useful to investors. However, the responsibility for making materiality judgements and determinations rests with the reporting entity.

Industry Description

The Coal Operations industry includes entities that mine coal and those that manufacture coal products. Mining activity covers both underground and surface mining, and thermal and metallurgical coal.

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 tonnes (t) CO_2-e, Percentage (%)	EM-CO-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-CO-110a.2
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-CO-140a.1
	Number of incidents of non-compliance associated with water quality permits, standards and regulations	Quantitative	Number	EM-CO-140a.2
Waste Management	Total weight of non-mineral waste generated	Quantitative	Metric tonnes (t)	EM-CO-150a.2
	Total weight of tailings produced	Quantitative	Metric tonnes (t)	EM-CO-150a.3
	Total weight of waste rock generated	Quantitative	Metric tonnes (t)	EM-CO-150a.4
	Total weight of hazardous waste generated	Quantitative	Metric tonnes (t)	EM-CO-150a.5
	Total weight of hazardous waste recycled	Quantitative	Metric tonnes (t)	EM-CO-150a.6
	Number of significant incidents associated with hazardous waste management	Quantitative	Number	EM-CO-150a.7
	Description of waste management policies and procedures for active and inactive operations	Discussion and Analysis	n/a	EM-CO-150a.8

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TOPIC	METRIC	CATEGORY	UNIT OF MEASURE	CODE
Biodiversity Impacts	Description of environmental management policies and practices for active sites	Discussion and Analysis	n/a	EM-CO-160a.1
	Percentage of mine sites where acid rock drainage is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation	Quantitative	Percentage (%)	EM-CO-160a.2
	Percentage of (1) proved and (2) probable reserves in or near sites with protected conservation status or endangered species habitat	Quantitative	Percentage (%)	EM-CO-160a.3
Rights of Indigenous Peoples	Percentage of (1) proved and (2) probable reserves in or near indigenous land	Quantitative	Percentage (%)	EM-CO-210a.1
	Discussion of engagement processes and due diligence practices with respect to the management of indigenous rights	Discussion and Analysis	n/a	EM-CO-210a.2
Community Relations	Discussion of process to manage risks and opportunities associated with community rights and interests	Discussion and Analysis	n/a	EM-CO-210b.1
	(1) Number and (2) duration of non-technical delays	Quantitative	Number, Days	EM-CO-210b.2
Labour Relations	Percentage of active workforce employed under collective agreements	Quantitative	Percentage (%)	EM-CO-310a.1
	(1) Number and (2) duration of strikes and lockouts [1]	Quantitative	Number, Days	EM-CO-310a.2
Workforce Health & Safety	(1) All-incidence rate, (2) fatality rate, and (3) near miss frequency rate (NMFR) for (a) direct employees and (b) contract employees	Quantitative	Rate	EM-CO-320a.1
	Discussion of management of accident and safety risks and long-term health and safety risks	Discussion and Analysis	n/a	EM-CO-320a.2
Reserves Valuation & Capital Expenditures	Sensitivity of coal reserve levels to future price projection scenarios that account for a price on carbon emissions	Quantitative	Million metric tonnes (Mt)	EM-CO-420a.1
	Estimated carbon dioxide emissions embedded in proven coal reserves	Quantitative	Metric tonnes (t) CO_2-e	EM-CO-420a.2
	Discussion of how price and demand for coal or climate regulation influence the capital expenditure strategy for exploration, acquisition and development of assets	Discussion and Analysis	n/a	EM-CO-420a.3

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[1] Note to **EM-CO-310a.2** – The disclosure shall include the number, duration and reason for the stoppage.

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TOPIC	METRIC	CATEGORY	UNIT OF MEASURE	CODE
Tailings Storage Facilities Management	Tailings storage facility inventory table: (1) facility name, (2) location, (3) ownership status, (4) operational status, (5) construction method, (6) maximum permitted storage capacity, (7) current amount of tailings stored, (8) consequence classification, (9) date of most recent independent technical review, (10) material findings, (11) mitigation measures, (12) site-specific EPRP	Quantitative	Various	EM-CO-540a.1
	Summary of tailings management systems and governance structure used to monitor and maintain the stability of tailings storage facilities	Discussion and Analysis	n/a	EM-CO-540a.2
	Approach to development of Emergency Preparedness and Response Plans (EPRPs) for tailings storage facilities	Discussion and Analysis	n/a	EM-CO-540a.3

Table 2. Activity Metrics

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Production of thermal coal	Quantitative	Million metric tonnes (Mt)	EM-CO-000.A
Production of metallurgical coal	Quantitative	Million metric tonnes (Mt)	EM-CO-000.B

Greenhouse Gas Emissions

Topic Summary

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. Regulatory efforts to reduce GHG emissions in response to the risks posed by climate change may result in higher operating and capital expenditures based on the magnitude of their direct emissions. Operational efficiencies can be achieved through the cost-effective reduction of GHG emissions. Such efficiencies can mitigate the potential financial impact of increased fuel costs from regulations that limit—or put a price on—GHG emissions.

Metrics

EM-CO-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 (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).

1.1 Emissions of all GHGs shall be consolidated and disclosed in metric tonnes of carbon dioxide equivalent (CO_2-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 theIntergovernmental 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; these sources include equipment at mine sites, mine mouth electric generating facilities, coal seam methane emissions, production and processing facilities, storage facilities, office buildings, and 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* provided by the International Aerospace Environmental Group (IAEG)

2.2.2 *Greenhouse Gas Inventory Guidance: Direct Emissions from Stationary Combustion Sources* provided 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 as well as:

2.3.1 The financial approach detailed in Chapter 3 of the Ipieca/API/OGP *Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions*, 2nd Edition, 2011 (hereafter, the 'Ipieca GHG Guidelines')

2.3.2 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 (CO_2-e) that are covered under emissions-limiting regulations divided by the total amount of gross global Scope 1 GHG emissions (CO_2-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.

5 In the case that current reporting of GHG emissions to the CDP or other entity (for example, a national regulatory disclosure program) 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.

EM-CO-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 according to *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 (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).

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.

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.

Water Management

Topic Summary

Coal operations have an impact on both the quality and quantity of local water resources. Coal operations are water intensive. The use of water in coal washing to remove sulphur, cool drilling equipment and transport coal in slurry pipelines can impact resources. The severity of these risks can vary depending on the region's water availability and the regulatory environment. Reducing water use and contamination also could create operational efficiencies for entities and lower their operating costs. Wastewater treatment and discharge often is regulated by jurisdictional authorities. Violating limits on selenium, sulphate and dissolved solids could affect coal operations entities through significant penalties, compliance costs, delays in production or higher costs related to mine closure.

Metrics

EM-CO-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

4 The entity shall analyse all of its operations for water risks and identify activities that withdraw and consume water in locations with High (40–80%) or Extremely High (>80%) Baseline Water Stress as classified by the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct.

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

EM-CO-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 selenium, total dissolved solids (TDS), sulphate, total suspended solids (TSS) and pH.

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 or 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.

Waste Management

Topic Summary

The Coal Operations industry generates large volumes of mineral and non-mineral waste, including process refuse, liquid coal waste, and solid rock and clay waste, which may contain toxic elements such as mercury, arsenic or cadmium. Waste produced during coal mining and processing operations can, depending on its type, be treated, discarded, or stored off- or on-site, in impoundments or disused mine pits. Improper disposal or storage of hazardous materials or mining waste can present significant long-term threats to human health and ecosystems through potential contamination of groundwater or surface water used for drinking or agriculture, posing operational and regulatory challenges for entities. Entities that reduce waste streams, effectively manage risks related to waste containing heavy metals and maintain rigorous hazardous waste disposal practices may reduce regulatory and litigation risks, remediation liabilities and operating costs.

Metrics

EM-CO-150a.2. Total weight of non-mineral waste generated

1 The entity shall disclose the total weight, in metric tonnes, of non-mineral waste generated.

1.1 Non-mineral waste is defined as material for which the entity has no further use and that is discarded, intended to be discarded or released into the environment.

1.2 The scope of the disclosure includes non-mineral waste generated from all activities.

1.2.1 The scope of non-mineral waste includes scrap metal, reject coal, used oil, tyres, batteries and other solid wastes.

1.3 The scope of non-mineral waste excludes overburden, waste rock, tailings and gaseous wastes.

EM-CO-150a.3. Total weight of tailings produced

1 The entity shall disclose the total weight, in metric tonnes, of tailings produced.

1.1 The definition of tailings shall be consistent with that provided in the Global Tailings Review *Global Industry Standard on Tailings Management* (GISTM).

EM-CO-150a.4. Total weight of waste rock generated

1 The entity shall disclose the total weight, in metric tonnes, of waste rock generated.

1.1 Waste rock is defined as mineral material and low-grade ore with target minerals in concentrations too low for economic recovery at the time of mining.

EM-CO-150a.5. Total weight of hazardous waste generated

1 The entity shall disclose the total weight, in metric tonnes, of hazardous waste generated.

1.1 Hazardous wastes are defined in accordance with the applicable jurisdictional legal or regulatory framework where the waste is generated.

1.1.1 The entity may use definitions from the United Nations Environment Programme (UNEP) *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.*

2 The entity shall disclose the frameworks used to define hazardous waste and the amounts defined in accordance with each applicable framework.

EM-CO-150a.6. Total weight of hazardous waste recycled

1 The entity shall disclose the total weight, in metric tonnes, of hazardous waste it generated that was recycled.

1.1 Hazardous wastes are defined in accordance with the applicable jurisdictional legal or regulatory framework where the waste is generated.

1.1.1 The entity may use definitions from the United Nations Environment Programme (UNEP) *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* (Basel Convention).

1.2 Recycled materials are defined as waste reprocessed or treated through production or manufacturing processes and made into a final product or a component to be integrated into a product.

1.2.1 This definition is based on the Basel Convention.

1.3 Materials incinerated, including for energy recovery, shall not be considered within the scope of recycled waste.

1.3.1 Energy recovery is defined as the use of combustible waste to generate energy through direct incineration, with or without other waste, but with recovery of the heat.

2 The entity shall disclose the frameworks used to define recycled hazardous waste and the amounts defined in accordance with each applicable framework.

EM-CO-150a.7. Number of significant incidents associated with hazardous waste management

1 The entity shall disclose the total number of significant incidents associated with the handling, storage, transportation or disposal of hazardous waste.

1.1 The scope of the disclosure includes incidents of mishandling and improper disposal of hazardous waste that are significant or have impacts on the environment, employees or surrounding communities.

1.1.1 Impacts on the environment, employees or surrounding communities may include contamination of surface water, ground water and land that required response and remediation, reduced biodiversity, or caused injuries or deaths among employees or community members.

1.2 A significant incident is defined as a release of hazardous waste to the environment that: exceeds the volume and concentration limits of local regulatory requirements or industry-accepted codes; is included in the entity's financial statements (for example, because of resulting liabilities); is recorded by the entity as an incident required to be reported to applicable local jurisdictions; or does not meet any of these criteria but is judged as significant by the operator.

1.2.1 The entity may disclose its own criteria for establishing the threshold in volume and concentration in excess of which it considers an incident significant.

1.3 Hazardous wastes are defined in accordance with the applicable jurisdictional legal or regulatory frameworks where the waste was generated.

1.3.1 The entity may use definitions from the United Nations Environment Programme (UNEP) *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*.

2 The entity shall disclose the frameworks used to define hazardous waste and the number of incidents defined in accordance with each applicable framework.

EM-CO-150a.8. Description of waste management policies and procedures for active and inactive operations

1 The entity shall describe the policies and procedures used in its waste management strategy.

1.1 The scope of the disclosure shall include policies and procedures for the entity's active and inactive operations.

1.2 The scope of waste includes mineral and non-mineral waste.

1.2.1 Mineral waste is defined as material generated during the extraction and beneficiation of ores and minerals.

1.2.2 Non-mineral waste is defined as all material other than mineral waste for which the entity has no further use and that is discarded, intended to be discarded or released into the environment.

2 The entity shall describe how its policies and procedures compare with those required under applicable jurisdictional laws or regulations.

2.1 The entity shall discuss whether and how its policies and procedures exceed the requirements of local jurisdictions.

2.2 The entity shall discuss how its policies and procedures vary by region.

3 The entity shall describe its approach to waste management throughout the project lifecycle.

3.1 The scope of the disclosure shall include a discussion of the entity's:

3.1.1 approach to assessment of potential environmental impacts associated with waste streams;

3.1.2 policies and procedures related to waste avoidance;

3.1.3 approach to identification, assessment and application of recycling, reuse and repurposing as waste management strategies;

3.1.4 policies and procedures related to waste disposal or incineration;

3.1.5 policies and procedures related to the remediation of environmental or social impacts of incidents associated with the mishandling of hazardous waste; and

3.1.6 approach to decommissioning waste facilities.

4 The entity shall include a description of how waste management efforts are coordinated among business partners (for example, contractors and subcontractors).

5 The entity shall describe how it ensures compliance and conformance with its waste management policies and procedures.

Biodiversity Impacts

Topic Summary

Coal operations can have a range of impacts on biodiversity. Surface mining and mountaintop removal can alter the landscape, removing vegetation and wildlife habitats. A particularly concerning effect of coal operations is acid rock drainage, in which surface and shallow subsurface water encounters coal mining overburden, contaminating the water with heavy metals and rendering it highly acidic, with harmful effects on humans, animals and vegetation. Biodiversity impacts of coal operations can affect the valuation of reserves and create operational risks. Because of increasing interest in the protection of ecosystems, the environmental characteristics of the land where reserves are located may lead to higher extraction costs. Entities might also face regulatory or reputational barriers to accessing reserves in ecologically sensitive areas, such as new protection status afforded to areas where reserves are located. Coal operations entities face regulatory risks related to reclamation after a mine is decommissioned, in accordance with applicable regulatory requirements to restore mined property according to a prior, approved reclamation plan. Material costs may arise from removing or covering refuse piles, fulfilling water treatment obligations and dismantling infrastructure at decommissioning. Furthermore, coal operations are subject to laws protecting endangered species. Entities with an effective environmental management plan for each stage of the project lifecycle may minimise their compliance costs and legal liabilities, face less resistance in developing new mines, avert delays in project completion, and avoid difficulties in obtaining permits, accessing reserves and completing projects.

Metrics

EM-CO-160a.1. Description of environmental management policies and practices for active sites

1 The entity shall describe its environmental management plans implemented at active sites, including, if relevant:

1.1 the lifecycle stages to which the plans apply, such as pre-bid (when the entity is considering acquisition of a site), exploration and appraisal, site development, production, closure, decommissioning and restoration;

1.2 the topics addressed by the plans, such as ecological and biodiversity impacts, waste generation, noise, emissions to air, discharges to water, natural resource consumption and hazardous chemical use;

1.3 the underlying references for its plans, including whether they are codes, guidelines, standards or regulations; and

1.4 whether they were developed by the entity, an industry organisation, a third-party organisation (for example, a non-governmental organisation), a governmental agency or some combination of these groups.

2 If relevant, the entity shall describe specific policies and practices that apply to areas with protected conservation status or areas of critical habitat, which are defined by the International Finance Corporation (IFC) Performance Standard 6, *Biodiversity Conservation and Sustainable Management of Living Natural Resources* as:

2.1 areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered or Endangered species; (ii) habitat of significant importance to endemic or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species or congregatory species; (iv) highly threatened or rare ecosystems; or (v) areas associated with important evolutionary processes.

3 If the management policies and practices do not apply to all the entity's sites or operations, it shall include the percentage of sites to which they were applied.

4 The entity shall disclose the degree to which its policies and practices are aligned with the IFC *Performance Standards on Environmental and Social Sustainability*, 2012, including:

4.1 Performance Standard 1, *Assessment and Management of Environmental and Social Risks and Impacts*;

4.2 Performance Standard 3, *Resource Efficiency and Pollution Prevention*;

4.3 Performance Standard 4, *Community Health, Safety, and Security*; and

4.4 Performance Standard 6, *Biodiversity Conservation and Sustainable Management of Living Natural Resources*.

5 Additional relevant references may include:

5.1 Joint E&P Forum/UNEP, *Environmental management in oil and gas exploration and production—An overview of issue and management approaches*, 1997; and

5.2 World Bank Multistakeholder Initiative, *Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit to Assist Government Agencies*.

EM-CO-160a.2. Percentage of mine sites where acid rock drainage is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation

1 The entity shall disclose the percentage of its mine sites, by annual production output from mines by weight, for which acid-generating seepage into surrounding surface water or groundwater is: (1) predicted to occur, (2) actively mitigated and (3) under treatment or remediation.

2 Acid rock drainage (ARD) is predicted to occur if computer simulations, chemical evaluations or acid-base accounting, evaluate that ARD is likely form at the mine site.

3 ARD is considered actively mitigated if the entity is preventing ARD through methods that include: storing or covering sulphite-bearing minerals to prevent oxidation, flood prevention, mine sealing, mixing of acid-buffering materials with acid-producing materials, and chemical treatment of sulphide wastes (for example, using organic chemicals designed to kill sulphide-oxidising bacteria).

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

5 ARD also may be referenced as acid-generating seepage or acid mine drainage.

EM-CO-160a.3. Percentage of (1) proved and (2) probable reserves in or near sites with protected conservation status or endangered species habitat

1 The entity shall disclose (1) the percentage of its proved reserves, by weight, in sites with protected conservation status or in endangered species habitat.

1.1 The percentage of proved reserves shall be calculated as the quantity (tonnage) of proved reserves located in areas with protected conservation status or endangered species habitat, divided by the total quantity of proved reserves.

2 The entity shall disclose (2) the percentage of its probable reserves, by weight, in sites with protected conservation status or endangered species habitat.

2.1 The percentage of probable reserves shall be calculated as the quantity (tonnage) of probable reserves located in areas with protected conservation status or endangered species habitat, divided by the total quantity of probable reserves.

3 Reserves are considered to be in areas of protected conservation status if they are located within:

3.1 International Union for Conservation of Nature (IUCN) Protected Areas (categories I–VI);

3.2 Ramsar Wetlands of International Importance;

3.3 United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites;

3.4 Biosphere Reserves recognised within the framework of UNESCO's Man and the Biosphere (MAB) Programme;

3.5 Natura 2000 sites; or

3.6 sites that meet the IUCN's definition of a protected area: 'A protected area is a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.'

3.6.1 These sites may be listed in the World Database of Protected Areas (WDPA) and mapped on Protected Planet.

4 Reserves are considered to be in endangered species habitat if they are in or near areas where species on the IUCN Red List of Threatened Species that are classified Critically Endangered (CR) or Endangered (EN) are extant.

4.1 A species is considered extant in an area if it is a resident, present during breeding or non-breeding season, or if it makes use of the area for passage.

4.1.1 For the purposes of disclosure, 'passage' is defined as all areas of land or water that a migratory species inhabits, stays in temporarily, crosses or overflies at any time on its normal migration route.

5 For the purposes of this disclosure, 'near' is defined as within five kilometres (km) of the boundary of an area of protected conservation status or an endangered species habitat and the location of the entity's proved and probable reserves.

6 Reserves are defined as the weight of a mineral deposit that could be economically and legally extracted or produced at the time of the reserves determination.

6.1 Proved reserves are reserves for which (i) the quantity of the mineral deposit is computed from dimensions revealed in outcrops, trenches, workings or drill holes; grade or quality are computed from the results of detailed sampling; and (ii) the sites for inspection, sampling and measurement are spaced so closely, and the geographical character is so well-defined, that size, shape, depth and mineral content of reserves are well-established.

6.2 Probable reserves are reserves for which quantity and grade (quality) are computed from information similar to that used for proved reserves, but the sites for inspection, sampling and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance for probable reserves, although lower than that for proved reserves, is high enough to assume continuity between points of observation.

7 The entity may separately identify reserves in areas with additional ecological, biodiversity or conservation designations such as those listed by the Biodiversity A–Z resource prepared by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC).

8 The entity may discuss reserves located in protected areas or endangered species habitats, but that present low risks to biodiversity or ecosystem services. The entity may provide similar discussion for reserves located in areas with no official designation of high biodiversity value, but that present high risks to biodiversity or ecosystem services.

Rights of Indigenous Peoples

Topic Summary

Entities in the Coal Operations industry can operate and hold assets in areas occupied by indigenous peoples. Entities perceived as contributing to human rights violations or failing to account for indigenous peoples' rights may be affected by protests, riots or suspension of permits. These entities could face substantial costs related to compensation or settlement payments, and write-downs in the value of their reserves in such areas. In the absence of applicable jurisdictional laws or regulations to address such cases, several international instruments have emerged to provide guidelines for entities. These instruments include obtaining the free, prior and informed consent of indigenous peoples for decisions that affect them. Several countries have implemented specific laws protecting indigenous peoples' rights, creating increasing regulatory risk for entities that violate those rights.

Metrics

EM-CO-210a.1. Percentage of (1) proved and (2) probable reserves in or near indigenous land

1 The entity shall disclose (1) the percentage of its proved reserves, by weight, located in or near areas considered to be indigenous peoples' land.

1.1 The percentage of proved reserves shall be calculated as the quantity (tonnage) of proved reserves located in or near indigenous land divided by the total quantity of proved reserves.

2 The entity shall disclose (2) the percentage of its probable reserves, by weight, located in or near areas considered to be indigenous peoples' land.

2.1 The percentage of probable reserves shall be calculated as the quantity (tonnage) of probable reserves located in or near indigenous land divided by the total quantity of probable reserves.

3 Indigenous peoples' lands are considered as those occupied by people who self-identify as indigenous in accordance with Article 33 of the United Nations *Declaration on the Rights of Indigenous Peoples* and the International Labour Organization Convention 169, and based on the working definition of 'Indigenous Peoples' adopted by the United Nations, probably have one or more characteristics, such as:

3.1 historical continuity with pre-colonial or pre-settler societies;

3.2 strong link to territories and surrounding natural resources;

3.3 distinct social, economic or political systems;

3.4 distinct language, culture and beliefs;

3.5 form non-dominant groups of society; and

3.6 resolve to maintain and reproduce ancestral environments and systems as distinct peoples and communities.

4 For the purposes of this disclosure, 'near' is defined as within five kilometres of the recognised boundary of an area considered to be indigenous land and the location of the entity's proved and probable reserves.

5 Reserves are defined as the weight of a mineral deposit that could be economically and legally extracted or produced at the time of the reserves determination.

5.1 Proved reserves are reserves for which (i) the quantity of the mineral deposit is computed from dimensions revealed in outcrops, trenches, workings or drill holes; grade or quality are computed from the results of detailed sampling and (ii) the sites for inspection, sampling and measurement are spaced so closely and the geographical character is so well-defined that size, shape, depth and mineral content of reserves are well-established.

5.2 Probable reserves are reserves for which quantity and grade (quality) are computed from information similar to that used for proved reserves, but the sites for inspection, sampling and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance for probable reserves, although lower than that for proved reserves, is high enough to assume continuity between points of observation.

EM-CO-210a.2. Discussion of engagement processes and due diligence practices with respect to the management of indigenous rights

1 The entity shall describe its due diligence practices and procedures with respect to indigenous rights of communities in which it operates or intends to operate, which may include:

1.1 upholding International Labour Organization (ILO) Convention 169;

1.2 use of free, prior and informed consent (or consultation) processes;

1.3 the establishment of project grievance mechanisms; and

1.4 the establishment of formal community agreements.

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

3 The discussion may include governance mechanisms the entity puts in place to ensure all levels of the organisation adhere to its policies and practices.

4 The discussion shall include how practices apply to business partners, such as contractors, subcontractors, suppliers and joint arrangement partners.

4.1 If practices do not apply to business partners, the entity may discuss factors that prevent the application of such practices.

Community Relations

Topic Summary

Coal operations take place over many years and can have a wide range of adverse effects on communities. Community rights and interests may be affected by the environmental and social impacts of operations, air emissions, waste generation, wastewater discharges and decommissioning activities. Entities often need support from local communities to obtain permits and leases and conduct their activities without disruptions. The expected value of reserves could be affected if the community interferes or lobbies its government to interfere with the rights of a coal entity to extract those reserves. In addition to community concerns about the direct impacts of projects, the presence of coal mining activities may create associated socioeconomic concerns related to education, health and livelihoods. Coal entities that engage in rent-seeking and exploiting a community's resources without providing proportional socioeconomic benefits in return may be exposed to actions by host governments and communities that restrict their activities or impose additional costs. Entities in the extractives industries can adopt various community engagement strategies in their global operations to manage risks and opportunities associated with community rights and interests, such as integrating community engagement into each phase of the project cycle. Entities that adopt a 'shared value' approach may be able to provide significant socioeconomic benefits to communities and allow them to operate profitably.

Metrics

EM-CO-210b.1. Discussion of process to manage risks and opportunities associated with community rights and interests

1 The entity shall discuss its processes, procedures and practices to manage risks and opportunities associated with the rights and interests of communities in areas where it conducts business. Community rights and interests include:

1.1 economic rights and interests, which may include employment, fair wages, payment transparency, and respect for infrastructure and agricultural land;

1.2 environmental rights and interests, which may include clean local air and water, as well as safe discharge and disposal of waste;

1.3 social rights and interests, which may include adequate health care, education and housing; and

1.4 cultural rights and interests, which may include protection of places of cultural significance (for example, sacred sites or burial sites).

2 The entity shall disclose, if relevant:

2.1 the lifecycle stages to which its practices apply, such as: pre-bid (when the entity is considering acquisition of a site), exploration and appraisal, site development, coal production, closure, decommissioning and restoration;

2.2 the community rights and interests (enumerated above) specifically addressed by the entity's practices; and

2.3 the underlying references for its procedures, including whether they are codes, guidelines, standards or regulations and whether they were developed by the entity, an industry organisation, a third-party organisation (for example, a non-governmental organisation), a governmental agency or some combination of these groups.

3 Risks and opportunities may include: non-technical delays, availability and development of local content, availability and access to adequate infrastructure, community actions, and challenges associated with resettlement and access to land.

4 The entity shall disclose the degree to which its policies and practices are aligned with the International Finance Entity's (IFC) *Performance Standards on Environmental and Social Sustainability*, 2012, including:

4.1 Performance Standard 4, *Community Health, Safety, and Security*;

4.2 Performance Standard 5, *Land Acquisition and Involuntary Resettlement*; and

4.3 Performance Standard 8, *Cultural Heritage*.

5 The discussion shall include how practices apply to business partners such as contractors, subcontractors, suppliers and joint arrangement partners.

6 The entity may describe its efforts to eliminate or mitigate community risks or address community concerns, which may include:

6.1 the use of a social impact assessment (SIA) that evaluates, manages and mitigates risks;

6.2 efforts to engage with stakeholders, build consensus and collaborate with communities; and

6.3 'shared' or 'blended' value projects that provide quantifiable benefits to the community and the entity.

7 The entity may quantify its community risks by calculating the aggregate estimated value at risk as the difference in value between a project free from country, regional or community risks (hereafter, country risk) and the value of a project adjusted for these risks.

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

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

7.1.2 Value at risk can be expressed as a reduction in the expected cash flows of a project because of country risk in calculating the net present value of a project using DCF.

7.1.3 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 because of the cost of insurance in calculating the net present value of a project using DCF analysis.

7.2 Country, regional or community risks may include: corruption, business legal structure, political stability, regulation, ethnic conflict, stability of the local market, availability of a skilled labour force, resettlement and access to land, quality of access to infrastructure (for example, ports, roads, shipping channels) or general licence to operate.

7.2.1 These risks may vary by jurisdiction and project level.

7.2.2 These risks differ from sovereign risk, which is defined as the potential for a central bank or government-backed entity to willingly or unwillingly default on debt obligations, or significantly alter important economic variables such as currency exchange rates, import ratios and money supply.

7.3 The entity shall identify and describe country risks specific to its projects and unique operating context.

7.3.1 This description may include the identification of country, regional and community risks or the discussion of specific projects.

7.3.2 This description may include discussion of how the entity has mitigated these risks (for example, through community engagement partnerships and blended value projects); the entity shall quantify this reduction in risk according to the methods described above.

7.3.3 The discussion should be in addition to broad country risk classification (for example, the prevailing Organisation for Economic Co-operation and Development (OECD) country risk classification, Standard & Poor's Country Risk ratings and the World Economic Forum Global Competitiveness Index).

7.4 The entity may describe the model or approach used to value capital expenditure projects such as adjusted discount rate, expected cash flow or other methods.

EM-CO-210b.2. (1) Number and (2) duration of non-technical delays

1 The entity shall disclose (1) the total number and (2) duration, in days, of site shutdowns or project delays because of non-technical factors.

2 The scope may include shutdowns and project delays resulting from pending regulatory permits, or other political delays related to community concerns, community or stakeholder resistance or protest, or armed conflict.

3 The scope of the disclosure excludes delays because of strikes and lockouts disclosed in EM-CO-310a.2.

4 The entity may discuss specific delays including associated costs, root cause and corrective actions for resolved delays, and status of ongoing delays.

Labour Relations

Topic Summary

Working conditions related to coal operations are usually physically demanding and hazardous. Labour unions play an important role in representing workers' interests and managing collective bargaining for better wages and working conditions. This makes the management of labour relations critical, since conflict with workers can result in labour strikes and other disruptions that can delay or stop production, leading to lost revenue and reputational damage. Persistent labour disputes can adversely affect the long-term profitability of the entity.

Metrics

EM-CO-310a.1. Percentage of active workforce employed under collective agreements

1 The entity shall disclose the percentage of employees in the active workforce employed under collective agreements during any part of the reporting period.

1.1 The number of employees in the active workforce of an entity is calculated as the maximum number of unique employees it employed at any time during the reporting period.

1.2 Collective agreements are defined as agreements between an entity and an employees' organisation on behalf of some or all employees of the entity concerning the engagement of employees, termination of employment, terms of employment, labour relations, and the rights and obligations of the organisations which are parties to the agreement.

1.3 Employees are defined as individuals on the entity's payroll, whether they are full-time, short service, part-time, executive, labour, salary, seasonal, migrant, or hourly employees. Employees excludes contract workers.

1.3.1 Contract workers are defined as individuals who are not on the entity's payroll, but whom the entity supervises or manages, including independent contractors and those employed by third parties (for example, temp agencies and labour brokers).

2 The percentage shall be calculated as the number of employees in the active workforce who were employed under collective agreements during any part of the reporting period divided by the average number of workers employed during the reporting period.

3 The scope of the disclosure includes all employees employed by the entity, including full-time, part-time and temporary employees.

EM-CO-310a.2. (1) Number and (2) duration of strikes and lockouts

1 The entity shall disclose (1) the total number of work stoppages involving 1,000 or more workers lasting one full shift or longer.

1.1 The scope of work stoppages includes strikes and lockouts.

1.1.1 A strike is defined as a temporary stoppage of work by a group of employees (not necessarily union members) to express a grievance or enforce a demand.

1.1.2 A lockout is defined as a temporary withholding or denial of employment during a labour dispute to enforce terms of employment upon a group of employees.

2 The entity shall disclose (2) the duration of strikes and lockouts as the total days idle because of work stoppages.

2.1 'Days idle' is defined as the aggregate number of workdays lost because of work stoppages.

2.2 Total days idle shall be calculated as the sum of the products of the number of workers involved in each work stoppage and the number of days each respective work stoppage was in effect.

3 The scope of the disclosure excludes work stoppages because of other non-technical reasons disclosed in EM-CO-210a.2.

Note to **EM-CO-310a.2**

1 The entity shall describe the reason for each work stoppage (as stated by labour), the effect on production and any corrective actions taken as a result.

Workforce Health & Safety

Topic Summary

Safety is critical to coal mining operations because of the hazardous working conditions involved. Fatalities and injuries can result from the many hazards associated with the industry, including accidents, cave-ins, explosions and flooding. Because of these hazards, the industry is characterised by higher-than-average mortality and injury rates. Coal miners are also susceptible to long-term health risks such as chronic lung disease as well as mental health problems. Some jurisdictional health and safety laws protect coal mining workers and may provide compensation for work-related chronic illnesses that can impose additional costs on entities or result in regulatory penalties. An entity's ability to protect employee health and safety, and to create a culture of safety and well-being among employees, may prevent accidents, mitigate costs, reduce operational downtime and enhance workforce productivity.

Metrics

EM-CO-320a.1. (1) All-incidence rate, (2) fatality rate, and (3) near miss frequency rate (NMFR) for (a) direct employees and (b) contract employees

1 The entity shall disclose (1) its all-incidence rate and (2) work-related fatality rate.

1.1 Incidents include:

1.1.1 fatalities or work-related injuries resulting in death of employees on active mine property;

1.1.2 non-fatal days lost cases or occupational injuries that result in the loss of one or more days from the entity's scheduled work, or days of limited or restricted activity while at work;

1.1.3 no days lost cases or occurrences requiring only medical treatment (beyond first aid); that is, non-fatal injury occurrences resulting only in loss of consciousness or medical treatment other than first aid; and

1.1.4 additional criteria defining an incident that are unique to an entity's jurisdiction may also be incorporated.

1.2 First aid, defined as emergency care or treatment for an ill or injured person before regular medical aid can be provided, and other non-recordable incidents may be defined in accordance with jurisdictional guidelines. The entity shall disclose the legal, regulatory or industry framework used as the source for these guidelines.

2 The entity shall disclose (3) its near miss frequency rate (NMFR) for work-related near misses.

2.1 A near miss is defined as an unplanned or uncontrolled event or chain of events that has not resulted in a recordable injury, illness, physical damage or environmental damage, but had the potential to do so in other circumstances.

2.2 The entity may disclose its process for classifying, identifying and reporting near misses.

3 All disclosed rates shall be calculated as: (statistic count × 200,000) / total number of hours worked by all employees in the year reported.

3.1 The '200,000' in the rate calculation represents the total number of hours 100 full-time workers working 40 hours per week for 50 weeks per year can provide annually.

4 The scope of the disclosure includes work-related incidents only.

4.1 Work-related incidents are injuries and illnesses resulting from events or exposures in the work environment.

4.2 The work environment is the establishment and other locations where one or more employees are working or are present as a condition of their employment.

4.3 The work environment includes not only physical locations, but also the equipment or materials used by the employee during the course of work.

4.4 Incidents that occur while an employee is travelling are work-related if, at the time of the injury or illness, the employee was engaged in work activities in the interest of the employer.

4.5 A work-related incident must be a new case, not a previously recorded injury or illness being updated.

5 The entity shall disclose the rates for each of these employee categories:

5.1 direct employees, defined as individuals on the entity's payroll, whether they are full-time, short service, part-time, executive, labour, salary, seasonal, migrant or hourly employees; and

5.2 contract employees, defined as individuals who are not on the entity's payroll, but whom the entity supervises or manages, including independent contractors and those employed by third parties (for example, temp agencies and labour brokers).

6 The scope of the disclosure includes all employees regardless of employee location or type of employment.

EM-CO-320a.2. Discussion of management of accident and safety risks and long-term health and safety risks

1 The entity shall discuss its management of accident and safety risks.

1.1 The scope of discussion includes how the entity manages safety and emergency preparedness throughout its value chain, such as through training, joint management by the workforce and leadership, use of technology, rules and guidelines, and the enforcement of rules and guidelines.

1.2 The scope of discussion includes how emergency preparedness is coordinated among business partners (for example, contractors and subcontractors).

1.3 The discussion may focus broadly on safety and emergency management systems, but it shall specifically address the systems used to avoid and manage emergencies, accidents and incidents that could have catastrophic effects on human health, local communities and the environment.

2 The entity shall discuss how it manages long-term health and safety risks associated with coal mining (for example, chronic lung disease) such as through training, use of personal protective equipment, use of technology, rules and guidelines, and the enforcement of rules and guidelines.

3 The entity may discuss implementation of relevant management systems including progress towards tracking safety and health metrics, employing management system metrics and obtaining third-party verification.

Reserves Valuation & Capital Expenditures

Topic Summary

Coal entities may be unable to extract a significant proportion of their coal reserves if greenhouse gas (GHG) emissions are controlled to limit global temperature increases. Stewardship of capital resources while considering medium- to long-term trends, particularly related to climate change mitigation actions, is critical to prevent asset impairment and maintain profitability and creditworthiness. Globally, regulations and policies are and may continue to be put into place to limit GHG emissions from coal-fired power plants—the customers of coal entities—thus reducing demand for and the price of coal. Coal demand also is being affected by regulations governing other harmful air emissions that apply to coal-fired power plants. An expansion of GHG-mitigation regulations may increase the magnitude of potential financial impacts in the medium to long term. Along with improved competitiveness of alternative energy technologies, these jurisdictional regulations and policies pose long-term risks for the reserves and capital investments of coal operations entities.

Metrics

EM-CO-420a.1. Sensitivity of coal reserve levels to future price projection scenarios that account for a price on carbon emissions

1 The entity shall perform a sensitivity analysis of its reserves to determine how several future scenarios may affect the determination of whether the reserves are proven or probable.

2 The entity shall analyse the sensitivity of its current proven and probable reserves using the price trajectories published by the International Energy Agency (IEA) in its World Energy Outlook (WEO) publication, including:

2.1 Current Policies Scenario, which assumes no changes in policies from the mid-point of the year of publication of the WEO.

2.2 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.

2.3 Sustainable Development Scenario, which assumes an energy pathway occurs that is consistent with the goal of limiting the global increase in temperature to 1.5°C by limiting concentration of greenhouse gases in the atmosphere.

2.4 The entity shall consider the WEO scenarios as a normative reference, thus any updates to the WEO made year-on-year shall be considered updates to this guidance.

2.5 Reserves are defined as mineral deposits that could be economically and legally extracted or produced at the time of the reserve determination.

2.6 Proven reserves are reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings or drill holes; grade 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 geographical character is so well defined that size, shape, depth and mineral content of reserves are well established.

2.7 Probable reserves are reserves for which quantity and grade or quality are computed from information like 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.

3 The entity shall conduct a reserves sensitivity analysis and disclose, in the aggregate, an estimate of reserves estimated for each product type based on different price and cost criteria, such as a range of prices and costs that may reasonably be achieved, including standardised futures prices or management's own forecasts.

4 The entity shall also disclose the price and cost schedules and assumptions on which disclosed values are based.

5 The entity may summarise its findings in the following table format:

Table 3. Sensitivity of Reserves to Prices By Principal Product Type and Price Scenario

PRICE CASE	PROVEN RESERVES		PROBABLE RESERVES	
(Scenario)	Coal	Product A	Coal	Product A
	(tonnes)	(measure)	(tonnes)	(measure)
Current Policies Scenario (base)				
New Policies Scenario				
Sustainable Development Scenario				

6 The entity may disclose the sensitivity of its reserve levels in other price and demand scenarios in addition to those described above, particularly if these scenarios differ depending on the type of coal reserves, regulatory environment in the countries or regions where mining occurs, end-use of the entity's products, or other factors.

7 For additional sensitivity analyses, the entity should consider disclosing the following, per the Task Force on Climate-Related Financial Disclosures (TCFD) Recommendations Report Figure 8 as well as the Implementing the Recommendations of the TCFD Report, Section E:

7.1 The alternative scenarios used, including other 2ºC or lower scenarios

7.2 Critical input parameters, assumptions, and analytical choices for the climate-related scenarios used, particularly as they relate to key areas such as policy assumptions, energy deployment pathways, technology pathways, and related timing assumptions

7.3 Time frames used for scenarios, including short-, medium-, and long-term milestones (e.g., how organisations consider timing of potential future implications under the scenarios used)

EM-CO-420a.2. Estimated carbon dioxide emissions embedded in proven coal reserves

1 The entity shall calculate and disclose an estimate of the carbon dioxide emissions embedded in its proven coal reserves.

1.1 This estimate applies a factor for potential CO_2 only and does not include an estimate for all potential greenhouse gas emissions because these are dependent on downstream use (for example, utility electricity generation, industrial heating and electricity generation, cement production or steel production).

2 Estimated potential carbon dioxide emissions from proven coal reserves shall be calculated according to the following formula, derived from Meinshausen et al:

2.1 $E = R \times V \times C$, where:

2.1.1 E are the potential emissions in kilograms of carbon dioxide (kg CO_2)

2.1.2 R are the proven reserves in gigagrams (Gg)

2.1.3 V is the net calorific value in terajoules per gigagram (TJ/Gg)

2.1.4 C is the effective carbon dioxide emission factor in kilograms CO_2 per terajoule (kg/TJ)

3 In the absence of data specific to the entity's coal reserves, carbon content shall be calculated using default data for each major type of coal resource published by the Intergovernmental Panel on Climate Change (IPCC) in its *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

3.1 The entity shall use default carbon content values per unit of energy listed in IPCC Table 1.3 Default Values of Carbon Content, Volume 2: Energy, Chapter 1.

3.2 The entity shall use calorific values per weight of coal resource contained in IPCC Table 1.2 Default Net Calorific Values (NCVs) and Lower and Upper Limit of the 95% Confidence Intervals, Volume 2: Energy, Chapter 1.

4 The entity shall use engineering estimates to determine the weight of its coal reserves in gigagrams.

5 For other assumptions required to estimate the carbon content of coal reserves, the entity shall rely on guidance from the IPCC, Greenhouse Gas Protocol, US Energy Information Agency (EIA) or the International Energy Agency (IEA).

EM-CO-420a.3. Discussion of how price and demand for coal or climate regulation influence the capital expenditure strategy for exploration, acquisition and development of assets

1 The entity shall discuss how projections for price and demand for coal and the path of air quality and climate regulation influence the entity's capital expenditure (CAPEX) strategy.

1.1 This discussion should include the entity's projections and assumptions about future coal prices and the likelihood that certain price and demand scenarios occur.

2 The entity shall discuss the implications of price and demand scenario planning (EM-CO-420a.1) and how they may affect decisions to explore, acquire and develop new reserves.

3 The entity may discuss factors that materially influence its CAPEX decision making, which may include:

3.1 How the scope of air quality and climate change regulation—such as which countries, regions or industries are likely to be impacted—may influence where the entity focuses its exploration and development

3.2 Its view of the alignment between the time horizon during which price and demand for coal may be affected by climate regulation and time horizons for returns on capital expenditures on reserves

3.3 How the structure of climate regulations—a carbon tax versus cap-and-trade—may differently affect price and demand, and thus the entity's capital expenditure decision making

4 The entity may discuss how these trends affect decision-making in the context of the various types of reserve expenditures, including development of assets, acquisition of properties with proven reserves, acquisition of properties with unproven resources and exploration activities.

Tailings Storage Facilities Management

Topic Summary

Coal waste impoundments or fine coal refuse ponds, also called tailings storage facilities (TSFs), can leak and contaminate water supplies if mismanaged, potentially leading to adverse impacts on the environment and human health. These impacts may carry financial implications such as regulatory penalties, compensation payments, and remediation or compliance obligations. Entities' ability to reduce the number and size of fine coal refuse ponds and ensure the structural integrity of impoundments can minimise such impacts. A catastrophic failure of such facilities (for example, a dam failure) could still release significant volumes of waste and materials that are harmful to the environment, leading to severe impacts on ecosystems, human livelihood, and local economies and communities. Such catastrophic incidents may result in significant financial losses for entities and may impair their social licence to operate. Robust processes and approaches to tailings facility design, management, operation and closure, as well as appropriate management of associated risks, can help prevent such incidents from occurring. Entities that adopt robust practices to maintain the safety of TSFs may do so through ensuring accountability for tailings management at the highest levels of the entity, conducting frequent internal and external independent technical reviews of TSFs, and ensuring mitigation measures are implemented in a timely manner in case of a safety concern. Additionally, a strong safety culture and well-established emergency preparedness and response plans can mitigate the impacts and financial implications of such events. Entity obligations related to long-term remediation and compensation for damages may result in additional financial effects in case of failure. An entity's ability to meet such obligations after an incident has occurred is an additional component of emergency preparedness.

Metrics

EM-CO-540a.1. Tailings storage facility inventory table: (1) facility name, (2) location, (3) ownership status, (4) operational status, (5) construction method, (6) maximum permitted storage capacity, (7) current amount of tailings stored, (8) consequence classification, (9) date of most recent independent technical review, (10) material findings, (11) mitigation measures, (12) site-specific EPRP

1 The entity shall disclose an inventory of its tailings storage facilities.

1.1 The definition of tailings facilities shall be consistent with that provided in the Global Tailings Review *Global Industry Standard on Tailings Management* (GISTM).

2 For each tailings facility, the entity shall disclose (1) the facility name, (2) its location, (3) ownership status, (4) operational status, (5) construction method, (6) maximum permitted storage capacity, (7) current amount of tailings stored, (8) consequence classification, (9) date of the most recent independent technical review, (10) material findings, (11) mitigation measures, and (12) site-specific emergency preparedness and response plan (EPRP).

2.1 The entity shall provide the name or other identifier used by the entity for the facility.

2.2 Disclosure of the facility's location shall include the country in which it operates.

2.3 Ownership status shall include whether the entity is the operator of the facility.

2.3.1 The definition of an operator shall be consistent with that provided in the GISTM Glossary.

2.4 The entity shall disclose the operational status of its facilities (for example, active, inactive—under maintenance, closed).

2.5 The entity shall disclose the facility construction method.

2.5.1 The entity shall disclose the construction method as 'downstream', 'upstream' or 'centreline', consistent with the definitions provided by the International Council on Mining and Metals (ICMM).

2.5.2 If the construction method does not match any of these definitions, the entity shall disclose the construction method as 'other' and provide a brief description of it.

2.6 The entity shall disclose the maximum permitted facility storage capacity, in metric tonnes.

2.7 The entity shall disclose the quantity of tailings stored in the facility as of the end of the reporting period, in metric tonnes.

2.8 The entity shall disclose the consequence classification of the facility in accordance with Requirement 4.1 of the GISTM.

2.9 The entity shall disclose the date of the most recent independent technical review of the facility, conducted in accordance with Requirement 10.6 of the GISTM.

2.9.1 A review is considered independent if it is conducted by third parties who are not and have not been directly involved with the design or operation of the facility.

2.10 The entity shall disclose whether the most recent independent technical review resulted in material findings related to the safety of the facility.

2.10.1 The scope of material findings shall be consistent with the definition of 'material' that provided in the GISTM, in which the criteria for what is material is to be defined by the entity, subject to the provisions of local regulations, and evaluated as part of any audit or external assessment that may be conducted on implementation.

2.10.2 The entity shall state either 'Yes' or 'No'.

2.10.3 If the entity has responded 'Yes' for a facility, the entity may provide a summary of the material findings in addition to the inventory table.

2.10.4 For facilities of which an independent technical review was not conducted, the entity shall state 'N/A'.

2.11 If the entity has disclosed 'Yes' regarding material findings, the entity shall disclose whether mitigation measures have been implemented to reduce risk to a level as low as reasonably practicable (ALARP).

2.11.1 The definition of ALARP shall be consistent with that provided in the GISTM Glossary.

2.11.2 The entity shall state either ‘Yes’ or ‘No’.

2.11.3 If the entity has responded ‘Yes’ for a facility, the entity may provide a summary of the relevant mitigation measures in addition to the inventory table.

2.12 The entity shall disclose whether a site-specific EPRP is in place in accordance with Requirements 13.1 and 13.2 of the GISTM.

2.12.1 The definition of EPRP shall be consistent with that provided in the GISTM Glossary.

2.12.2 The entity shall state either ‘Yes’ or ‘No’.

3 The entity should disclose its inventory in this table format:

Table 4. Tailings storage facility inventory table

(a) Facility name	(b) Location	(c) Ownership status	(d) Operational status	(e) Construction method	(f) Maximum permitted storage capacity	(g) Current quantity of tailings stored	(h) Consequence classification	(i) Date of most recent independent technical review	(j) Material findings	(k) Mitigation measures	(l) Site specific EPRP

EM-CO-540a.2. Summary of tailings management systems and governance structure used to monitor and maintain the stability of tailings storage facilities

1 The entity shall provide a summary of the tailings management systems used to monitor and maintain the structural integrity of tailings facilities and to minimise the risk of a catastrophic failure.

1.1 The scope of the disclosure shall include a summary of the policies and procedures for the entity’s active and inactive tailings facilities for all phases of their lifecycle, including closure and post-closure.

1.2 The definitions of tailings facilities and tailings management systems shall be consistent with those provided in the Global Tailings Review *Global Industry Standard on Tailings Management* (GISTM).

2 The disclosure shall include concepts outlined in Principles 7–11 of the GISTM and may include:

2.1 a summary of the performance monitoring programme for tailings facilities and their appurtenant structures;

2.2 a summary of the engineering monitoring systems that verify design assumptions and monitor potential failure modes;

2.3 the frequency of risk assessments consistent with Requirement 10.1 of the GISTM;

2.4 the frequency of engineer of record or senior independent technical reviewer construction and performance reviews;

2.4.1 the definition of engineer of record shall be consistent with that provided in the GISTM;

2.5 a summary of the governance framework that outlines the accountability, from the site-level management through to executive leadership and the board of directors; and

2.6 frequency of reviews to confirm that adequate financial capacity (including insurance, to the extent commercially reasonable) is available for planned closure, early closure, reclamation and post-closure of tailings facilities and their appurtenant structures.

EM-CO-540a.3. Approach to development of Emergency Preparedness and Response Plans (EPRPs) for tailings storage facilities

1 The entity shall disclose its approach to the development of Emergency Preparedness and Response Plans (EPRPs).

1.1 The definition of EPRP shall be consistent with that provided in the Global Tailings Review *Global Industry Standard on Tailings Management* (GISTM) Glossary.

1.2 The scope of the disclosure shall include a summary of plans, procedures and policies for the entity's active and inactive tailings storage facilities for all phases of the lifecycle, including closure and post-closure.

1.2.1 The definition of tailings facility shall be consistent with that provided in the GISTM Glossary.

2 The entity shall disclose its approach to EPRPs at its facilities, including the preparedness of local stakeholders.

2.1 The disclosure shall include:

2.1.1 the entity's approach to engaging with employees, contractors, public sector agencies, first responders, and local authorities and institutions in accordance with requirements 13.1 and 13.2 of the GISTM; and

2.1.2 the entity's frequency of emergency response plan tests and evacuation exercises to minimise the consequences of a potential failure.

SASB STANDARDS

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