



STANDARD-SETTING PROJECT

## Tailings Management in Extractives

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### **PROPOSED CHANGES TO THE SASB METALS & MINING AND COAL OPERATIONS STANDARDS**

INVITATION TO COMMENT  
ON EXPOSURE DRAFTS AND BASIS FOR CONCLUSIONS

Issued: December 17, 2020

Comments Due: March 17, 2021

Prepared by the Sustainability Accounting Standards Board®

## Notice of public comment period on proposed changes to the SASB Metals & Mining and Coal Operations Standards on tailings management

The SASB Standards Board invites comments on the enclosed exposure drafts, particularly on questions included in the section “Questions for Respondents,” through March 17, 2021. Interested parties may submit comments in one of two ways:

- using the public comments form on the [Tailings Management in Extractives project page](#) on the SASB website; or
- emailing comments to [comments@sasb.org](mailto:comments@sasb.org) with the subject “Tailings Management in Extractives Exposure Draft”

The Standards Board and the technical staff tracks and considers all comments received. All comments submitted will be on the public record and posted on the SASB website. Although the Standards Board may not provide specific responses to each public comment, the Standards Board will acknowledge receipt of, review, and summarize the public comments received.

Upon conclusion of the 90-day public comment period, the Standards Board will consider all comments submitted and conduct deliberations based on the comments received. At that time, the Standards Board may pursue further revisions of the Metals & Mining and Coal Operations Standards or may approve the revisions as presented in the enclosed exposure drafts. Upon approval by the Standards Board, the updated version will supersede the current version (Version 2018-10) of the Standards.



The Sustainability Accounting Standards Board (SASB) is an independent nonprofit organization that sets standards to guide disclosure of financially material sustainability information by companies to their investors.

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## Overview

This document was produced as part of the Tailings Management in Extractives standard-setting project, overseen by the SASB Standards Board (the Board). It contains the following sections:

- a) Questions for Respondents
- b) Basis for Conclusions on Proposed Changes to the Metals & Mining and Coal Operations Standards
- c) Exposure Draft of Proposed Changes to the Metals & Mining Standard
- d) Exposure Draft of Proposed Changes to the Coal Operations Standard
- e) Appendix: Redline Version of Proposed Changes

The questions for respondents indicate specific points on which the Board seeks input during the comment period and guide the reader to corresponding sections of the basis for conclusions and exposure drafts. The basis for conclusions primarily summarizes the considerations of the Board when developing the exposure drafts, including how the proposed changes were guided by the SASB *Conceptual Framework*. The exposure drafts set out the Board's proposed changes to the Metals & Mining and Coal Operations Standards on the issue of tailings facilities management, including related issues of waste management.

The [Tailings Management in Extractives project page](#) on the SASB website contains further information on the standard-setting project.

On December 16, 2020, the Board voted to release the enclosed exposure drafts for a 90-day public comment period. The Board encourages companies, investors, and subject matter experts, as well as other interested parties and the general public, to review the exposure drafts and the corresponding questions for respondents and to provide comments through March 17, 2021.

## Questions for Respondents

2020 EXPOSURE DRAFT

The SASB Standards Board (the Board) invites comments on the enclosed Metals & Mining Exposure Draft and Coal Operations Exposure Draft, particularly on the questions below. Comments are most helpful if they

- a) address the questions as stated;
- b) indicate the question, industry, disclosure topic, and/or metric to which they relate;
- c) contain a clear rationale; and
- d) include any alternatives the Board should consider, if applicable.

Respondents do not need to comment on all the questions posed.

### **Question 1: Do you support the proposed changes to the Metals & Mining and Coal Operations Standards?**

The proposed changes to the Metals & Mining and Coal Operations Standards are designed to substantially improve the standards by more comprehensively addressing the issue of tailings storage facilities management and the related issue of waste management. The proposed changes may be viewed in the section of the Basis for Conclusions, “Summary of Proposed Changes” (page 9) or the Exposure Drafts (page 27 and page 39).

### **Question 2: Do you support the expanded approach on tailings storage facilities management, including the creation of its own disclosure topic?**

The Board is proposing to build on the existing coverage of tailings storage facilities with the creation of a separate disclosure topic, Tailings Storage Facilities Management, which is intended to capture company performance on the management of such facilities, in both Metals & Mining and Coal Operations Standards. The Board evaluated multiple options related to the expansion of the existing Standard’s approach to tailings storage facilities—see “Rationale for proposed topic scope and structure” (page 16) for a discussion on the Board’s considerations that resulted in the proposed addition of the disclosure topic.

### **Question 3: Do you agree with the Board’s conclusion that presenting tailings storage facilities inventory in a table format would be more useful than disclosure that is aggregated at the company level? Do you agree that company disclosure preparation costs for the table would not be significantly greater than the alternative?**

The Board is proposing the addition of a metric to both the Metals & Mining and Coal Operations Standards that calls for disclosures on individual tailings storage facilities in a table format, as opposed to an aggregated measure at the company level—see “Rationale for the ‘Tailings storage facility inventory table’ metric” (page 23) for a discussion of the basis for the Board’s decision. The Board’s view is that this approach will lead to more useful information for investors without significantly impacting the preparatory costs of disclosure, either initially or on an ongoing basis.

**Question 4: Do you agree with the Board’s conclusion that a disclosure capturing all hazardous waste incidents is more useful than one focusing only on hazardous raw materials or one that requires separate disclosure of incidents involving hazardous raw materials versus other hazardous wastes?**

The Board is proposing the addition of a metric that is intended to capture incidents related to both hazardous raw materials and hazardous waste to the Metals & Mining Standard: *Number of significant incidents associated with hazardous materials and waste management*. The Board evaluated multiple approaches to this metric and concluded that an aggregated measure that captures multiple classes of incidents is likely to be more useful. See “Rationale for proposed new metrics to measure risk likelihood” (page 21) for a discussion of the Board’s considerations and alternate approaches that were evaluated.

**Question 5: Do you agree with the Board’s decision to retain the Waste Management disclosure topic in the Coal Operations Standard? Should any of the corresponding metrics be excluded?**

The Board has sought to ensure differences in industry activities between the Coal Operations industry and the Metals & Mining industry are sufficiently reflected in the proposed changes. The Board recognizes that the issue of waste management manifests differently depending on the natural resource that is being mined and, as a result, is proposing some variations in the waste management-related metrics when compared to the Metals & Mining Standard. The section below, “Rationale for differences in the Coal Operations Standard,” (page 22) discusses the basis for the Board’s conclusion to retain the Waste Management disclosure topic in the Coal Operations Standard, while modifying some metrics.



**Basis for Conclusions on Proposed  
Changes to the Metals & Mining and  
Coal Operations Standards**

2020 EXPOSURE DRAFT



## Introduction

- 1 The basis for conclusions accompanies, but is not part of, the *Exposure Drafts of Proposed Changes to the Metals & Mining and Coal Operations Standards* (the exposure drafts) as part of the Tailings Management in Extractives standard-setting project. The basis for conclusions summarizes the considerations and rationale of the SASB Standards Board (the Board) in developing the Exposure Drafts. Individual Board members gave greater weight to some factors than to others.
- 2 The Basis for Conclusions is organized as follows:
  - a) Summary of proposed changes
  - b) Why was the project added to the standard-setting agenda?
  - c) What are the sustainability impacts?
  - d) How did the Board develop the exposure drafts?
  - e) What is the basis for the Board's proposed changes to the disclosure topics?
  - f) What is the basis for the Board's proposed changes to the metrics?

## Summary of proposed changes

- 3 The Board proposes (1) adding a disclosure topic, Tailings Storage Facilities Management, and three corresponding metrics to the Metals & Mining and Coal Operations Standards to capture risks associated with the management of tailings storage facilities; and (2) maintaining the Waste & Hazardous Materials Management disclosure topic in the Metals & Mining Standard and Waste Management disclosure topic in the Coal Operations Standard respectively with a narrowed scope to focus on the risks related to waste generation, including tailings and the management and handling of hazardous waste (and hazardous materials in Metals & Mining Industry).

### New disclosure topic: Tailings Storage Facilities Management

- 4 The proposed Tailings Storage Facilities Management disclosure topic captures risks associated with the management of tailings storage facilities (TSFs), specifically with maintaining safe operations of facilities, developing failure-prevention strategies, and having in place emergency preparedness and response plans (EPRP) to mitigate implications from catastrophic failures, should they occur.
- 5 The Board proposes the following metrics for the Tailings Storage Facilities Management disclosure topic:
  - a) Move metric **EM-MM-150a.3**. *Number of tailings impoundments, broken down by MSHA hazard potential*, in the Waste & Hazardous Materials Management disclosure topic,<sup>1</sup> to the new Tailings Storage Facilities Management disclosure topic. Revise the *Number of tailings impoundments, broken down by MSHA hazard potential* metric to a *Tailings*

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<sup>1</sup> The disclosure topic is Waste Management in the Coal Operations Standard. All subsequent references to the disclosure topic are intended to reflect the differences between the two industry standards even if not explicitly stated.

*storage facilities inventory table*

- b) Add new metrics:
  - i. *Description of tailings management systems and governance structure used to monitor and maintain safety of tailings storage facilities*
  - ii. *Summary of the emergency preparedness and response plan (EPRP) for tailings storage facilities*

### **Revised disclosure topic: Waste & Hazardous Materials Management**

6 The revised Waste & Hazardous Materials Management disclosure topic will continue to focus on the risks related to the management of the generation and handling of waste, including tailings, but will not include the management of tailings storage facilities. The topic scope will also include the management and handling of hazardous materials for the Metals & Mining industry.

7 For the Metals & Mining Standard, the Board proposes the following revisions to the corresponding metrics of the Waste & Hazardous Materials Management disclosure topic:

- a) Revise metric **EM-MM-150a.1**. *Total weight of tailings waste, percentage recycled, to Total weight of tailings produced*
- b) Remove metric **EM-MM-150a.2**. *Total weight of mineral processing waste, percentage recycled*
- c) Add new metrics:
  - i. *Total weight of non-mineral waste generated*
  - ii. *Total weight of waste rock generated*
  - iii. *Total weight of hazardous waste generated*
  - iv. *Total weight of hazardous waste that is recycled*
  - v. *Number of significant incidents associated with hazardous materials and waste management*
  - vi. *Description of waste and hazardous materials management policies and procedures for active and inactive operations*

8 For the Coal Operations Standard, the Board proposes adding the same metrics described above to the Waste Management disclosure topic, with the following two exceptions:

- a) *Number of significant incidents associated with hazardous waste management* instead of *Number of significant incidents associated with hazardous materials and waste management*

- b) *Description of waste management policies and procedures for active and inactive operations* instead of *Description of waste and hazardous materials management policies and procedures for active and inactive operations*

9 See the Appendix for a redline version of the proposed changes to the metrics and topic summaries.

## Why was the project added to the standard-setting agenda?

10 Investor interest in risks related to tailings storage facilities has been increasing after high-profile catastrophic tailings facility failures in recent years,<sup>2</sup> especially the collapse of a high-hazard-potential TSF in Brumadinho, Brazil, in January 2019 that resulted in more than 250 fatalities.<sup>3</sup> Financial losses from these incidents resulted in significant costs and liabilities for companies, including remediation costs, legal fees, loss of assets, and litigation costs, as well as caused reputational damages. Historically, company disclosures on TSFs management focused on the design, location, and consequences of facility failure. The recent incidents have led to a significant increase in public and investor interest around more disclosure on the management practices around failure prevention and emergency response.

11 The Board decided to initiate a standard-setting project in December 2019 to evaluate the Metals & Mining and Coal Operations Standards to ensure that the set of disclosures fully captures the risks associated with company management of TSFs.<sup>4</sup> The three main areas of evidence the Board considered are outlined below: the evolution of industry disclosure on the issue with increasing investor interest and engagement around management practices of TSFs; the establishment of the Global Tailings Review, a co-convened investor, industry, and United Nations working group with the goal of standardizing and improving TSFs management practices; and the lack of global applicability of the existing metric.

## Investor Interest in Disclosures on Tailings Storage Facilities Management

12 Following the Brumadinho catastrophe, a coalition of investors, including major asset owners and asset managers in the extractives industries, initiated an investor-led engagement, the Investor Mining & Tailings Safety Initiative, to enhance disclosure on the management of TSFs.<sup>5</sup> The group issued a request to 726 publicly listed mining companies to publicly disclose information about each of their TSFs. The requested disclosure included 20 questions on the characteristics of the

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<sup>2</sup> Examples of recent facilities failures include but are not limited to the November 2015 Samarco Mineração SA mining dam collapse in Brazil, which released 50 million cubic meters of toxic iron ore residue; and the August 2014 Mount Polley tailings pond failure in Canada, which released 10 million cubic meters of water and 4.5 million cubic meters of mine waste slurry.

<sup>3</sup> See Vale, “Fabio Schvartsman—Announcement About Brumadinho Breach Dam,” <http://www.vale.com/brasil/EN/aboutvale/news/Pages/fabio-schvartsman-announcement-about-brumadinho-breach-dam.aspx>; and Marta Nogueira and Christian Plub, “Exclusive: Brazil Prosecutor Aims to Charge Vale Within Days Over Mining Waste Dam Disaster,” Reuters, <https://www.reuters.com/article/us-vale-sa-disaster-exclusive/exclusive-brazil-prosecutor-aims-to-charge-vale-within-days-over-mining-waste-dam-disaster-idUSKBN1Z72GS>.

<sup>4</sup> For additional information on the project, including recordings of the Board meetings and other resources, please see the [Tailings Management in Extractives project page](#).

<sup>5</sup> The engagement represents more than \$13 trillion in assets under management and governed through a steering committee chaired by the Church of England Pensions Board and the Swedish Council of Ethics of the AP Funds. See the Church of England, “Investor Mining and Tailings Safety Initiative: Background,” <https://www.churchofengland.org/investor-mining-tailings-safety-initiative>.

dams (e.g., height, type, and capacity), construction methods, and safety checks.<sup>6</sup> The request did not seek disclosure on aspects of emergency preparedness and response plans aimed for zero accidents and zero fatalities in the future.<sup>7</sup>

- 13 As of May 2020, 45 of the top 50 mining companies responded to the request by publicly disclosing on their company websites the requested information on thousands of TSFs. This represents more than 86 percent of the mining industry by market capitalization, and 100 percent of the 23 publicly owned companies that are members of the International Council on Mining & Metals (ICMM).<sup>8</sup> While the investor request for increased disclosure was successful in getting a high rate of corporate responses, the initiative noted that “a key outcome of the survey is the need to refine the disclosure request to enable standardisation of responses/terminology etc. across industry.”<sup>9</sup>
- 14 Additionally, in July 2020, the United Nations Environmental Programme (UNEP) published the report *Sustainability Reporting in the Mining Sector: Current Status and Future Trends*. One of the report’s key messages is that “the management of environmental and social aspects, and sustainability reporting of mining companies[,] is currently not meeting the expectations of interested stakeholders, notably communities affected by mining operations and investors.”<sup>10</sup> The proposed revisions in the SASB Standards aim to improve the completeness, the comparability, and, therefore, the decision-usefulness of disclosure on TSFs management for investors.

### Initiative to Establish a Global Standard

- 15 Building on the Investor Mining & Tailings Safety Initiative engagement, the ICMM, comprising 26 of the world’s leading mining and metals companies and 35 industry associations, along with UNEP and Principles for Responsible Investment (PRI) committed to develop and drive adoption of a set of global best practices on TSFs management. Collectively, they convened the Global Tailings Review to establish a global standard for the safer management of TSFs. The final *Global Industry Standard on Tailings Management (GISTM)* was published in August 2020 and organized around six topics, 15 principles, and 77 auditable requirements.<sup>11</sup> Principle 15, which contains three requirements, specifically addresses disclosure expectations. SASB has engaged multiple times with the working group participants and individuals involved in developing the *GISTM*, including ICMM and PRI, to seek alignment among all efforts.

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<sup>6</sup> Adam C. T. Matthews, “Re: Urgent Request for Information Concerning Tailings Dam Management April 7th 2019,” <https://www.churchofengland.org/sites/default/files/2019-04/Generic%20Tailings%20letter%2017042019.pdf>.

<sup>7</sup> SASB staff consultations with broad types of investors reflected the opinion that it is hard to build and operate a perfect facility and that incidents will happen. It is important to understand consequences around any potential dam failure.

<sup>8</sup> The Church of England, “Investor Mining and Tailings Safety Initiative: Responses to the Disclosure Request,” <https://www.churchofengland.org/investor-mining-tailings-safety-initiative>.

<sup>9</sup> The Church of England, “Investors, Banks and Insurers Review Global Progress in Addressing Tailings Dam Safety,” <https://www.churchofengland.org/more/media-centre/news/finance-news/investors-banks-and-insurers-review-global-progress-addressing>.

<sup>10</sup> UN Environment Programme, *Sustainability Reporting in the Mining Sector: Current Status and Future Trends*, <https://wedocs.unep.org/bitstream/handle/20.500.11822/33924/SRMS.pdf?sequence=1&isAllowed=y>.

<sup>11</sup> *Global Industry Standard on Tailings Management*, [https://globaltailingsreview.org/wp-content/uploads/2020/08/global-industry-standard\\_EN.pdf](https://globaltailingsreview.org/wp-content/uploads/2020/08/global-industry-standard_EN.pdf).

## Lack of Global Applicability of Existing Metric

16 An additional element the Board considered for this project is the global nature of the issue compared with the US-centric nature of the existing metric *Number of tailings impoundments, broken down by MSHA hazard potential* (EM-MM-150a.3 and EM-CO-150a.1). Mining operations occur in more than 100 countries, and globally applicable guidance is critical to provide investors with information that is comparable across companies operating in various geographic regions. The technical protocol for the current metric (i.e., the guidance on definitions, scope, implementation, compilation, and presentation for the metric) provides guidance that mining operators in locations under the auspices of the Mine Safety and Health Administration (MSHA) should refer to the MSHA hazard potential classification system, and operators in locations not under the auspices of the MSHA should use a third party to determine hazard potential while following MSHA guidance. This may not be feasible or cost-effective for companies operating outside the United States. As a result, the Board concluded that an objective of the project is to improve the global applicability of the existing metric, *Number of tailings impoundments, broken down by MSHA hazard potential*.

## What are the sustainability impacts?

17 There are two main types of risks related to waste management, including tailings, for the Metals & Mining and Coal Operations industries: pervasive risks from managing and handling industrial waste and hazardous materials; and tail risks (i.e., low probability and high impact) associated with possible catastrophic dam failures of TSFs and the implications of such failures if they occur. While the sustainability risks associated with the management of waste and hazardous materials generally center on mitigating environmental risks, the Board recognized that there is a broader and different set of environmental, social, and governance risks related to the management of TSFs.

## Sustainability risks of mining waste and hazardous materials

18 Mining waste, including industrial non-mineral waste, waste rock, tailings, and smelting waste, may be chemically reactive or hazardous and pose high environmental risks. Improper storage or disposal of hazardous materials or mining waste can present a significant long-term threat to human health and ecosystems through potential contamination of land, groundwater, and surface water. Additionally, some waste rock may be acid-forming and pose biodiversity impacts.<sup>12</sup>

## Sustainability risks of tailings storage facilities

19 TSFs are commonly large impoundments that contain slurry, composed of water and tailings. Catastrophic failure of such facilities (e.g., a dam failure) can release significant volumes of waste that may have high-consequence impacts on ecosystems, human livelihood, local economies, and communities. If a failure does occur, the consequences of the failure could be reduced if a

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<sup>12</sup> Biodiversity impact is currently covered by the Biodiversity Impacts disclosure topic of the Metals & Mining and Coal Operations Standards.

company can effectively respond to the emergency and limit (to the extent possible) resulting damages.

## How did the Board develop the exposure drafts?

- 20 The Board and technical staff actively monitored the evolving issue of tailings facilities failures prior to the addition of the project to the Board’s standard-setting agenda. Monitoring the issue included assessing corporate disclosures and the effectiveness of the relevant standards at capturing performance on the issue in a decision-useful manner, monitoring developments in the industry, soliciting input from stakeholders, and deliberating the need for standard setting. These pre-agenda research and consultation activities culminated with the Board’s decision in December 2019 to add the Tailings Management in Extractives project to its standard-setting agenda, thereby initiating standard setting.
- 21 Since the project was added to the agenda, the technical staff has conducted extensive research and has engaged in consultations with stakeholders and subject matter experts, including the SASB Standards Advisory Group, in support of the development of the exposure drafts. An expansive set of companies that conduct mining activities were consulted and provided input, including companies of all sizes from across the world’s major mining regions (Asia, Australia, Canada, Latin America, South Africa, and the United States). Numerous investors representing a diverse range of institutions, experiences, and perspectives provided input as well—including fundamental industry analysts (equity and credit analysts), corporate governance experts, and environmental, social, and governance (ESG) specialists. In addition to companies and investors, other relevant organizations and subject matter experts were consulted, such as industry associations, investor groups, non-governmental organizations (NGOs), academics, and consultants.
- 22 The research and consultation conducted by the technical staff led to a series of deliberations by the Board on key issues, considerations, and challenges related to the development of the exposure drafts. Ultimately, the Board concluded that the changes proposed in the enclosed exposure drafts have a sufficient basis in evidence and stakeholder input to proceed with conducting a public comment period.
- 23 Additional information related to the [standard-setting process](#) that the Board follows to maintain and update the SASB Standards can be found on the SASB website, in the [Rules of Procedure](#), and/or in the [Conceptual Framework](#). Additional project-specific information can be found on the [Tailings Management in Extractives project page](#) on the SASB website.

## What is the basis for the Board’s proposed changes to disclosure topics?

- 24 The Board deliberated the appropriate disclosure topic scope and structure to reflect the different nature of sustainability issues and management approaches used for management of waste and hazardous materials versus for management of TSFs. The Board proposes to (1) add a disclosure topic, Tailings Storage Facilities Management, mapped to the Critical Risk and Incident

Management general issue category,<sup>13</sup> to capture risks associated with the management of tailings storage facilities; and (2) maintain the Waste & Hazardous Materials Management disclosure topic with a narrowed scope to focus on the risks related to waste generation (including tailings) and management and handling of hazardous waste (and materials for the Metals & Mining Standard).

- 25 The Board considered the evidence discussed below from staff research and consultations on the different sustainability risks, management approaches, level of investor interest, and channels of financial impact for the two issues of waste management and TSFs management.

### Industry Management of Mining Waste and Hazardous Materials

- 26 Management of hazardous and non-hazardous waste, as well as hazardous materials used in the mining process, focuses on environmental risks associated with the treatment, handling, storage, disposal, or regulatory compliance related to such waste and materials. SASB Standards Advisory Group members, both companies and investors, as well as industry experts outside of the advisory group have affirmed during multiple rounds of the consultation that these risks are usually well understood and that management strategies are usually well developed, although not always adhered to at the same degree across the industry. The nature of environmental risks depends on the method of mining, the grade of ore that is mined, and the type of products the company manufactures. Companies choose appropriate waste management strategies to address the environmental risks most pertinent for their operations to lower associated regulatory and litigation risks, remediation liabilities, and costs. Furthermore, companies that reduce their hazardous materials usage through recycling or choosing alternative materials, implement strict safety protocols, and take corrective measures in case of incidents can minimize financial impacts and reduce reputational risks should a waste-related incident occur.

### Industry Management of Tailings Storage Facilities

- 27 Companies use a range of strategies and practices to maintain the safety of TSFs. While the probability of catastrophic failure is low, one incident can bear extremely high consequences with significant financial implications and may jeopardize a company's reputation, brand, and social license to operate. Investors affirmed in consultation that this is a financially impactful topic. Multiple consultation participants, including academics, industry associations members, SASB Standards Advisory Group members, and engineering firms involved in the design, construction, and maintenance of TSFs, have assured that this kind of tail risk varies tremendously by site, as do management strategies to mitigate this risk. Companies adopt robust management strategies, including establishing internal governance structures that ensure high-level executive accountability, a strong safety culture within the company, frequent external independent technical safety reviews, transparent engagement with the public and local communities on risks and how to manage such risks, and a well-established emergency preparedness and response

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<sup>13</sup> The Critical Incident Risk Management general issue category addresses a company's use of management systems and scenario planning to identify, understand, and prevent or minimize the occurrence of low-probability, high-impact accidents and emergencies with significant potential environmental and social externalities. It is a general issue category under the Leadership & Governance sustainability dimension, which focuses on the management of issues that are inherent to the business model or common practice in the industry that are in potential conflict with the interest of broader stakeholder groups, and therefore create a potential liability or a limitation or removal of a license to operate.

plan. In consultations, investors expressed an interest in more disclosure to understand the risks around mismanagement of tailings facilities.

### Rationale for proposed topic scope and structure

- 28 As indicated in the evidence above, the Board recognized foremost that management of tailings facilities involves a different set of sustainability risks and management considerations than the management of tailings and other waste products. The sustainability issues associated with the management of waste, including tailing, are narrower in scope (environment focused) than those associated with the management of storage facilities (environmental, social, and governance). The Board deliberated the tradeoffs between having all information associated with TSFs management separately under one disclosure topic versus being split between several disclosure topics such as Waste & Hazardous Materials Management; Critical Incident Risk Management; and a potential new Emergency Preparedness and Response disclosure topic.
- 29 The Board considered staff research and consultations of how companies and investors in the industry typically manage and disclose these issues. Research indicated that companies typically manage and disclose TSFs management strategies separately from waste management strategies. Companies consider TSFs as systems and manage them as assets throughout the life cycle. On the other side, tailings, the waste product itself, are a part of waste management. A SASB staff review of company disclosures indicated that large companies with multiple TSFs place waste management and TSFs management in different quadrants of their materiality assessment, often giving higher materiality rating to the TSFs management issue. Furthermore, companies usually disclose the amount of tailings produced within waste-related topics in their sustainability reports. The Board acknowledged that this still varies across companies in the industry. For example, a smaller company stated in consultation that its environmental department, which reports to its board, manages both tailings facilities and waste management, and it did not identify tailings storage facilities risks as high for the company's operations.
- 30 When it comes to the emergency response topic, companies often provide aggregate—not site-by-site specific—disclosure on a broad range of emergencies, including dam failure, which is not always sufficient for investors' understanding of risks associated with a potential dam failure. Disclosure analysis and the consultation feedback indicated that investors analyzed TSFs management as a critical risk issue separately from risks associated with the handling and management of waste, including tailings, and separately from emergencies such as fires and earthquakes.
- 31 The Board decided that an approach of a separate single disclosure topic on TSFs management is more aligned with industry practices and project scope, and in turn would be more decision-useful for investors and more cost-effective for companies to prepare the disclosure. The proposed Tailings Facilities Management disclosure topic is mapped to the Critical Incident Risk



Management general issue category<sup>14</sup> to reflect more holistically the environmental, social, and governance issues relate to TSFs management. Meanwhile, the Waste & Hazardous Materials Management disclosure topic should be maintained and revised to clarify its focus on the risks related to the management of generating and handling waste, including tailings.

## What is the basis for the Board’s proposed changes to metrics?

32 The Board considered a set of metrics for each disclosure topic to help users understand and interpret performance on the risk exposure and risk likelihood associated with each disclosure topic. Tables 1.a and 1.b summarize the sustainability angles, sustainability impact, and key concepts to be measured that the Board considered for the two disclosure topics discussed above. To assess the magnitude of sustainability impact (i.e., risk exposure), the Board considered and proposed metrics that measure total potential harm. To assess the probability or likelihood of the risk, the Board recommended metrics that provide historical data on incidents coupled with forward-looking qualitative metrics focused on a management approach to prevent incidents from occurring.

**Table 1.a.** Key Concepts to Measure: Tailings Storage Facilities Management Disclosure Topic

<i>Topic</i>	<i>Sustainability Angle</i>	<i>Sustainability impact</i>	<i>Concept to be measured</i>
<b><i>Tailings Storage Facilities Management</i></b>	<i>Structural integrity of tailings storage facilities</i>	<i>Long term chronic impacts on the environment from failed facilities* resulting in seepage and leakage</i>	Risk exposure: <i>(1) number of facilities and their characteristics (e.g., year built, failure classification consequences, operational status, etc.)</i>
		<i>Physical dam collapse leading to catastrophic environmental damage and loss of life</i>	Risk likelihood: <i>(2) management approach to maintain the structural integrity of facilities and to mitigate possible accidents/failures</i>
		<i>Lack of proper accident preparedness and emergency response plan</i>	<i>(3) management approach to minimize consequences of an accident/failure</i>

<sup>14</sup> The Critical Incident Risk Management general issue category addresses a company’s use of management systems and scenario planning to identify, understand, and prevent or minimize the occurrence of low-probability, high-impact accidents and emergencies with significant potential environmental and social externalities. It is a general issue category under the Leadership & Governance sustainability dimension, which focuses on the management of issues that are inherent to the business model or common practice in the industry that are in potential conflict with the interest of broader stakeholder groups, and therefore create a potential liability or a limitation or removal of a license to operate.

**Table 1.b.** Key Concepts to Measure: Waste & Hazardous Materials Management Disclosure Topic for the Metals & Mining Standard (Waste Management Disclosure Topic for the Coal Operations Standard)

Topic	Sustainability Angle	Sustainability impact	Concept to be measured
<p><b>Waste and Hazardous Materials Management*</b></p> <p><i>*Note: This is the Waste Management disclosure topic in the Coal Operations Standard</i></p>	<p><i>Environmental contamination</i></p>	<p><i>Non-mineral waste: Improper disposal of industrial (non-mineral) hazardous waste</i></p>	<p><i>Risk exposure:</i> (1) amount of waste produced</p>
		<p><i>Mineral waste: Accidental releases of heavy metals and hazardous waste from mining activities (seepage of heavy metals from tailings)</i></p>	<p><i>Risk likelihood:</i> (2) prior history of related incidents (3) management approach to minimize risk</p>
		<p><i>Hazardous raw materials*:</i> (cyanide, sulfuric acid, etc.) Accidental releases and spills</p> <p><i>*Note: Does not apply to Coal Operations</i></p>	

### Proposed Metrics for Waste & Hazardous Materials Management

33 The Board proposes the following revisions to the metrics of the Waste & Hazardous Materials Management disclosure topic for the Metals & Mining Standard.

- a) Revise metric **EM-MM-150a.1**. *Total weight of tailings waste, percentage recycled to Total weight of tailings produced*
- b) Remove metric **EM-MM-150a.2**. *Total weight of mineral processing waste, percentage recycled*
- c) Add new metrics:
  - i. *Total weight of non-mineral waste generated*
  - ii. *Total weight of waste rock generated*
  - iii. *Total weight of hazardous waste generated*
  - iv. *Total weight of hazardous waste that is recycled*
  - v. *Number of significant incidents associated with hazardous materials and waste management*
  - vi. *Description of waste and hazardous materials management policies and procedures for active and inactive operations*

34 The rationale for the proposed revision, removal and additions is discussed below.

#### Rationale to revise *Total weight of tailings waste, percentage recycled*, to *Total weight of tailings produced*

35 The Board proposes to remove the sub-metric “percentage recycled” from the existing metric **EM-MM-150a.1. Total weight of tailings waste, percentage recycled**. Multiple mining waste experts noted in consultations that the recycling of tailings is not for the purposes of managing the generation or handling of waste. Some companies reprocess tailings to perform secondary extraction of ore, but such processes reduce the volume of tailings by only less than one percent, which would be considered an immaterial change in the total amount of waste generated. Additionally, if the tailings generated by the company are not chemically reactive, some companies may reuse or repurpose tailings to backfill voids or old mines in order to avoid purchasing materials for these needs, while others may utilize tailings to manufacture construction materials. However, recycling tailings is not perceived as a common practice or as a substantial strategy to reduce risks associated with the generation or handling of tailings. Therefore, the recycling of tailings is not viewed as an indicator of performance and would not indicate representationally faithful information. Therefore, given the lack of pervasiveness and indication of performance, the Board proposes to remove the “percentage recycled” sub-metric.

#### Rationale to remove *Total weight of mineral processing waste, percentage recycled* metric

36 The Board proposes to remove the current metric **EM-MM-150a.2. Total weight of mineral processing waste, percentage recycled**, given additional evidence indicating that mineral processing waste does not have a significant impact on financial performance nor is it a measurement of significant interest to investors. The current metric defines “mineral processing waste” to include “waste generated during metals processing (e.g., smelting and refining), such as slags, dusts, sludges, and spent solvents” as well as “scrap metal, reject coal, used oil, and other solid wastes and excludes gaseous wastes.” An analysis of industry disclosures indicated that the amount of mineral processing waste is usually insignificant in comparison with other types of waste. It is not a commonly reported metric by companies in the industry, nor a data point indicated by investors to be of interest. Furthermore, this metric has been misinterpreted in a few company disclosures as “amount of industrial waste” or “amount of non-mineral waste” due to the current definitions in the metric being unclear, which results in less comparable disclosures that are not decision-useful for investors.

#### Rationale for proposed new metrics

37 The Board proposes the following six new metrics for the disclosure topic. Along with the revised *total weight of tailings waste produced* metric, the set of seven metrics is intended to ensure completeness in capturing the risk exposure and risk likelihood associated with waste management.

- i. *Total weight of non-mineral waste generated*
- ii. *Total weight of waste rock generated*
- iii. *Total weight of hazardous waste generated*

- iv. *Total weight of hazardous waste that is recycled*
- v. *Number of significant incidents associated with hazardous materials and waste management*
- vi. *Description of waste and hazardous materials management policies and procedures for active and inactive operations*

38 Although the proposed set of metrics increases the number of metrics from three to seven, the Board expects the revised metrics to clarify and improve the usefulness of disclosures for investors by providing information that is set up for year-over-year comparability, and to be more cost-effective for companies to prepare, given closer alignment with the format of other reporting frameworks such as the 2020 GRI Waste Standard. The Board's intent is for the newly added metrics to produce disclosures that are more complete, comparable, understandable, and aligned, thereby enabling investors to assess waste management risks of mining companies more effectively.

#### *Rationale for proposed new metrics to measure risk exposure*

39 The Board proposes the following five quantitative metrics that correspond to the most common types of waste produced in mining to measure operational exposure to risks associated with waste generation and disposal:

- i. *Total weight of non-mineral waste generated*
- ii. *Total weight of tailings produced* (revised metric EM-MM-150a.1)
- iii. *Total weight of waste rock generated*
- iv. *Total weight of hazardous waste generated*
- v. *Total weight of hazardous waste that is recycled*

40 Even though the amount of each type of waste greatly depends on the type of mining that companies conduct, in the Board's view, the proposed set of metrics will apply to most companies within the industry and, combined with activity metrics, will provide investors with a set of complete, comparable, and representationally faithful disclosures.

#### *Rationale for metrics on non-mineral waste and hazardous waste*

41 Large amounts of potentially hazardous non-mineral waste are generated during mineral extraction and processing. Non-mineral waste includes items such as batteries, tires, antifreeze, oil, paint, solvent, and other materials. Non-mineral waste is usually highly controlled, and investors are interested in the regulatory risks that companies face associated with the generation and disposal of such waste. The current standard includes non-mineral waste as part of the "amount of mineral processing waste" metric that is proposed to be removed. As discussed above, differing company interpretations of the current mineral processing waste metric has resulted in less comparable disclosures that are not decision-useful for investors. To improve the understandability and usability of the disclosure and to align with industry disclosure practices, the Board recommends three separate metrics: *Total weight of non-mineral waste generated*; *Total weight of hazardous waste generated*; and *Total weight of hazardous waste that is recycled*. These three metrics are the most reported metrics related to non-mineral waste by all

mining companies and would deliver comparable, year-over-year information on environmental risks that are of interest to investors.

#### Rationale for metrics on mineral waste

42 Tailings and waste rock are two main types of mineral waste from extractive activities and present different sustainability risks. Waste rock, depending on its geochemical composition, may contain remnants of naturally occurring heavy metals. The environmental risks posed by toxic heavy metals have not been previously covered by the standard.<sup>15</sup> Several investors expressed interest in the ratio between waste rock generation and tailings productions, as it indicates different company risk profiles. Furthermore, investors indicated that they normalize the weight of tailings produced and waste rock generated, respectively, by the amount of product<sup>16</sup> to evaluate a company's financial performance and profitability. The Board decided to propose two separate metrics to align with common industry practices, as companies generally report the amount of waste rock and tailings separately, and to ensure the metrics produce understandable and verifiable disclosures.

#### Rationale for proposed new metrics to measure risk likelihood

43 Additionally, the Board proposes two additional metrics to assess risk likelihood:

- i. *Number of significant incidents associated with hazardous materials and waste management*
- ii. *Description of waste and hazardous materials management policies and practices for active and inactive operations*

44 The Board proposes two metrics to measure the risk likelihood or probability of waste-management-related risks: *Number of significant incidents associated with hazardous materials and waste management* and *Description of waste and hazardous materials management policies and practices for active and inactive operations*.

45 The metric *Number of significant incidents associated with hazardous materials and waste management* provides historical data on how well a company has been managing operational risks associated with hazardous inputs and outputs. Accidental release into the environment (air, soil, and water) of hazardous raw materials used in mineral processing and its outputs can lead to fines and remediation costs and present a potential liability in the form of health-related monetary claims from affected parties. Multiple investors expressed interest in disclosures on the number of significant incidents companies had that related to handling hazardous materials and resulted in operational safety or an environmental impact. This type of data is generally recorded and reported by companies, and therefore, it would provide verifiable information to users.

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<sup>15</sup> Biodiversity impacts from heavy metals is currently covered by the Biodiversity Impacts disclosure topic of the Metals & Mining and Coal Operations Standards.

<sup>16</sup> The Metals & Mining Standard contain the activity metric "Production of (1) metal ores and (2) finished metal products" (EE-MM-000.A). The Coal Operations Standard contains the activity metrics "Production of thermal coal" and "Production of metallurgical coal" (EM-CO-000.A and EM-CO-000.B).

46 The same metric is also intended to provide disclosure on hazardous-waste-related incidents, which is aggregated with hazardous materials incidents in the Metals & Mining Standard. In addition to hazardous materials' post-process outputs, other types of discarded materials, such as tires and batteries, can be classified as hazardous waste based on their biological, chemical, and physical properties. Even though the main risk measured by this metric comes from handling raw hazardous materials such as cyanide, the metric proposed by the Board combines all the hazardous materials and hazardous wastes together. This may provide some benefits in usefulness in terms of a broader scope of disclosure; however, this approach may lead to a deterioration in usefulness, as it aggregates very different types of incidents together. Some investors have stated that they evaluate this information in an aggregated form to provide a high-level indication on the effectiveness of governance that companies have around hazardous waste in the mining process. However, the Board is seeking input on whether aggregating this data may be misleading (i.e., reduce how representationally faithful the metric is) or deteriorate its usefulness.

47 As a separate issue, the Board specifically discussed and weighed the benefits of disclosure on the amount of hazardous materials generated versus disclosure on the number of incidents that occurred to measure the magnitude of potential risk. Feedback from both investors and companies indicated that disclosures on volume and/or weight of hazardous materials is not likely to result in comparable or useful data to assess the probability of risk. Potential risk from hazardous materials, mainly chemicals used in mining processes, is highly dependent on other characteristics beyond volume or weight, such as the concentration and toxicity level of the chemical. Instead, the number of incidents provides a more comparable, verifiable, and useful indicator of historical company performance around management of hazardous materials. The Board ultimately decided that the combination of this quantitative metric combined with a qualitative metric on the description of waste and the hazardous materials' handling policy will provide the most complete and useful assessment of a company's performance year over year. The two metrics together intend to provide a set of complete disclosure with quantitative historical data on incidents that have occurred, coupled with forward-looking qualitative discussion on management approaches to prevent such incidents from occurring in the future.

#### Rationale for differences in the Coal Operations Standard

48 For the Coal Operations Standard, the Board proposes using the same set of five metrics for measuring risk exposure as in the Metals & Mining Standard and is proposing slight modifications for the two metrics on measuring risk likelihood, as follows:

- i. *Number of significant incidents associated with hazardous waste management* instead of *Number of significant incidents associated with hazardous materials and waste management*
- ii. *Description of waste management policies and procedures for active and inactive operations* instead of *Description of waste and hazardous materials management policies and procedures for active and inactive operations*

- 49 The current Coal Operations Standard does not place as significant an emphasis on waste management as the Metals & Mining Standard does. The single metric associated with the disclosure topic in the current Coal Operations Standard is focused on tailings storage facilities, and there are no direct metrics on the management of waste generation and handling in the current disclosure topic. In executing this project, the Board did not seek to reassess the financial materiality of waste management within the Coal Operations Standard, as the focus of the project is on risks related to tailings storage facilities. The Board continues to recognize the Waste Management disclosure topic in the existing Coal Operations Standard.
- 50 Waste generation and management are inextricably linked with tailings risks. As a result, the metrics proposed by the Board for both the Tailings Storage Facilities Management disclosure topic and the Waste Management disclosure topic have been developed with an intent for clear connectivity between them. Therefore, the Board proposes an expanded set of metrics to adequately measure performance related to waste management.
- 51 However, there is industry specificity in the disclosure topics and metrics themselves. As noted, the current disclosure topic in the Coal Operations Standard is Waste Management, as opposed to Waste & Hazardous Materials Management in the Metals & Mining Standard. Coal is processed by means of crushing, screening, and beneficiation; it does not involve processes such as leaching or flotation, which require hazardous raw materials and are commonly used for metals processing. Therefore, hazardous raw materials are not included within the scope of the Coal Operations Standard given differences between the industries. The proposed metrics for the Coal Operations Standard exclude elements discussed above referring to hazardous raw materials, as they are not representationally faithful to performance on the Waste Management disclosure topic for the Coal Operations industry.

### Proposed Metrics for Tailings Storage Facilities Management Disclosure Topic

- 52 The Board proposes three corresponding metrics for the new Tailings Storage Facilities Management topic in both the Metals & Mining and Coal Operations Standards:
- i. *Tailings storage facility inventory table* (moved and revised current metric, **EM-MM-150a.3. and EM-CO-150a.1. Number of tailings impoundments, broken down by MSHA hazard potential**)
  - ii. *Description of tailings management systems and governance structure used to monitor and maintain safety of tailings storage facilities*
  - iii. *Summary of the emergency preparedness and response plan (EPRP) for tailings storage facilities*

#### Rationale for the *Tailings storage facility inventory table* metric

- 53 The Board proposes expanding the current metric *Number of tailings impoundments, broken down by MSHA hazard potential* (EM-MM150a.3 and EM-CO-150a.1) to a more comprehensive “Tailings storage facility inventory table” in the new Tailings Facilities Management disclosure topic proposed for both Metals & Mining and Coal Operations Standards. The metric is moved to the new disclosure topic to maintain all management aspects of TSFs under one disclosure topic.

MSHA hazard potential classification is being replaced with Dam Failure Consequence Classification, which is defined in accordance with the *Global Industry Standard on Tailings Management*.<sup>17</sup> *GISTM* has been developed by the multi-stakeholder group of worldwide recognized experts on mining and tailings storage facilities. The standard lays out expectations of the stakeholders, which includes investors, on how facilities should be managed and what information should be disclosed. The Dam Failure Consequence Classification matrix is at the foundation of multiple recommendations of the *GISTM* for an annual evaluation of risks and measures required to mitigate for such risks.

- 54 The Board considered another approach for this metric, aggregate disclosure, rather than a detailed facility-by-facility disclosure in a form of a table. The board ultimately saw greater value in approaching the presentation of data through a table that calls for individual facility disclosures, as opposed to an aggregate disclosure at the company level. Due to the variability in the size of operations of different companies and the variability of risk profile from facility to facility, aggregating such data at a company level could be misleading and could misrepresent the risk. The Board believes the inventory table would not likely require additional data collection by the reporting entity and using the table would be more aligned with what some companies have already provided in response to the ICMM request. The proposed tailings storage facility inventory table is guided and largely aligned with the *GISTM* requirements for disclosure and focuses on the most decision-useful data, which may vary year over year on a site-by-site basis, that could be missed if the data were reported in aggregation among all facilities. Although some large companies in the industry currently complement an aggregate disclosure with separate, non-standardized disclosures on specific facilities, mainstream investors indicated that this approach is not the most effective nor understandable for their investment decision needs. The Board ultimately decided on a facility-by-facility disclosure approach for the proposed metric, with a set of specific data points that are intended to result in complete, representationally faithful, and decision-useful information for investors—without adversely impacting companies’ costs in preparing disclosures when compared with those of an aggregated metric.
- 55 The proposed metric includes disclosures on (a) name of the facility, (b) facility location, (c) ownership status, (d) construction year, (e) operational status, (f) Dam Failure Consequence Classification (DFCC) level, (g) date of most recent tailings facility construction and performance review (TFCPR), (h) material findings, (i) mitigation measures, and (j) emergency preparedness and response plan (EPRP). The Board proposes requirements a–j as a complete set of disclosures to reflect the most indicated points of interest for investors. All the data points, as well as the technical protocol to this metric, are closely aligned with requirements on disclosure in the *GISTM*, which the Board views as a benefit to the cost-effectiveness of the proposed metric. Most importantly, this format of disclosure provides a more representationally faithful and comparable view on overall company performance on the topic.

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<sup>17</sup> Global Industry Standard on Tailings Management, “Annex 2: Consequence Classification Tables,” [https://globaltailingsreview.org/wp-content/uploads/2020/08/global-industry-standard\\_EN.pdf](https://globaltailingsreview.org/wp-content/uploads/2020/08/global-industry-standard_EN.pdf).



- 56 Data points (a–f) on facilities’ location, operational and ownership status, structure age, and failure consequence classification intend to provide a complete and verifiable set of measurements on each facility’s risk exposure. These data points provide a snapshot of the risk exposure and may indicate changes over time in a facility’s risk profile to investors (e.g., changes in operational status or DFCC level). In investors’ view, facilities with high failure-consequence classification, if not managed appropriately, present a larger risk in case of a failure. Facility-design-related information would serve as an input into the DFCC assessment, which serves as another confirmation of the usefulness of the sub-metric. Therefore, there is value in disclosing the consequence classification of each facility to assess potential risk magnitude.
- 57 Meanwhile, data points (g–j) on the date of last independent technical performance review, material findings from the review, mitigation measures, and indication of site-specific EPRP provide qualitative data on risk likelihood in the reporting year and would provide year-over-year management performance measurements. Investors noted, and companies agreed during consultations, that design-related information alone is not sufficient for decision-making. Investors conveyed that modifications to design and other aspects concerning facility operations and safety should also be disclosed and be verifiable. Therefore, the Board recommends the inclusion of data on the most recent independent technical review, which aligns with the “tailings facility construction and performance reviews” referenced in the *GISTM*. Finally, to provide decision-useful information on community training and the appropriate level of emergency preparedness on facility-by-facility basis, the Board proposes the EPRP data point, which would indicate to investors whether a site-specific plan was put in place by the operator.
- 58 Investors stated that they were interested in safety considerations for each facility, which is reflected through the data points proposed for the metric. For example, investors indicated interest in the volume of tailings in relation to capacity of the design of the facility, which could represent a higher risk – this would be captured in (g) TFCPR reports, (h) material findings, if it creates a safety concerns, and (i) mitigation measures. Investors also were interested in the year of construction and whether any modification were made to the design, which would be captured in (d) construction year, (g) TFCPR, (h) material findings, if it creates a safety concerns, and (i) mitigation measures. Lastly, and the proximity to communities and whether communities were trained on emergency response were also brought up multiple times during the consultations with investors. This would be captured in (f) DFCC and (j) EPRP.
- 59 Although the Board received feedback from investors that they would like to see remediation costs for each site disclosed if a failure does occur, companies noted that it would be extremely difficult to estimate and would require multiple assumptions. DFCC takes this element into account to a degree, and the Board decided not to propose a separate data point on remediation costs.

#### Rationale for the proposed qualitative metrics

- 60 The Board proposes inclusion of two qualitative, discussion & analysis metrics to facilitate disclosure of additional context around the management approach of TSFs and improve

completeness of disclosure: *Description of tailings management systems and governance structure used to monitor and maintain safety of TSFs and Summary of the Emergency Preparedness and Response Plan (EPRP) for tailings storage facilities*. The corresponding technical protocols are aligned with the GISTM to enhance standardization, cost-effectiveness and alignment of disclosure.

- 61 The Board deliberated the extent that EPRP should be part of public disclosures. While the set of metrics associated with the Tailings Storage Facilities disclosure topic would be incomplete without a metric on emergency preparedness, multiple companies expressed concerns that detailed information of EPRPs contain confidential information. Investors expressed only interest in whether companies are testing their plans at appropriate frequency in addition to knowing whether companies have site-specific EPRPs in place for their TSFs. The Board wanted to ensure that the resulting disclosure balances complete and decision-useful disclosures for investor use with consideration of company concerns. The proposed metric aims to produce comparable and representationally faithful disclosures by focusing on specific elements of emergency preparedness and accident response plans that are of interest to investors and fully aligned with the GISTM requirements, as opposed to general, open-ended descriptions.

#### Rationale for similar approach taken for both industries

- 62 Although tailings produced in coal operations have slightly different physical characteristics from those produced during metals mining, the sustainability issues around management of TSFs are similar and investors expressed interest in disclosures on the management of TSFs for both industries. The amount of fine coal refuse produced is typically less than tailings in metals mining, and coal impoundments are generally smaller and have lower flowability. Although all of these factors generally reduce consequences of a facility failure, similar risks still apply for the Coal Operations industry. In turn, the Board had the same considerations and proposes the same metrics for both industries.

# Exposure Draft of Proposed Changes to the Metals & Mining Standard

## About this Exposure Draft

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

This exposure draft does not include the entirety of the standard. The following Sustainability Disclosure Topics & Accounting Metrics Table reflects the complete set of disclosure topics and metrics, including the proposed changes, for this industry. The subsequent sections of this exposure draft include only the disclosure topics, metrics and technical protocols that are relevant to the proposed changes.

The public comment period lasts for 90 days, beginning on December 17, 2020, and ending on March 17, 2021. The Standard is subject to change thereafter.

Please use the public comments form on the [Tailings Management in Extractives project page](#) on the SASB website or email comments to [comments@sasb.org](mailto:comments@sasb.org) with the subject "Tailings Management in Extractives Exposure Draft."

Prepared by the Sustainability Accounting Standards Board

December 2020

## SUSTAINABILITY DISCLOSURE TOPICS & ACCOUNTING METRICS

**Table 1. Sustainability Disclosure Topics & Accounting Metrics**

TOPIC	ACCOUNTING 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 <sub>2</sub> -e, Percentage (%)	EM-MM-110a.1
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	EM-MM-110a.2
Air Quality	Air emissions of the following pollutants: (1) CO, (2) NO <sub>x</sub> (excluding N <sub>2</sub> O), (3) SO <sub>x</sub> , (4) particulate matter (PM <sub>10</sub> ), (5) mercury (Hg), (6) lead (Pb), and (7) volatile organic compounds (VOCs)	Quantitative	Metric tons (t)	EM-MM-120a.1
Energy Management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable	Quantitative	Gigajoules (GJ), Percentage (%)	EM-MM-130a.1
Water Management	(1) Total fresh water withdrawn, (2) total fresh water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Thousand cubic meters (m <sup>3</sup> ), 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
Waste & Hazardous Materials Management	Total weight of non-mineral waste generated	Quantitative	Metric tons (t)	EM-MM-150a.4
	Total weight of tailings produced	Quantitative	Metric tons (t)	EM-MM-150a.5
	Total weight of waste rock generated	Quantitative	Metric tons (t)	EM-MM-150a.6
	Total weight of hazardous waste generated	Quantitative	Metric tons (t)	EM-MM-150a.7
	Total weight of hazardous waste that is recycled	Quantitative	Metric tons (t)	EM-MM-150a.8
	Number of significant incidents associated with hazardous materials and waste management	Quantitative	Number	EM-MM-150a.9
	Description of waste and hazardous materials management policies and procedures for active and inactive operations	Discussion and Analysis	n/a	EM-MM-150a.10
Biodiversity Impacts	Description of environmental management policies and practices for active sites	Discussion and Analysis	n/a	EM-MM-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-MM-160a.2

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
	Percentage of (1) proved and (2) probable reserves in or near sites with protected conservation status or endangered species habitat	Quantitative	Percentage (%)	EM-MM-160a.3
Security, Human Rights & Rights of Indigenous Peoples	Percentage of (1) proved and (2) probable reserves in or near areas of conflict	Quantitative	Percentage (%)	EM-MM-210a.1
	Percentage of (1) proved and (2) probable reserves in or near indigenous land	Quantitative	Percentage (%)	EM-MM-210a.2
	Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict	Discussion and Analysis	n/a	EM-MM-210a.3
Community Relations	Discussion of process to manage risks and opportunities associated with community rights and interests	Discussion and Analysis	n/a	EM-MM-210b.1
	Number and duration of non-technical delays	Quantitative	Number, Days	EM-MM-210b.2
Labor Relations	Percentage of active workforce covered under collective bargaining agreements, broken down by U.S. and foreign employees	Quantitative	Percentage (%)	EM-MM-310a.1
	Number and duration of strikes and lockouts <sup>1</sup>	Quantitative	Number, Days	EM-MM-310a.2
Workforce Health & Safety	(1) MSHA all-incidence rate, (2) fatality rate, (3) near miss frequency rate (NMFR) and (4) average hours of health, safety, and emergency response training for (a) full-time employees and (b) contract employees	Quantitative	Rate	EM-MM-320a.1
Business Ethics & Transparency	Description of the management system for prevention of corruption and bribery throughout the value chain	Discussion and Analysis	n/a	EM-MM-510a.1
	Production in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index	Quantitative	Metric tons (t) saleable	EM-MM-510a.2
Tailings Storage Facilities Management	Tailings storage facility inventory table	Quantitative	Various	EM-MM-540a.1
	Description of tailings management systems and governance structure used to monitor and maintain safety of tailings storage facilities	Discussion and Analysis	n/a	EM-MM-540a.2
	Summary of the emergency preparedness and response plan (EPRP) for tailings storage facilities	Discussion and Analysis	n/a	EM-MM-540a.3

<sup>2</sup> Note to **EM-MM-310a.2** – Disclosure shall include a description of the root cause for each work stoppage.

# Waste & Hazardous Materials Management

## Topic Summary

The Metals & Mining industry generates large volumes of non-mineral and mineral waste, including waste rock, tailings, slurries, slags, sludges, smelting, and industrial wastes, some of which may contain substances that are toxic, hazardous, or chemically reactive. Mineral processing sometimes also requires the use of hazardous materials for metal extraction.

Waste produced during mining operations, depending on its type, can be treated, disposed of, or stored off-site or on-site—in impoundments or old mine pits. Improper disposal or storage of hazardous materials or mining waste can present a significant long-term threat to human health and ecosystems through potential contamination of groundwater or surface water that is used for drinking or agriculture purposes. Companies that reduce waste streams while implementing policies to manage risks related to handling hazardous materials may see lower regulatory and litigation risks, remediation liabilities, and costs.

## Accounting Metrics

### EM-MM-150a.4. Total weight of non-mineral waste generated

- 1 The entity shall disclose the total amount, in metric tons, of non-mineral waste it generated.
  - 1.1 Non-mineral waste is defined as anything for which the entity has no further use and which is discarded, intended to be discarded, or released into the environment.
  - 1.2 The scope of 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, tires, batteries, and other solid wastes.
  - 1.3 The scope of non-mineral waste excludes overburden, waste rock, tailings, and gaseous wastes.

### EM-MM-150a.5. Total weight of tailings produced

- 1 The entity shall disclose the total weight, in metric tons, of tailings it produced.
  - 1.1 Tailings are a common by-product of the mineral recovery process.
    - 1.1.1 Tailings usually take the form of a liquid slurry made of fine mineral particles—created when mined ore is crushed, ground, and processed—and water.
  - 1.2 Definition of tailings is aligned with that provided by the [International Council on Mining and Metals \(ICMM\)](#).

### **EM-MM-150a.6. Total weight of waste rock generated**

- 1 The entity shall disclose the total amount, in metric tons, of waste rock it generated.
  - 1.1 Waste rock are mineral materials and low-grade ore with no economic interest at the time of mining.

### **EM-MM-150a.7. Total weight of hazardous waste generated**

- 1 The entity shall disclose the total weight, in metric tons, of waste it generated that was hazardous.
  - 1.1 Hazardous wastes are defined per the legal or regulatory framework(s) applicable within the jurisdiction(s) where the waste is generated.
    - 1.1.1 The entity may use definitions from the United Nations Environment Programme (UNEP) and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989.

### **EM-MM-150a.8. Total weight of hazardous waste that is recycled**

- 1 The entity shall disclose the total weight, in metric tons, of hazardous waste it generated that was recycled.
  - 1.1 Hazardous wastes are defined per the legal or regulatory framework(s) applicable within the jurisdiction(s) where the waste is generated.
    - 1.1.1 The entity may use definitions from the United Nations Environment Programme (UNEP) and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989.
  - 1.2 Recycled materials are defined as waste materials that have been reprocessed or treated by means of production or manufacturing process and made into a final product or a component for incorporation into a product.
    - 1.2.1 This definition is based on the UNEP, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989.
  - 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 as a means to generate energy through direct incineration, with or without other waste, but with recovery of the heat.

## **EM-MM-150a.9. Number of significant incidents associated with hazardous materials and waste management**

- 1 The entity shall disclose the total number of significant incidents associated with handling, storage, transportation, or disposal of hazardous materials used in mineral processing activities and hazardous waste generated.
  - 1.1 The scope of disclosure includes incidents of seepage from tailings facilities that contain meaningful concentration of hazardous raw materials as a result of ore processing and are significant or have an impact; or significant spills or releases into environment that occurred during handling, storage, transportation, use, and/or disposal of raw hazardous materials and that had impacts on environment, employees, and/or surrounding communities.
    - 1.1.1 A meaningful concentration is defined as a concentration that exceeds the concentration limits of applicable local regulatory requirements or industry-wide accepted codes such as [International Cyanide Management Code](#) in regard to cyanide.
    - 1.1.2 Impacts on the on environment, employees, or surrounding communities include, but are not limited to, surface water and ground water contamination and land contamination that required response and remediation, caused adverse impacts on biodiversity, or caused personal injury or death to employees or community members.
  - 1.2 A significant incident is defined as an incident that exceeds volume and concentration limits of local regulatory requirements or industry-accepted codes; or is otherwise included in the entity's financial statements (e.g., due to resulting liabilities) or recorded by the entity as an incident required to be reported by local jurisdictions; or is an event that is significant in the judgment of the operator, even though it did not meet the criteria above.
    - 1.2.1 The entity may disclose its criteria for establishing the threshold in volume and concentration for which it considers an incident significant.
  - 1.3 Hazardous materials and wastes are defined per the legal or regulatory framework(s) applicable within the jurisdiction(s) where materials are used and wastes generated.
    - 1.3.1 Hazardous materials used in direct mineral processing may include, but are not limited to, cyanides, sulfuric acid, hydrochloric acid, nitric acid, ammonia, mercury, and lead.
  - 1.4 Hazardous wastes are defined per the legal or regulatory framework(s) applicable within the jurisdiction(s) where the waste is generated.
    - 1.4.1 The entity may use definitions from the United Nations Environment Programme (UNEP) and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989.



1.5 Mineral processing is defined as the process through which commercially valuable minerals are separated from their ores.

1.5.1 Examples of mineral processing include, but are not limited to, leaching and flotation.

## **EM-MM-150a.10. Description of waste and hazardous materials management policies and procedures for active and inactive operations**

- 1 The entity shall describe the policies and procedures that are set forth by its waste and hazardous materials management strategy.
  - 1.1 The scope of disclosure shall include procedures and policies 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 wastes generated during the extraction and beneficiation of ores and mineral.
    - 1.2.2 Non-mineral waste is defined as all other waste (excluding mineral waste) for which the entity has no further use and which is discarded, intended to be discarded, or released into the environment.
  - 1.3 The scope of hazardous raw materials includes chemicals and materials used for procedures such as leaching and flotation, including, but not limited to, cyanides, sulfuric acid, hydrochloric acid, and nitric acid.
- 2 The entity shall describe how its policies and procedures compare with those required by local jurisdictions that apply to the entity.
  - 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 during entire project life cycle.
  - 3.1 The scope of disclosure shall include, but is not limited to, 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 remediation of environmental or social impacts of incidents associated with the mishandling of hazardous waste disposal; and
  - 3.1.6 Approach to decommissioning waste facilities.
- 4 The entity shall describe its approach to the management of hazardous materials used in processing. The scope of disclosure shall include, but is not limited to:
  - 4.1 Process through which the entity determines which materials are hazardous, including applicable entity-specific policies or applicable regulation;
  - 4.2 Approach to risk assessment of potential impacts associated with handling and use of hazardous materials;
  - 4.3 Policies and procedures related to avoiding and mitigating the risk of spills, seepage, poisoning, accidents, and incidents that could have catastrophic human health, local community, and environmental impacts; and
  - 4.4 Policies and procedures related to remediation of consequences of spills, seepage, poisoning, accidents, and incidents that could have catastrophic human health, local community, and environmental impacts.
- 5 The entity shall include a description of how waste and hazardous materials management efforts are coordinated among business partners (e.g., contractors and subcontractors).
- 6 The entity shall describe how it ensures compliance and conformance with waste and hazardous material management policies and procedures.

# Tailings Storage Facilities Management

## Topic Summary

The Metals & Mining industry faces significant operational hazards, particularly those associated with the integrity of tailings storage facilities (TSFs). A catastrophic failure of such facilities (e.g., a dam failure) can release significant volumes of waste streams and materials that are potentially harmful to the environment, leading to high-consequence impacts on ecosystems, human livelihood, local economies, and communities. Such catastrophic incidents may result in significant financial losses for companies and may erode their social license to operate. Robust processes and approaches to tailings facilities design, management, operation, and closure, as well as appropriate management of associated risks, can help prevent such incidents from occurring. Companies that adopt robust practices to maintain the safety of TSFs may do so through assigning accountability for tailings management at the highest levels of the company, conducting frequent internal and external independent technical reviews of TSFs, and ensuring that 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 should they occur. Company obligations related to long-term remediation and compensation for damages may result in additional financial impacts in case of a failure. A company's ability to meet such obligations after an incident occurs is an additional component of emergency preparedness.

## Accounting Metrics

### EM-MM-540a.1. Tailings storage facility inventory table

- 1 The entity shall disclose inventory of its tailings storage facilities and information concerning its approach to their safety management.
  - 1.1 For the purposes of disclosure, definition of tailings facilities is aligned with that provided in the [Global Industry Standard on Tailings Management \(GISTM\)](#).
- 2 For every one of its tailings facilities, the entity shall disclose (a) name of the facility, (b) location, (c) ownership status, (d) construction year, (e) operational status, (f) Dam Failure Consequence Classification (DFCC) level, (g) date of most recent tailings facility construction and performance review (TFPCR), (h) material findings, (i) mitigation measures, and (j) emergency preparedness and response plan (EPRP).
  - 2.1 The entity shall provide the name or other identifier for the facility that the entity uses.
  - 2.2 Location shall include country and region.
  - 2.3 Ownership status shall indicate whether the entity is the operator of the facility.
    - 2.3.1 For the purposes of disclosure, definition of an operator is aligned with that provided in the [GISTM](#).

- 2.4 The entity shall disclose operational status of its facilities (e.g., active, inactive—under maintenance, closed, etc.).
- 2.5 The entity shall determine the consequence of failure classification of its facilities in accordance with Requirement 4.1 of the *GISTM* and report it in accordance with Requirement 15.1.B.2 of the *GISTM*.
- 2.6 The entity shall provide the year of the most recent TFCPR conducted by the engineer of record or senior independent technical reviewer in accordance with Requirement 10.4 of the *GISTM* and report it in accordance with Requirement 15.1.B.9 of the *GISTM*.
- 2.6.1 For the purposes of disclosure, definition of engineer of record and senior independent technical reviewer are aligned with those provided in the *GISTM*.
- 2.7 The entity shall disclose whether the TFCPR resulted in material findings related to safety of the facility.
- 2.7.1 For the purposes of disclosure, definition of material findings is aligned with that provided in the *GISTM*.
- 2.7.2 For facilities where the TFCPR was conducted, the entity shall respond to this request either “Yes” or “No.”
- 2.7.3 For facilities where the TFCPR was not conducted, the entity shall state “N/A.”
- 2.8 The entity shall disclose whether mitigation measures were taken to reduce both the probability and the consequences of a tailings facility failure in order to reduce the risk to a level as low as reasonably practicable (ALARP) in accordance with Requirement 15.1.B.6 of the *GISTM*.
- 2.8.1 For the purposes of disclosure, definition of mitigation measures is aligned with the definition of mitigation hierarchy provided in the *GISTM*.
- 2.8.2 The entity shall respond to this request either “Yes” or “No.”
- 2.9 The entity shall disclose whether a site-specific tailings facility EPRP is in place in accordance with Requirements 13.1 and 13.2 of the *GISTM* and report it in accordance with Requirement 15.1.B.8 of the *GISTM*.
- 2.9.1 For the purposes of disclosure, definition of EPRP is aligned with that provided in the *GISTM*.
- 2.9.2 The entity shall respond to this request either “Yes” or “No.”
- 3 The entity shall consider the above references to the *GISTM* to be normative references; thus, any future updates made to them shall be considered updates to this guidance.
- 4 The entity may disclose inventory of its tailings facilities and information concerning its approach to their safety management in the following table format:

(a) Facility name	(b) Location	(c) Ownership status	(d) Construction year	(e) Operational status	(f) DFCC level	(g) Date of most recent TFCCR	(h) Material findings	(i) Mitigation measures	(j) EPRP

## EM-MM-540a.2. Description of tailings management systems and governance structure used to monitor and maintain safety of tailings storage facilities

- 1 The entity shall provide a description of tailings management systems used to monitor and maintain the structural integrity of tailings facilities and to minimize the risk of a catastrophic failure.
  - 1.1 The scope of disclosure shall include procedures and policies for the entity's active and inactive tailings facilities for all phases of their life cycle, including closure and post-closure.
  - 1.2 For the purposes of disclosure, definition of tailings management systems is aligned with that provided in the [Global Industry Standard on Tailings Management \(GISTM\)](#).
  - 1.3 For the purposes of disclosure, definition of tailings facilities is aligned with that provided in the GISTM.
- 2 The disclosure shall be aligned and provided in accordance with Principles 7–11 of the *GISTM* and include, but not be limited to:
  - 2.1 Description of the performance monitoring program for the tailings facility and its appurtenant structures;
  - 2.2 Description of the engineering monitoring system that is appropriate for verifying design assumptions and monitoring potential failure modes;
  - 2.3 Risk assessment frequency and frequency of reviews and internal audits to verify consistent implementation of company procedures, guidelines, and corporate governance requirements;
  - 2.4 Frequency of engineer of record or senior independent technical reviewer construction and performance reviews;
    - 2.4.1 For the purposes of disclosure, definition of engineer of record is aligned with that provided in the *GISTM*;
  - 2.5 the governance framework that describes the accountability from management at each facility up to the company's executive leadership and into the board; 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 the tailings facility and its appurtenant structures.

### **EM-MM-540a.3. Summary of the emergency preparedness and response plan (EPRP) for tailings storage facilities**

- 1 The entity shall disclose a summary of its EPRP for tailings storage facilities.
  - 1.1 The scope of 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 life cycle, including closure and post-closure.
  - 1.2 For the purposes of disclosure, the definition of tailings facilities is aligned with that provided in the *Global Industry Standard on Tailings Management (GISTM)*.
- 2 The entity shall disclose its approach to ensuring the effectiveness of the EPRP at the site-specific level.
  - 2.1 Disclosure shall include, but be not limited to:
    - 2.1.1 The entity's approach to development of site-specific emergency response plans;
    - 2.1.2 The entity's approach to training the workforce and educating the potentially affected communities on the risks of a failure, if probability of such is determined by an annual technical tailings facility performance review; and
    - 2.1.3 The entity's frequency of emergency response plan tests and evacuation exercises to minimize consequences of a potential failure.
- 3 The disclosure shall be aligned and provided in accordance with Requirement 15.1.B.8 of the *GISTM*.
  - 3.1 For each existing tailings facility, and in accordance with Principle 21 of the United Nations Guiding Principles on Business and Human Rights (UNGPs), the entity shall provide a summary version of the tailings facility EPRP for facilities that have a credible failure mode(s) that could lead to a flow failure event that (i) is informed by credible flow failure scenarios from the tailings facility breach analysis; (ii) includes emergency response measures that apply to project affected people as identified through the tailings facility breach analysis and involve cooperation with public sector agencies; and (iii) excludes details of emergency preparedness measures that apply to the entity's assets or confidential information (Requirements 13.1 and 13.2 of the *GISTM*).

# Exposure Draft of Proposed Changes to the Coal Operations Standard

## About this Exposure Draft

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

This exposure draft does not include the entirety of the standard. The following Sustainability Disclosure Topics & Accounting Metrics Table reflects the complete set of disclosure topics and metrics, including the proposed changes, for this industry. The subsequent sections of this exposure draft include only the disclosure topics, metrics and technical protocols that are relevant to the proposed changes.

The public comment period lasts for 90 days, beginning on December 17, 2020, and ending on March 17, 2021. The Standard is subject to change thereafter.

Please use the public comments form on the [Tailings Management in Extractives project page](#) on the SASB website or email comments to [comments@sasb.org](mailto:comments@sasb.org) with the subject "Tailings Management in Extractives Exposure Draft."

Prepared by the Sustainability Accounting Standards Board

December 2020

## SUSTAINABILITY DISCLOSURE TOPICS & ACCOUNTING METRICS

**Table 1. Sustainability Disclosure Topics & Accounting Metrics**

TOPIC	ACCOUNTING 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 <sub>2</sub> -e, Percentage (%)	EM-CO-110a.1
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	EM-CO-110a.2
Water Management	(1) Total fresh water withdrawn, (2) percentage recycled, (3) percentage in regions with High or Extremely High Baseline Water Stress	Quantitative	Thousand cubic meters (m <sup>3</sup> ), 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 tons (t)	EM-CO-150a.2
	Total weight of tailings produced	Quantitative	Metric tons (t)	EM-CO-150a.3
	Total weight of waste rock generated	Quantitative	Metric tons (t)	EM-CO-150a.4
	Total weight of hazardous waste generated	Quantitative	Metric tons (t)	EM-CO-150a.5
	Total weight of hazardous waste that is recycled	Quantitative	Metric tons (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
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



TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
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
	Number and duration of non-technical delays	Quantitative	Number, Days	EM-CO-210b.2
Labor Relations	Percentage of active workforce covered under collective bargaining agreements, broken down by U.S. and foreign employees	Quantitative	Percentage (%)	EM-CO-310a.1
	Number and duration of lockouts <sup>1</sup>	Quantitative	Number, Days	EM-CO-310a.2
Workforce Health & Safety	(1) MSHA All-Incidence rate, (2) fatality rate, and (3) near miss frequency rate (NMFR)	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 tons (Mt)	EM-CO-420a.1
	Estimated carbon dioxide emissions embedded in proven coal reserves	Quantitative	Metric tons (t) CO <sub>2</sub> -e	EM-CO-420a.2
	Discussion of how price and demand for coal and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets	Discussion and Analysis	n/a	EM-CO-420a.3
Tailings Storage Facilities Management	Tailings storage facility inventory table	Quantitative	Various	EM-CO-540a.1
	Description of tailings management systems and governance structure used to monitor and maintain safety of tailings storage facilities	Discussion and Analysis	n/a	EM-CO-540a.2
	Summary of the emergency preparedness and response plan (EPRP) for tailings storage facilities	Discussion and Analysis	n/a	EM-CO-540a.3

<sup>1</sup> Note to **EM-CO-310a.2** – Disclosure shall include the number, duration, and reason for the stoppage.

# Waste Management

## Topic Summary

The Coal Operations industry generates large volumes of non-mineral and mineral waste, including solid rock and clay waste, process refuse, and liquid coal waste, which may contain toxic elements such as mercury, arsenic, or cadmium. Waste produced during coal mining and processing operations, depending on its type, can be treated, disposed of, or stored off-site or on-site—in impoundments or old mine pits. Improper disposal or storage of hazardous materials or mining waste can present a significant long-term threat to human health and ecosystems through potential contamination of groundwater or surface water that is used for drinking or agriculture purposes. This poses operational and regulatory challenges for coal operations companies. Companies that reduce waste streams while implementing policies to manage risks related to waste that contains heavy metals and that have rigorous hazardous waste disposal practices may see lower regulatory and litigation risks, remediation liabilities, and costs.

## Accounting Metrics

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

- 1 The entity shall disclose the total amount, in metric tons, of non-mineral waste it generated.
  - 1.1 Non-mineral waste is defined as anything for which the entity has no further use and which is discarded, intended to be discarded, or released into the environment.
  - 1.2 The scope of 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, tires, 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 tons, of tailings it produced.
  - 1.1 Tailings are a by-product of the mineral recovery process.
    - 1.1.1 Tailings usually take the form of a liquid slurry made of fine mineral particles—created when mined ore is crushed, ground, and processed—and water.
  - 1.2 Definition of tailings is aligned with that provided by International [Council on Mining and Metals \(ICMM\)](#).

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

- 1 The entity shall disclose the total amount, in metric tons, of waste rock it generated.
  - 1.1 Waste rock are mineral materials and low-grade ore with no economic interest 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 tons, of waste it generated that was hazardous.
  - 1.1 Hazardous wastes are defined per the legal or regulatory framework(s) applicable within the jurisdiction(s) where the waste is generated.
    - 1.1.1 The entity may use definitions from the United Nations Environment Programme (UNEP) and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989.

#### **EM-CO-150a.6. Total weight of hazardous waste that is recycled**

- 1 The entity shall disclose the total weight, in metric tons, of hazardous waste it generated that was recycled.
  - 1.1 Hazardous wastes are defined per the legal or regulatory framework(s) applicable within the jurisdiction(s) where the waste is generated.
    - 1.1.1 The entity may use definitions from the United Nations Environment Programme (UNEP) and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989.
  - 1.2 Recycled materials are defined as waste materials that have been reprocessed or treated by means of production or manufacturing process and made into a final product or a component for incorporation into a product.
    - 1.2.1 This definition is based on the UNEP, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989.
  - 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 as a means to generate energy through direct incineration, with or without other waste, but with recovery of the heat.

## **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 handling, storage, transportation, or disposal of hazardous waste.
  - 1.1 The scope of disclosure includes incidents of mishandling and improper disposal of hazardous waste that are significant or have impacts on the environment, employees, and/or surrounding communities.
    - 1.1.1 Impacts on the on environment, employees, or surrounding communities include, but are not limited to, surface water and ground water contamination and land contamination that required response and remediation, caused adverse impacts on biodiversity, or caused personal injury or death to employees or community members.
  - 1.2 A significant incident is defined as an incident that exceeds volume and concentration limits of local regulatory requirements or industry-accepted codes; or is otherwise included in the entity's financial statements (e.g., due to resulting liabilities) or recorded by the entity as an incident required to be reported by local jurisdictions; or is an event that is significant in the judgment of the operator, even though it did not meet the criteria above.
    - 1.2.1 The entity may disclose its criteria for establishing the threshold in volume and concentration for which it considers an incident significant.
  - 1.3 Hazardous wastes are defined per the legal or regulatory framework(s) applicable within the jurisdiction(s) where the waste is generated.
    - 1.3.1 The entity may use definitions from the United Nations Environment Programme (UNEP) and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989.

## **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 that are set forth by its waste management strategy.
  - 1.1 The scope of disclosure shall include procedures and policies 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 wastes generated during the extraction and beneficiation of ores and mineral.
    - 1.2.2 Non-mineral waste is defined as all other waste (excluding mineral waste) for which the entity has no further use and which 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 by local jurisdictions that apply to the entity.
  - 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 during entire project life cycle.
  - 3.1 The scope of disclosure shall include, but is not limited to, 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 remediation of environmental or social impacts of incidents associated with the mishandling of hazardous waste disposal; 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 (e.g., contractors and subcontractors).
- 5 The entity shall describe how it ensures compliance and conformance with waste management policies and procedures.

# 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 when mismanaged, leading to potential adverse impacts to the environment or human health. These impacts may carry financial implications such as regulatory penalties, compensation payments, and remediation or compliance obligations. Companies' ability to lower the number and size of fine coal refuse ponds and ensure the structural integrity of impoundments can help minimize such impacts. Even though the type of materials stored in coal refuse impoundments are characterized with lower flowability than those in the Metals & Mining industry, a catastrophic failure of such facilities (e.g., a dam failure) can still release significant volumes of waste and materials that are potentially harmful to the environment, leading to high-consequence impacts on ecosystems, human livelihood, local economies, and communities. Such catastrophic incidents may result in significant financial losses for companies and may erode their social license to operate. Robust processes and approaches to tailings facilities design, management, operation and closure, as well as appropriate management of associated risks, can help prevent such incidents from occurring. Companies that adopt robust practices to maintain the safety of TSFs may do so through assigning accountability for tailings management at the highest levels of the company, conducting frequent internal and external independent technical reviews of TSFs, and ensuring that 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 should they occur. Company obligations related to long-term remediation and compensation for damages may result in additional financial impacts in case of a failure. A company's ability to meet such obligations after an incident occurs is an additional component of emergency preparedness.

## Accounting Metrics

### EM-CO-540a.1. Tailings storage facility inventory table

- 1 The entity shall disclose inventory of its tailings storage facilities and information concerning its approach to their safety management.
  - 1.1 For the purposes of disclosure, definition of tailings facilities is aligned with that provided in the [Global Industry Standard on Tailings Management \(GISTM\)](#).
- 2 For every one of its tailings facilities, the entity shall disclose (a) name of the facility, (b) location, (c) ownership status, (d) construction year, (e) operational status, (f) Dam Failure Consequence Classification (DFCC) level, (g) date of most recent tailings facility construction and performance review (TFPCR), (h) material findings, (i) mitigation measures, and (j) emergency preparedness and response plan (EPRP).
  - 2.1 The entity shall provide the name or other identifier for the facility that the entity uses.

- 2.2 Location shall include country and region.
- 2.3 Ownership status shall indicate whether the entity is the operator of the facility.

- 2.3.1 For the purposes of disclosure, definition of an operator is aligned with that provided in the *GISTM*.

The entity shall disclose operational status of its facilities (e.g., active, inactive—under maintenance, closed, etc.).

- 2.5 The entity shall determine the consequence of failure classification of its facilities in accordance with Requirement 4.1 of the *GISTM* and report it in accordance with Requirement 15.1.B.2 of the *GISTM*.
- 2.6 The entity shall provide the year of the most recent TFCPR conducted by the engineer of record or senior independent technical reviewer in accordance with Requirement 10.4 of the *GISTM* and report it in accordance with Requirement 15.1.B.9 of the *GISTM*.
  - 2.6.1 For the purposes of disclosure, definition of engineer of record and senior independent technical reviewer are aligned with those provided in the *GISTM*.
- 2.7 The entity shall disclose whether the TFCPR resulted in material findings related to safety of the facility.
  - 2.7.1 For the purposes of disclosure, definition of material findings is aligned with that provided in the *GISTM*.
  - 2.7.2 For facilities where the TFCPR was conducted, the entity shall respond to this request either “Yes” or “No.”
  - 2.7.3 For facilities where the TFCPR was not conducted, the entity shall state “N/A.”
- 2.8 The entity shall disclose whether mitigation measures were taken to reduce both the probability and the consequences of a tailings facility failure in order to reduce the risk to a level as low as reasonably practicable (ALARP) in accordance with Requirement 15.1.B.6 of the *GISTM*.
  - 2.8.1 For the purposes of disclosure, definition of mitigation measures is aligned with the definition of mitigation hierarchy provided in the *GISTM*.
  - 2.8.2 The entity shall respond to this request either “Yes” or “No.”
- 2.9 The entity shall disclose whether a site-specific tailings facility EPRP is in place in accordance with Requirements 13.1 and 13.2 of the *GISTM* and report it in accordance with Requirement 15.1.B.8 of the *GISTM*.
  - 2.9.1 For the purposes of disclosure, definition of EPRP is aligned with that provided in the *GISTM*.
  - 2.9.2 The entity shall respond to this request either “Yes” or “No.”

- 3 The entity shall consider the above references to the *GISTM* to be normative references; thus, any future updates made to them shall be considered updates to this guidance.
- 4 The entity may disclose inventory of its tailings facilities and information concerning its approach to their safety management in the following table format:

(a) Facility name	(b) Location	(c) Ownership status	(d) Construction year	(e) Operational status	(f) DFCC level	(g) Date of most recent TFCPR	(h) Material findings	(i) Mitigation measures	(i) EPRP

### **EM-CO-540a.2. Description of tailings management systems and governance structure used to monitor and maintain safety of tailings storage facilities**

- 1 The entity shall provide a description of tailings management systems used to monitor and maintain the structural integrity of tailings facilities and to minimize the risk of a catastrophic failure.
  - 1.1 The scope of disclosure shall include procedures and policies for the entity's active and inactive tailings facilities for all phases of their life cycle, including closure and post-closure.
  - 1.2 For the purposes of disclosure, definition of tailings management systems is aligned with that provided in the [Global Industry Standard on Tailings Management \(GISTM\)](#).
  - 1.3 For the purposes of disclosure, definition of tailings facilities is aligned with that provided in the [GISTM](#).
- 2 The disclosure shall be aligned and provided in accordance with Principles 7–11 of the *GISTM* and include, but not be limited to:
  - 2.1 Description of the performance monitoring program for the tailings facility and its appurtenant structures;
  - 2.2 Description of the engineering monitoring system that is appropriate for verifying design assumptions and monitoring potential failure modes;
  - 2.3 Risk assessment frequency and frequency of reviews and internal audits to verify consistent implementation of company procedures, guidelines, and corporate governance requirements;
  - 2.4 Frequency of engineer of record or senior independent technical reviewer construction and performance reviews;
    - 2.4.1 For the purposes of disclosure, definition of engineer of record is aligned with that provided in the *GISTM*;



- 2.5 The governance framework that describes the accountability from management at each facility up to the company's executive leadership and into the board; 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 the tailings facility and its appurtenant structures.

### **EM-CO-540a.3. Summary of the emergency preparedness and response plan (EPRP) for tailings storage facilities**

- 1 The entity shall disclose a summary of its EPRP for tailings storage facilities.
  - 1.1 The scope of 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 life cycle, including closure and post-closure.
  - 1.2 For the purposes of disclosure, the definition of tailings facilities is aligned with that provided in the *Global Industry Standard on Tailings Management (GISTM)*.
- 2 The entity shall disclose its approach to ensuring the effectiveness of the EPRP at the site-specific level.
  - 2.1 Disclosure shall include, but be not limited to:
    - 2.1.1 The entity's approach to development of site-specific emergency response plans;
    - 2.1.2 The entity's approach to training the workforce and educating the potentially affected communities on the risks of a failure, if probability of such is determined by an annual technical tailings facility performance review; and
    - 2.1.3 The entity's frequency of emergency response plan tests and evacuation exercises to minimize consequences of a potential failure.
- 3 The disclosure shall be aligned and provided in accordance with Requirement 15.1.B.8 of the *GISTM*.
  - 3.1 For each existing tailings facility, and in accordance with Principle 21 of United Nations Guiding Principles on Business and Human Rights (UNGPs), the entity shall provide a summary version of the tailings facility EPRP for facilities that have a credible failure mode(s) that could lead to a flow failure event that (i) is informed by credible flow failure scenarios from the tailings facility breach analysis; (ii) includes emergency response measures that apply to project affected people as identified through the tailings facility breach analysis and involve cooperation with public sector agencies; and (iii) excludes details of emergency preparedness measures that apply to the entity's assets or confidential information (Requirements 13.1 and 13.2 of the *GISTM*).

## Appendix: Redline Version of Proposed Changes

The following appendix contains redline versions of proposed changes for the Metals & Mining and Coal Operations Standards. Given the proposed changes are on revisions to disclosure topics and the addition and removal of entire metrics, the redline of the corresponding topic summaries and table of sustainability disclosure topics and accounting metrics are exclusively provided, as opposed to a redline of the complete exposure draft standard. All respondents are encouraged to review the entirety of the exposure drafts above to understand the proposed definitions and methodologies as communicated in the standards.

# Metals & Mining Standard

## SUSTAINABILITY DISCLOSURE TOPICS & ACCOUNTING METRICS

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
<b>Greenhouse Gas Emissions</b>	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	Quantitative	Metric tons (t) CO <sub>2</sub> -e,	EM-MM-110a.1
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	EM-MM-110a.2
<b>Air Quality</b>	Air emissions of the following pollutants: (1) CO, (2) NO <sub>x</sub> (excluding N <sub>2</sub> O), (3) SO <sub>x</sub> , (4) particulate matter (PM <sub>10</sub> ), (5) mercury (Hg), (6) lead (Pb), and (7) volatile organic compounds (VOCs)	Quantitative	Metric tons (t)	EM-MM-120a.1
<b>Energy Management</b>	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable	Quantitative	Gigajoules (GJ), Percentage (%)	EM-MM-130a.1
<b>Water Management</b>	(1) Total fresh water withdrawn, (2) total fresh water consumed, percentage of each in regions with High or Extremely High Baseline Water	Quantitative	Thousand cubic meters (m <sup>3</sup> ), 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
<b>Waste &amp; Hazardous Materials Management</b>	<del>Total weight of tailings waste, percentage recycled</del>	<del>Quantitative</del>	<del>Metric tons (t), Percentage (%)</del>	<del>EM-MM-150a.1</del>
	<del>Total weight of mineral processing waste, percentage recycled</del>	<del>Quantitative</del>	<del>Metric tons (t), Percentage (%)</del>	<del>EM-MM-150a.2</del>
	<del>Number of tailings impoundments, broken down by MSHA hazard potential</del>	<del>Quantitative</del>	<del>Number</del>	<del>EM-MM-150a.3</del>
	<del>Total weight of non-mineral waste generated</del>	<del>Quantitative</del>	<del>Metric tons (t)</del>	<del>EM-MM-150a.4</del>
	<del>Total weight of tailings produced</del>	<del>Quantitative</del>	<del>Metric tons (t)</del>	<del>EM-MM-150a.5</del>
	<del>Total weight of waste rock generated</del>	<del>Quantitative</del>	<del>Metric tons (t)</del>	<del>EM-MM-150a.6</del>
	<del>Total weight of hazardous waste generated</del>	<del>Quantitative</del>	<del>Metric tons (t)</del>	<del>EM-MM-150a.7</del>
	<del>Total weight of hazardous waste that is recycled</del>	<del>Quantitative</del>	<del>Metric tons (t)</del>	<del>EM-MM-150a.8</del>
	<del>Number of significant incidents associated with hazardous materials and waste management</del>	<del>Quantitative</del>	<del>Number</del>	<del>EM-MM-150a.9</del>
	<del>Description of waste and hazardous materials management policies and procedures for active and inactive operations</del>	<del>Discussion and Analysis</del>	<del>n/a</del>	<del>EM-MM-150a.10</del>

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
<b>Biodiversity Impacts</b>	Description of environmental management policies and practices for active sites	Discussion and Analysis	n/a	EM-MM-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-MM-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-MM-160a.3
<b>Security, Human Rights &amp; Rights of Indigenous Peoples</b>	Percentage of (1) proved and (2) probable reserves in or near areas of conflict	Quantitative	Percentage (%)	EM-MM-210a.1
	Percentage of (1) proved and (2) probable reserves in or near indigenous land	Quantitative	Percentage (%)	EM-MM-210a.2
	Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict	Discussion and Analysis	n/a	EM-MM-210a.3
<b>Community Relations</b>	Discussion of process to manage risks and opportunities associated with community rights and interests	Discussion and Analysis	n/a	EM-MM-210b.1
	Number and duration of non-technical delays	Quantitative	Number, Days	EM-MM-210b.2
<b>Labor Relations</b>	Percentage of active workforce covered under collective bargaining agreements, broken down by U.S. and foreign employees	Quantitative	Percentage (%)	EM-MM-310a.1
	Number and duration of strikes and lockouts <sup>1</sup>	Quantitative	Number, Days	EM-MM-310a.2
<b>Workforce Health &amp; Safety</b>	(1) MSHA all-incidence rate, (2) fatality rate, (3) near miss frequency rate (NMFR) and (4) average hours of health, safety, and emergency response training for (a) full-time employees and (b) contract employees	Quantitative	Rate	EM-MM-320a.1
<b>Business Ethics &amp; Transparency</b>	Description of the management system for prevention of corruption and bribery throughout the value chain	Discussion and Analysis	n/a	EM-MM-510a.1
	Production in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index	Quantitative	Metric tons (t) saleable	EM-MM-510a.2
<b>Tailings Storage Facilities Management</b>	<a href="#">Tailings storage facility inventory table</a>	<a href="#">Quantitative</a>	<a href="#">Various</a>	<a href="#">EM-MM-540a.1</a>
	<a href="#">Description of tailings management systems and governance structure used to monitor and maintain safety of tailings storage facilities</a>	<a href="#">Discussion and Analysis</a>	<a href="#">n/a</a>	<a href="#">EM-MM-540a.2</a>
	<a href="#">Summary of the emergency preparedness and response plan (EPRP) for tailings storage facilities</a>	<a href="#">Discussion and Analysis</a>	<a href="#">n/a</a>	<a href="#">EM-MM-540a.3</a>

<sup>1</sup> Note to **EM-MM-310a.2** – Disclosure shall include the number, duration, and reason for the stoppage

# Waste & Hazardous Materials Management

## Topic Summary

The Metals & Mining industry generates large volumes of non-mineral processing and smelting wastes, including slags and tailings and mineral waste, including waste rock, tailings, slurries, slags, sludges, smelting, and industrial wastes, some of which may be hazardous contain substances that are toxic, hazardous, or chemically reactive. Impoundments for tailings can cover large areas of land. This Mineral processing sometimes also requires the use of hazardous materials for metal extraction. Waste produced during mining operations, depending on its type, can be treated, disposed of, or stored off-site or on-site—in impoundments or old mine pits. Improper disposal or storage of hazardous materials or mining waste can present a significant threat if the impoundments burst, collapse, or leak, leading to the loss of life or damage to property and ecosystems. Mineral wastes are also often stored in pit, using abandoned open pit surface mines. Such storage can create the potential for groundwater contamination and could affect the stability of active mines in the area long-term threat to human health and ecosystems through potential contamination of groundwater or surface water that is used for drinking or agriculture purposes. Companies that reduce and recycle waste streams while implementing policies to manage risks related to the integrity of tailings facilities may enjoy handling hazardous materials may see lower regulatory and litigation risks, remediation liabilities, and costs. Additionally, tailings can contain hazardous chemical residues from extraction and processing operations. Companies' ability to manage the sourcing, transport, use, and disposal of mining and metal processing chemicals and by-products can reduce associated risks.

## Tailings Storage Facilities Management

### **Topic Summary**

The Metals & Mining industry faces significant operational hazards, particularly those associated with the integrity of tailings storage facilities (TSFs). A catastrophic failure of such facilities (e.g., a dam failure) can release significant volumes of waste streams and materials that are potentially harmful to the environment, leading to high-consequence impacts on ecosystems, human livelihood, local economies, and communities. Such catastrophic incidents may result in significant financial losses for companies and may erode their social license to operate. Robust processes and approaches to tailings facilities design, management, operation, and closure, as well as appropriate management of associated risks, can help prevent such incidents from occurring. Companies that adopt robust practices to maintain the safety of TSFs may do so through assigning accountability for tailings management at the highest levels of the company, conducting frequent internal and external independent technical reviews of TSFs, and ensuring that 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 should they occur. Company obligations related to long-term remediation and compensation for damages may result in additional financial impacts in case of a failure. A company's ability to meet such obligations after an incident occurs is an additional component of emergency preparedness.

# Coal Operations Standard

## SUSTAINABILITY DISCLOSURE TOPICS & ACCOUNTING METRICS

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	Quantitative	Metric tons CO <sub>2</sub> -e, Percentage (%)	EM-CO-110a.1
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	EM-CO-110a.2
Water Management	Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic meters (m <sup>3</sup> ), Percentage (%)	EM-CO-140a.1
	Number of incidents of non-compliance with water-quality permits, standards, and regulations	Quantitative	Number	EM-CO-140a.2
Waste Management	<del>Number of tailings impoundments by MSHA hazard potential</del>	<del>Quantitative</del>	<del>Number</del>	<del>EM-CO-150a.1</del>
	<u>Total weight of non-mineral waste generated</u>	<u>Quantitative</u>	<u>Metric tons (t)</u>	<u>EM-CO-150a.2</u>
	<u>Total weight of tailings produced</u>	<u>Quantitative</u>	<u>Metric tons (t)</u>	<u>EM-CO-150a.3</u>
	<u>Total weight of waste rock generated</u>	<u>Quantitative</u>	<u>Metric tons (t)</u>	<u>EM-CO-150a.4</u>
	<u>Total weight of hazardous waste generated</u>	<u>Quantitative</u>	<u>Metric tons (t)</u>	<u>EM-CO-150a.5</u>
	<u>Total weight of hazardous waste that is recycled</u>	<u>Quantitative</u>	<u>Metric tons (t)</u>	<u>EM-CO-150a.6</u>
	<u>Number of significant incidents associated with hazardous waste management</u>	<u>Quantitative</u>	<u>Number</u>	<u>EM-CO-150a.7</u>
	<u>Description of waste management policies and procedures for active and inactive operations</u>	<u>Discussion and Analysis</u>	<u>n/a</u>	<u>EM-CO-150a.8</u>
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, (3) under treatment or remediation	Quantitative	Percentage (%)	EM-CO-160a.2
	Percentage of (1) proven and (2) probable reserves in or near sites with protected conservation status or endangered species habitat	Quantitative	Percentage (%)	EM-CO-160a.3

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
<b>Rights of Indigenous Peoples</b>	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
<b>Community Relations</b>	Discussion of process to manage risks and opportunities associated with community rights and interests	Discussion and Analysis	n/a	EM-CO-210b.1
	Number and duration of non-technical delays	Quantitative	Numbers, Days	EM-CO-210b.2
<b>Labor Relations</b>	Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees	Quantitative	Percentage (%)	EM-CO-310a.1
	Number and duration of strikes and lockouts <sup>1</sup>	Quantitative	Number, Days	EM-CO-310a.2
<b>Workforce Health &amp; Safety</b>	(1) MSHA All-Incidence Rate, (2) fatality rate, and (3) near-miss frequency rate (NMFR)	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
<b>Reserves Valuation &amp; Capital Expenditures</b>	Sensitivity of coal reserve levels to future price projection scenarios that account for a price on carbon emissions	Quantitative	Million metric tons (Mt)	EM-CO-420a.1
	Estimated carbon dioxide emissions embedded in proven coal reserves	Quantitative	Metric tons (t) CO <sub>2</sub> -e	EM-CO-420a.2
	Discussion of how price and demand for coal and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets	Discussion & Analysis	n/a	EM-CO-420a.3
<b>Tailings Storage Facilities Management</b>	<a href="#">Tailings storage facility inventory table</a>	<a href="#">Quantitative</a>	<a href="#">Various</a>	<a href="#">EM-CO-540a.1</a>
	<a href="#">Description of tailings management systems and governance structure used to monitor and maintain safety of tailings storage facilities</a>	<a href="#">Discussion and Analysis</a>	<a href="#">n/a</a>	<a href="#">EM-CO-540a.2</a>
	<a href="#">Summary of the emergency preparedness and response plan (EPRP) for tailings storage facilities</a>	<a href="#">Discussion and Analysis</a>	<a href="#">n/a</a>	<a href="#">EM-CO-540a.3</a>

<sup>1</sup> Note to **EM-CO-310a.2** – Disclosure shall include the number, duration, and reason for the stoppage



# Waste Management

## Topic Summary

~~Handling of~~The Coal Operations industry generates large volumes of non-mineral and mineral waste, including solid rock and clay waste, process refuse, and liquid coal waste ~~containing hazardous substances like~~ , which may contain toxic elements such as mercury, arsenic, and cadmium ~~poses operational and regulatory challenges for coal operations companies. Coal slurry or tailings ponds or~~ cadmium. Waste produced during coal mining and processing operations, depending on its type, can be treated, disposed of, or stored off-site or on-site—in impoundments or old mine pits. ~~Improper disposal or storage of hazardous materials or mining waste~~ can present a significant threat if the impoundments burst, collapse, or leak, leading to destruction of lives, property, and ecosystems, with associated financial impacts that may include regulatory penalties, compensation payments, and remediation or compliance obligations. ~~Permitting of mining operations may be affected, lowering a company's revenue or requiring additional expenditures prior to approval. Companies' ability to lower the number and size of tailings ponds and ensure the structural integrity of impoundments can help minimize such impacts.~~ ~~long-term threat to human health and ecosystems through potential contamination of groundwater or surface water that is used for drinking or agriculture purposes. This poses operational and regulatory challenges for coal operations companies. Companies that reduce waste streams while implementing policies to manage risks related to waste that contains heavy metals and that have rigorous hazardous waste disposal practices may see lower regulatory and litigation risks, remediation liabilities, and costs.~~

# 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 when mismanaged, leading to potential adverse impacts to the environment or human health. These impacts may carry financial implications such as regulatory penalties, compensation payments, and remediation or compliance obligations. Companies' ability to lower the number and size of fine coal refuse ponds and ensure the structural integrity of impoundments can help minimize such impacts. Even though the type of materials stored in coal refuse impoundments are characterized with lower flowability than those in the Metals & Mining industry, a catastrophic failure of such facilities (e.g., a dam failure) can still release significant volumes of waste and materials that are potentially harmful to the environment, leading to high-consequence impacts on ecosystems, human livelihood, local economies, and communities. Such catastrophic incidents may result in significant financial losses for companies and may erode their social license to operate. Robust processes and approaches to tailings facilities design, management, operation and closure, as well as appropriate management of associated risks, can help prevent such incidents from occurring. Companies that adopt robust practices to maintain the safety of TSFs may do so through assigning accountability for tailings management at the highest levels of the company, conducting frequent internal and external independent technical reviews of TSFs, and ensuring that 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 should they occur. Company obligations related to long-term remediation and compensation for damages may result in additional financial impacts in case of a failure. A company's ability to meet such obligations after an incident occurs is an additional component of emergency preparedness.

2020 EXPOSURE DRAFT

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