Initiative for Responsible Mining Assurance

Excerpt from the DRAFT Standard for Responsible Mining and Mineral Processing 2.0

Chapter 4.5 – Greenhouse Gas Emissions and Energy Consumption

Context & Disclaimer on IRMA DRAFT Standard 2.0

IRMA DRAFT Standard for Responsible Mining and Minerals Processing 2.0 is being released for public consultation, inviting the world to join in a conversation around expectations that drive value for greater environmental and social responsibility in mining and mineral processing.

This draft document invites a global conversation to improve and update the 2018 IRMA Standard for Responsible Mining Version 1.0. It is not a finished document, nor seeking final review, but rather is structured to invite a full range of questions, comments and recommendations to improve the IRMA Standard.

This IRMA DRAFT Standard for Responsible Mining and Minerals Processing (v.2.0) has been prepared and updated by the IRMA Secretariat based on learnings from the implementation of the Standard (v.1.0), experience from the first mines independently audited, evolving expectations for best practices in mining to reduce harm, comments and recommendations received from stakeholders and Indigenous rights holders, and the input of subject-specific expert Working Groups convened by IRMA in 2022.

IRMA's Standard has a global reputation for comprehensive in-depth coverage addressing the range of impacts, as well as opportunities for improved benefit sharing, associated with industrial scale mining. This consultation draft proposes a number of new requirements; some may wonder whether IRMA's Standard already includes too many requirements. The proposed additions are suggested for a range of reasons (explained in the text following), including improving auditability by separating multiple expectations that were previously bundled into a single requirement, addressing issues that previously weren't sufficiently covered (e.g. gender, greenhouse gas emissions), and providing more opportunities for mining companies to receive recognition for efforts to improve social and environmental protection.

Please note, expert Working Groups were created to catalyze suggestions for solutions on issues we knew most needed attention in this update process. They were not tasked to come to consensus nor make formal recommendations. Their expertise has made this consultation document wiser and more focused, but work still lies ahead to resolve challenging issues. We encourage all readers to share perspectives to improve how the IRMA system can serve as a tool to promote greater environmental and social responsibility, and create value for improved practices, where mining and minerals processing happens.

The DRAFT Standard 2.0 is thus shared in its current form to begin to catalyze global conversation and stakeholder input. It does not represent content that has been endorsed by IRMA's multistakeholder Board of Directors. IRMA's Board leaders seek the wisdom and guidance of all readers to answer the questions in this document and inform this opportunity to improve the IRMA Standard for Responsible Mining.

IRMA is dedicated to a participatory process including public consultation with a wide range of affected people globally and seeks feedback, comments, questions, and recommendations for improvement of this Standard. IRMA believes that diverse participation and input is a crucial and determining factor in the effectiveness of a Standard that is used to improve environmental and social performance in a sector. To this end, every submission received will be reviewed and considered.

The DRAFT Standard 2.0 is based on content already in practice in the IRMA Standard for Responsible Mining Version 1.0 (2018) for mines in production, combined with the content drafted in the IRMA Standard for Responsible Mineral Development and Exploration (the 'IRMA-Ready' Standard – Draft v1.0 December 2021) and in the IRMA Standard for Responsible Minerals Processing (Draft v1.0 June 2021).

Chapter Structure

BACKGROUND

Each chapter has a short introduction to the issue covered in the chapter, which may include an explanation of why the issue is important, a description of key issues of concern, and the identification of key aspects of recognized or emerging best practice that the standard aims to reflect.

TERMS USED IN THIS CHAPTER

This is a list of the terms used in the chapter ■ Each term is separated with ■

Terms listed here are identified in the chapter with a dashed underline. And they are defined in the Glossary of Terms at the end of the chapter.

OBJECTIVES/INTENT STATEMENT

A description of the key objectives that the chapter is intended to contribute to or meet.

SCOPE OF APPLICATION

A description of the conditions under which the chapter may or may not be relevant for particular mines or mineral processing sites. If the entity can provide evidence that a chapter is not relevant, that chapter will not need to be included in the scope of the IRMA assessment. A requirement is 'not relevant' if the issue to which a requirement relates is not applicable at the site. For example, requirements related to the use of cyanide would not be relevant at a site at which cyanide is never used.

Chapter Requirements

X.X.X. These are criteria headings

X.X.X.X. And these are the requirements that must be met for an IRMA assessment to be issued and subsequently maintained by a site. Most criteria have more than one requirement. All requirements must be met in order to comply fully with the criterion.

a. Some requirements consist of hierarchical elements:
    i. At more than one level.
    ii. Operations may be required to meet all elements in a list, or one or more of the elements of such a list, as specified.

NOTES

Any additional notes related to the chapter and its requirements are explained here.

GLOSSARY OF TERMS USED IN THIS CHAPTER

Terms used in the chapter are defined here.

ANNEXES AND TABLES

Annexes or Tables are found here.

IRMA Critical Requirements

The 2018 IRMA Standard for Responsible Mining v. 1.0 includes a set of requirements identified as being critical requirements. Operations being audited in the IRMA system must at least substantially meet these critical requirements in order to be recognized as achieving the achievement level of IRMA 50 and higher, and any critical requirements not fully met would need to have a corrective action plan in place describing how the requirement will be fully met within specified time frames.

The 2023 updates to the 2018 Standard may edit some critical requirements in the process of revising and therefore there will be a further review specific to the language and implications of critical requirements that follows the overall Standard review.

Associated Documents

This document is an extract of the full DRAFT IRMA FOR RESPONSIBLE MINING AND MINERAL PROCESSING (Version 2.0) – DRAFT VERSION 1.0, released in October 2023 for a public-comment period. The English-language full version should be taken as the definitive version. IRMA reserves the right to publish corrigenda on its web page, and readers of this document should consult the corresponding web page for corrections or clarifications.

Readers should note that in addition to the DRAFT Standard, there are additional policies and guidance materials maintained in other IRMA documents, such as IRMA's Principles of Engagement and Membership Principles, IRMA Guidance Documents for the Standard or specific chapters in the Standard, IRMA Claims and Communications Policy and other resources. These can be found on the IRMA website in the Resources section. Learn more at responsiblemining.net

Comment on the IRMA Standard

> Comments on the IRMA Standard and system are always welcome.
>
> They may be emailed to IRMA at: comments@responsiblemining.net

Additional information about IRMA is available on our website: responsiblemining.net

Chapter 4.5
Greenhouse Gas Emissions and Energy Consumption

NOTES ON THIS CHAPTER: There are significant changes between this proposed chapter and the 2018 Mining Standard. The changes listed below are being proposed for two primary reasons. First, many stakeholders have commented that IRMA's current chapter does not reflect best practices found in other standards. And second, in the five years since IRMA's 2018 Standard has been in effect, critical actions to limit warming to around 1.5°C and avoid the worst effects of climate change continue to lag behind what is necessary. The mining industry, as with the rest of the world, must make rapid progress during this decade, and IRMA is seeking to promote positive change by adding and strengthening its requirements.

The proposed changes have been informed by IRMA Expert Working Group discussions, a review of requirements in other standards and guidance applicable to the mining and minerals sector, and a survey to mining companies as part of the M3 Standards Partnership, a joint project of IRMA, ResponsibleSteel, the Responsible Jewellery Council and the Mining Association of Canada.

Proposed additions and changes:

- This chapter (and title) has been expanded and now integrates requirements related to energy consumption and efficiency.
- Added requirements related to design consideration (embedding energy efficiency, and minimization of energy consumption and greenhouse gas emissions at the design stage) (4.5.1.1).
- Timebound requirements have been introduced to calculate and potentially establish targets for reducing upstream Scope 3 emissions (4.5.2.1.c), calculate and report downstream Scope 3 emissions (4.5.2.1.d).
- Inclusion of carbon losses from land use changes in calculation of emissions (4.5.3.1.b).
- Evaluation against targets is now required, with appropriate corrective actions implemented as necessary (4.5.4.2).
- Specific requirements related to the use and characteristics of acceptable carbon offsets have been added (4.5.5).
- Broadened the scope of transparency and public disclosure requirements (4.5.6).
- See notes on each requirement for more rationale.

Glossary:

- We are proposing other new/revised definitions for several glossary terms. The 'Terms Used In This Chapter' box shows which terms are new, and the proposed definitions can be found in the glossary at the end of the chapter requirements (and before the Annexes). Feedback on definitions is welcome.

BACKGROUND

Humans are increasingly influencing the climate and the earth's temperature by burning fossil fuels, cutting down rainforests and raising livestock.[1] These activities release gases such as carbon dioxide, methane, nitrous oxide, ozone and a few others that have the ability to trap heat in the Earth's atmosphere. Many of these gases occur naturally, but human activity is increasing the concentrations of some of them in the atmosphere[2] The need to reduce emissions is urgent: the Intergovernmental Panel on Climate Change (IPCC) recently noted that to limit warming to around 1.5°C (2.7°F) requires global greenhouse gas emissions to peak before 2025 at the latest, and be

[1] European Commission website: "Causes of Climate Change." https://ec.europa.eu/clima/change/causes_en

[2] Ibid.

reduced by 43% by 2030.[3] As a result, the United Nations Framework Convention on Climate Change has spurred the establishment of targets for the reduction of greenhouse gas emissions that are applicable in nearly 200 countries.[4]

Mines and mineral processing operations are major energy consumers and emitters of greenhouse gases. These operations therefore have an opportunity and responsibility to manage their energy use and carbon emissions, and the potential exists for these operations to consume less energy, increase the proportion of energy used that comes from renewable sources, emit less carbon from ongoing activities, capture carbon already emitted to the atmosphere, and improve the entity's bottom line.

TERMS USED IN THIS CHAPTER

Affected Community ■ Baseline ■ Carbon Offset NEW ■ Competent Professionals ■ Consultation ■ Corporate Owner ■ CO_2e NEW ■ Credible Method/Methodology NEW ■ Energy Consumption NEW ■ Entity NEW ■ Exploration NEW ■ Free, Prior and Informed Consent ■ Indigenous Peoples ■ Mineral Processing NEW ■ Mining NEW ■ Mitigation Hierarchy ■ Operations NEW ■ Project NEW ■ Revegetation ■ Site NEW ■ Scope 1 NEW ■ Scope 2 NEW ■ Scope 3 NEW ■ Stakeholder ■ Suppliers ■

These terms appear in the text with a dashed underline. For definitions see the Glossary of Terms at the end of the chapter.

There are three categories of greenhouse gas emissions from mines and mineral processing operations: 1) Scope 1 or direct emissions resulting from fossil fuel use in operations, transportation of ore, feed and waste materials and products, and non-renewable electricity generation at remote sites, and fugitive emissions; 2) Scope 2 or indirect emissions associated with electricity purchased from third-party service providers and 3) Scope 3 emissions, which are defined as all other indirect emissions not included in Scope 2 that occur in the upstream and downstream value chain of the operation. Mines and mineral processing operations can manage Scope 1 and Scope 2 emissions and at the same time cut costs and improve competitiveness by adopting best practices in energy sourcing, efficiency, and emissions reductions. Until relatively recently, the focus in the mining sector has been on Scope 1 and Scope 2 emissions. For many operations, however, Scope 3 emissions are substantially larger than then cumulative total of Scope 1 and Scope 2. Therefore, progress must also be made on this third category of emissions if the mining sector is to successfully decarbonize its operations.

OBJECTIVES/INTENT OF THIS CHAPTER

To minimize contribution to climate change impacts through increased energy efficiency, reduced energy consumption, reduced emissions of greenhouse gases from direct and indirect sources, and increased capture of carbon already emitted to the atmosphere.

NOTE ON OBJECTIVES: REVISED. Now incorporates energy-related issues.

SCOPE OF APPLICATION

RELEVANCE: This chapter is applicable to all exploration, mining and mineral processing projects and operations.

NOTE ON SCOPE OF APPLICATION: This proposed version of the IRMA Standard is meant to apply to exploration, mining, and mineral processing projects and operations (see definitions of project and operation), but not all requirements will be relevant in all cases. We have provided some high-level information below, but the IRMA Secretariat will produce a detailed Scope of Application for each chapter that will indicate relevancy on a requirement-by-requirement basis (and will provide some normative language where the expectations may slightly differ for proposed projects versus operations, or for mining versus mineral processing, etc.).

[3] Intergovernmental Panel on Climate Change. 2022. "The evidence is clear: the time for action is now. We can halve emissions by 2030." https://www.ipcc.ch/2022/04/04/ipcc-ar6-wgiii-pressrelease/

[4] For example, see: "Nationally appropriate mitigation commitments or actions by developed country Parties," United Nations Climate Change website. https://unfccc.int/topics/mitigation/workstreams/nationally-appropriate-mitigation-actions

CRITICAL REQUIREMENTS IN THIS CHAPTER

There is a policy that includes targets for reducing direct and indirect greenhouse gas emissions, reducing energy consumption, and increasing the proportion of energy consumed from renewable sources (4.5.2.1).

NOTE ON CRITICAL REQUIREMENTS: The 2018 IRMA Standard includes a set of requirements identified as being critical. Projects/operations being audited in the IRMA system must at least substantially meet all critical requirements in order to be recognized at the achievement level of IRMA 50 and higher, and any critical requirements not fully met need a corrective action plan for meeting them within specified time frames.

INPUT WELCOME: The proposed revisions to the 2018 Standard have led to new content, as well as edits of some critical requirements in the process. Therefore, there will be a further review of the language and implications of critical requirements prior to the release of a final v.2.0 of the IRMA Standard. During this consultation period we welcome input on any existing critical requirement, as well as suggestions for others you think should be deemed critical. A rationale for any suggested changes or additions would be appreciated.

Greenhouse Gas Emissions and Energy Consumption Requirements

4.5.1. Technology Selection

4.5.1.1. The entity demonstrates that energy efficiency, minimization of energy consumption and minimization of greenhouse gas emissions are material considerations in the selection of energy sources, mining and processing methods, technologies and equipment, and the design of buildings and facilities at proposed projects and when there are opportunities to replace or add technology or change processes at operations, and documents its rationale for the final selections.

NOTE FOR 4.5.1.1: This is a NEW requirement. It was proposed in the draft IRMA-Ready Standard for Exploration, and is being carried over into this proposed update to the 2018 Mining Standard. One addition from what was proposed in IRMA-Ready is that entities also document their rationale for technology, so that there is something that can be provided as evidence of how decisions were made on technology selection.

We are proposing that proposed projects be required to demonstrate how energy efficiency, energy consumption and greenhouse gas emissions have been considered in technology selection. Ideally this would be carried out during the pre-feasibility and feasibility phases of project development, as this is time when there are still excellent opportunities for eliminating and minimizing GHG emissions and energy consumption through the selection of technologies and mining/processing techniques, design of buildings, facilities, and processes.[5]

However, while new projects have the best opportunity to utilize the most energy efficient and low emissions technology, options also exist at operations when they are adding or replacing equipment or processes. While not requiring that energy efficient and low emission technologies be used in all cases, we are proposing that, at minimum, sites are required to demonstrate that they have carried out a thorough analysis and are not choosing equipment and processes based on, for example, economics alone.

It may be difficult to assess whether minimization of energy consumption and greenhouse gas emissions have been given due weight in the final selection of technologies and practices. Perhaps if companies can demonstrate that they have investigated and calculated the energy use and greenhouse gas emissions of potential options, and have selected more efficient, less polluting technologies and processes, even though some of these approaches might have had higher upfront costs, then that could be sufficient evidence that they have integrated “clean energy” concerns into their technology choices and design processes.

[5] Igogo, T., Loweder, T., Engel-Cox, J., Newman, A and Awuah-Offei, K. 2020. Integrating Clean Energy in Mining Operations: Opportunities: Challenges and Enabling Approaches. (Joint Institute for Strategic Energy Analysis). p. vii. https://www.nrel.gov/docs/fy20osti/76156.pdf

CONSULTATION QUESTION 4.5-1: Do you agree with adding this requirement? Are there other ways a company might demonstrate it has given the minimization of energy use and greenhouse gas emissions due weight in its mine design processes? Should this requirement be limited to proposed projects, or is it reasonable to create a similar requirement that applies to existing operations that are adding or replacing equipment or processes?

4.5.2. Greenhouse Gas and Energy Policy

NOTE FOR 4.5.2: This criterion used to be Greenhouse Gas Policy. It has been revised to reflect the addition of energy-related requirements in this chapter.

4.5.2.1. (Critical Requirement)

A policy (or equivalent) is in place that includes:

a. A commitment to manage energy consumption and greenhouse gas emissions in a manner that aligns with the goals of the Paris Agreement;[6]

b. Quantitative timebound short-term (<5 years), medium-term (5-15 years) and long-term (>15 years) site-based targets,[7] and targets set by corporate owners for reducing Scope 1 and Scope 2 greenhouse gas emissions in absolute and intensity terms that demonstrably contribute to the goals of the Paris Agreement;[8]

c. A timebound commitment to calculate[9] and publicly report upstream Scope 3 emissions, and, if upstream Scope 3 greenhouse gas emissions represent more than 40% of a site's total emissions, establishing quantitative, timebound short-term, medium-term and long-term site-based targets[10] (absolute or intensity) for reducing upstream Scope 3 emissions that demonstrably contribute to the goals of the Paris Agreement; [11]

d. A timebound commitment to calculate and publicly report downstream Scope 3 emissions;

e. A site-based energy reduction target; and

f. A site-based target for increasing the proportion of energy consumed that comes from renewable sources.

NOTE FOR 4.5.1.1: REVISED. This was a requirement 4.5.1.1 in the 2018 Mining Standard.

[6] In 2015 a legally binding international treaty was reached by world leaders in Paris (known as 'the Paris Agreement'), which set long-term goals to guide all nations, including substantially reducing global greenhouse gas emissions to limit the global temperature increase in this century to 2 degrees Celsius, while pursing efforts to limit the increase further, to 1.5 degrees. (Source: United Nation web site: "The Paris Agreement." https://www.un.org/en/climatechange/paris-agreement)

[7] IRMA's definitions of short-term (<5 years), medium-term (5-15 years) and long-term (>15 years) are aligned with those defined in the ResponsibleSteel International Standard Version 2.0 (published 14 September 2022). Note that for the long-term targets, the final date cannot be beyond 2050, which is the target date for achievement of net-zero carbon emissions established by the Paris Agreement (middle of the 21st century, which is taken to mean 2050).

[8] target for reductions in absolute greenhouse gas emissions is defined by a reduction in absolute (or total) emissions over time (e.g., reduce total greenhouse gas emissions by 20% below 2007 levels by 2015). Scope 1 emissions are the direct emissions from the mineral processing operation (or company, if setting targets on a corporate-wide basis). Scope 2 emissions are the indirect emissions from consumption of purchased electricity, heat, and steam. Scope 3 are other indirect emissions. See GHG Protocol Standard for more details. https://ghgprotocol.org/corporate-standard

Emissions intensity is calculated as tonne of GHG equivalents (CO_2e) per unit of product. The site must be able to clearly demonstrate how the targets contribute to the achievement of the Paris Agreement.

[9] The GHG Protocol notes "Direct measurement of GHG emissions by monitoring concentration and flow rate is not common. More often, emissions may be calculated based on a mass balance or stoichiometric basis specific to a facility or process. However, the most common approach for calculating GHG emissions is through the application of documented emission factors. These factors are calculated ratios relating GHG emissions to a proxy measure of activity at an emissions source". Based on this, IRMA refers to the calculation of Scope 1, Scope 2 and Scope 3 emissions (as the most widely adopted approach), but will accept direct measurement data where this is based on a credible methodology.

[10] IRMA's definition of short-term (<5 years), medium-term (5-15 years) and long-term (>15 years) are aligned with those defined in the ResponsibleSteel International Standard Version 2.0 (published 14 September 2022).

[11] For example, see Science Based Targets Initiative. May 23, 2018. SBTi Criteria and Recommendations. TWG-INF-002 | Version 3.0. pp. 4 – 6. https://sciencebasedtargets.org/resources/legacy/2017/02/SBTi-criteria.pdf

4.5.2.1.a. is NEW. While the 2018 Mining Standard expected that targets for Scope 1 and 2 emissions be set, the targets were not tied to any overarching goal. Since that time, there has been a growing expectation that all companies across every sector, and all assets within a company should play a positive part in achieving net-zero carbon emissions according to the timeline defined in the Paris Agreement. Mining, with its central role in providing primary critical minerals and metals, must ensure that meeting growing demand does not undermine the achievement of the Paris Agreement goals. In this context, IRMA now requires sites to commit to managing energy use and greenhouse gas emissions in a way that supports the Paris Agreement.

We are proposing to define **energy consumption** as:

> The total use of energy from fossil fuel and non-fossil fuel sources (including renewables), whether delivered in the form of electricity, steam, heat (combustion) or cooling. (See proposed glossary additions at the end of the chapter)

4.5.2.1.b is REVISED – the 2018 mining standard says "setting meaningful and achievable targets," but the proposed language is now more explicit and refers to targets within defined short-, medium- and long-term timelines that clearly contribute to the goals of the Paris Agreement. IRMA's definitions of short-term (<5 years), medium-term (5-15 years) and long-term (>15 years) are aligned with those defined in the ResponsibleSteel International Standard Version 2.0 (published 14 September 2022. IRMA has also added a timebound consideration, so that the achievement of a site's long-term target cannot occur beyond the date set for net-zero by the Paris Agreement (2050). This means that for sites commencing operations after 2035, 'long-term' will be the interval to 2050 (rather than >15 years). Also, while there was an option in the 2018 Mining Standard for targets to apply to the site OR corporate level, we are proposing here that site-level and corporate-level targets be set.

4.5.2.1.c is NEW. There was general agreement in the Expert Working Group on greenhouse gases convened by IRMA about the well-documented challenges of measuring and reporting Scope 3 emissions. At the same time, it is generally agreed that companies need to not only reduce their own direct emissions, but also use their leverage to reduce emissions in their upstream and downstream supply chains. Alongside this, there is recognition of the significance of Scope 3 emissions for many (and possibly, most) mine and mineral processing sites, where Scope 3 emissions can be substantially larger than collective Scope 1 and 2 emissions.

There is a move towards improved accounting and reporting of Scope 3 emissions, for example:

- ICMM is currently working with its members to identify a common approach and methodology to account for and report Scope 3 emissions (which implies it will move to a reporting requirement in the future).
- TSM requires some reporting of Scope 3 emissions.
- The Taskforce on Climate-related Financial Disclosures (TCFD) explicitly recommends that organizations disclose Scope 3 emissions associated with their business.

Calculating and reporting of Scope 3 emissions have moved beyond being an aspirational concept and in this context, IRMA believes the time is right to include requirements related to (at least) the calculation of Scope 3 emissions, with an initial focus on the upstream (where sites are likely to have better access to relevant data and greater opportunities to influence or select suppliers to reduce Scope 3 emissions). Where Scope 3 emissions are a significant proportion of overall emissions (set at >40% to align with the threshold established by the Science Based Targets initiative (SBTi), requirements are extended to establishing reduction targets for Scope 3 (in much the same way this is done in 4.5.2.1.b for Scopes 1 and 2).

4.5.2.1.d is NEW. Downstream Scope 3 emissions are more complex, and sites are likely to have only limited access to incomplete sets of relevant data and less leverage to influence how mineral and metals sold by them are manufactured into an enormous range of end products. Therefore, IRMA does not currently expect companies and sites to calculate and publicly report downstream Scope 3 emissions (or to set targets for reducing downstream Scope 3 emissions, irrespective of their size). It does, however, expect companies and sites to establish a timeframe within with such calculation and reporting will commence; the timeframe should give the company or site sufficient time to develop or identify a consistent and transparent calculation methodology (potentially in partnership with commodity- or sector-level partners, or, for example, using the

outputs of cross-sectoral initiatives). The timeframe should not be artificially inflated, however, to delay implementation of calculation or reporting unnecessarily.

The energy consumption target (4.5.2.1.e) and renewable energy-use target (4.5.2.1.f) are NEW. Sub-requirement I is being added because other mining standards include energy use targets, so we are filling that gap to align better with others.

CONSULTATION QUESTION 4.5-2

Background: There is some debate about whether reduction targets should relate to absolute emissions or emissions intensity.

An intensity-based target means sites can have higher absolute emissions if production is rising. In a world where demand for certain commodities (e.g., lithium, cobalt and copper) is forecast to rise steeply in the near- and medium-term, this could lead to a scenario of falling greenhouse gas emissions intensity in the mining sector, but rising contribution to global emissions by the industry.

If absolute emissions are used as the basis of reduction targets, the contribution to climate change can be more effectively managed, but this may be challenging for existing operations that are ramping up production to meet market demands, particularly in the short-term (when it may not be possible to immediately make technical and operational changes to reduce GHG emissions). There is also concern that absolute targets could potentially reward operations with high historical emissions, as this establishes a higher baseline for which more reduction opportunities exist, so such sites may gain the appearance of very positive progress off the back of poor performance in the past.

Given the uncertainty about whether one measure can always be considered the most appropriate, IRMA proposes to require both absolute and intensity targets as they speak to different aspects of the bigger picture and both are needed to fully understand a site's performance.

Question: Do you agree with the proposal to require absolute emissions AND intensity targets? If this is the chosen approach, what would realistic targets and timeframes be for each measure and how should they be linked?

CONSULTATION QUESTION 4.5-3

Background: We are proposing a target related to use of renewable energy (sub-requirement 4.5.2.1.f), in recognition that a deep reduction in the burning of fossil fuels must be part of any company's strategy if we are to limit the effects of climate change. For large industrial operations like mines and mineral processing facilities, a two pronged-approach of reducing overall energy use, and over time increasing the percentage of energy from renewables will be most effective.

The two new requirements are complementary as reducing energy use remains important even if consumed energy is solely derived from renewable sources (i.e., unnecessarily high consumption of renewable energy from external parties limits the availability for other consumers users, whose reliance on non-renewable sources increase, with knock on emission impacts).

We recognize that in some locations, there may be limited options for buying renewable energy sourced from external parties, but there should always be an opportunity for a site to produce its own energy from solar, wind or water sources, for example. On this basis, IRMA considers at this stage that it is reasonable to require companies to set renewable energy use targets of some sort (and not allow them to say this is 'not relevant').

Question: Do you agree with the addition of a renewable energy target? If not, why not?

4.5.2.2. The policy is reviewed annually, and revised as needed, with a clear review/revision history.[12]

NOTE FOR 4.5.2.2: This was 4.5.1.1.d in the 2018 Mining Standard. We are proposing to require a more frequent review cycle partly because a policy review is not particularly onerous, but importantly because the need to review and adapt reduction targets more frequently than every five years (the expectation in the 2018 Standard) is being driven by the need to close the gap between current actions and the actions necessary to meet the Paris Agreement goals.[13]

4.5.3. Greenhouse Gas Emissions and Energy Consumption Quantification

NOTE FOR 4.5.3: This criterion used to be 'Emissions Quantification.' It has been revised to reflect the addition of energy-related requirements in this chapter.

4.5.3.1. For Scope 1 and Scope 2:

a. Emissions of all relevant greenhouse gases associated with the site are calculated using credible methodologies;

b. For Scope 1, the calculations account for emissions arising from land use changes and reductions in land carbon stock arising from the site's direct activities;

c. All calculations are verified by a credible third-party expert.

NOTE FOR 4.5.3.1: REVISED. Quantification of greenhouse gas emissions was addressed in requirement 4.5.2.1 in the 2018 Mining Standard.

4.5.3.1.b is a NEW expectation. It is being proposed so that the contributions from land clearing (and the associated loss of vegetation and potential degradation of soil resources) are not overlooked in the GHG accounting. This will be particularly important for proposed mines (and is included in Annex 2.1-B in Chapter 2.1 as something to be scoped during ESIA), but also for expansions of existing operations that require the clearing, degradation or burial of previously undisturbed land and its associated soils and flora.

In both 4.5.3.1 and 4.5.3.2, we refer to using 'credible methodologies,' The 2018 Mining Standard specifically named the Greenhouse Gas Protocol Corporate Standard and the Global Reporting Initiative's GRI 305 emissions reporting standards as methods that could be followed in calculating emissions. Rather than referring to specific methods, we are now proposing that any credible methodology can be used. We will still provide some examples of credible methodologies in guidance.

We are proposing to define **credible method/methodology** as:

> A method/methodology that is widely recognized, accepted, and used by experts and practitioners in a particular field of study.

Also, in both 4.5.3.1 and 4.5.3.2, we have added a NEW expectation that the emissions calculations be verified by a credible third-party expert. This is similar to an expectation in the Mining Association of Canada's Toward Sustainable Mining Climate Change protocol. That protocol requires that Scope 1, 2 and 3 data are independently assured for accuracy in order to meet their higher achievement levels of AA and AAA levels (not required for levels C, B, or A).[14]

CONSULTATION QUESTION 4.5-4: Do you have any suggestions of other methodologies for calculating Scope 1, Scope 2 and Scope 3 emissions that could be added as examples in IRMA Guidance?

[12] Revisions might be needed, for example, if there are significant changes to site-based activities, new technologies become available, or there are newly identified opportunities for reductions in energy consumption and greenhouse gas emissions or increases in energy efficiency and use of energy from renewable sources.

[13] See, for example, UNEP's annual Emissions Gap Report (available at https://www.unep.org/resources/emissions-gap-report), which in 2022 noted "the international community is falling far short of the Paris goals, with no credible pathway to 1.5°C in place".

[14] Mining Association of Canada. Toward Sustainable Mining Climate Change Protocol. p. 10. https://mining.ca/wp-content/uploads/dlm_uploads/2023/04/Climate-Change-Protocol-English.pdf

CONSULTATION QUESTION 4.5-5

Background: A question was raised during the Expert Working Group discussions about prioritizing direct measurement of emissions over calculations, due to lack of confidence in the quality of emissions factors. The GHG Protocol notes "Direct measurement of GHG emissions by monitoring concentration and flow rate is not common. More often, emissions may be calculated based on a mass balance or stoichiometric basis specific to a facility or process. However, the most common approach for calculating GHG emissions is through the application of documented emission factors. These factors are calculated ratios relating GHG emissions to a proxy measure of activity at an emissions source."

Question: Are you aware of trends in use of direct measurements for particular greenhouse gas emissions? If so, what are the methods being used to do so, and what are the main limitations in the use of those approaches?

4.5.3.2. For Scope 3:

a. A screening exercise is completed to determine relevant upstream and downstream Scope 3[15] categories using credible methodologies according to the timebound commitments noted for upstream and downstream Scope 3 emissions in 4.5.2.1.c and 4.5.2.1.d respectively;

b. Scope 3 emissions of all relevant greenhouse gases and relevant categories of emissions associated with the site are calculated using credible methodologies according to the timebound commitments noted for upstream and downstream Scope 3 emissions in 4.5.2.1.c and 4.5.2.1.d respectively. If a site's upstream Scope 3 emissions represent more than 40% of the site's total emissions, a Scope 3 target is required (see 4.5.2.1.c); and

c. All calculations are verified by a credible third-party expert.

NOTE FOR 4.5.3.2: This is a NEW requirement. We are proposing that Scope 3 emissions be calculated, as this aligns with the target-setting requirement for upstream emissions in the proposed 4.5.2.1.c. However, the timing of the calculation of Scope 3 emissions will be expected to occur according to the timebound plans in 4.5.2.1 c and d for upstream and downstream emissions, respectively. At present, no target is envisaged for downstream Scope 3 emissions.

This new requirement is based on earlier discussions with IRMA's multi-stakeholder GHG Working Group and a review of the status of Scope 3 emissions in other mineral and metal ESG standards. While there is no single consistent viewpoint on how companies and sites should calculate and report Scope 3 emissions, there is a developing consensus that for the mining industry, Scope 3 is too significant in too many cases for Scope 3 requirements to be deferred any longer. IRMA is seeking to balance urgency and pragmatism, introducing requirements related to Scope 3 while acknowledging that sites will require time to define, develop and implement the necessary systems for data acquisition and management.

CONSULTATION QUESTION 4.5-6: Has IRMA struck an appropriate balance between driving progress on Scope 3 emissions with creating the necessary breathing space for sites to work towards conformance within a reasonable timeframe?

4.5.3.3. Energy consumption associated with the site is measured using a credible methodology, and data are disaggregated into:

a. Energy generated by the site from fossil fuels and consumed by fixed and mobile equipment (collectively, sources of Scope 1 emissions);

b. Acquired and consumed electricity, steam, heat, or cooling (collectively, sources of Scope 2 emissions);

c. Energy derived from renewable sources purchased from external suppliers; and

d. Energy derived from renewable sources generated by the site.

[15] The timing of Scope 3 calculations will be according to the timebound plans in 4.5.1.1.c and 4.5.1.1.d for upstream and downstream emissions, respectively.

NOTE FOR 4.5.3.3: NEW. The 2018 Standard did not include energy quantification. The proposed disaggregated information will be necessary in order to conform with other energy-related requirements in this chapter (and therefore, this disaggregation does not imply additional effort on the part of the site).

4.5.3.4. GHG emissions intensity and energy intensity are calculated based on the mass of final products from the site.[16]

NOTE FOR 4.5.3.4: NEW. We are proposing that intensity be calculated on an annual basis as follows:

$$\text{GHG intensity} = \frac{\text{annual tonnage of GHG equivalents } (CO_2e)}{\text{total annual mass of product produced in that year (not sold)}}$$

(Examples include tonnes CO_2e/ounce of gold, or tonnes CO_2e/tonne of refined copper)

$$\text{Energy intensity} = \frac{\text{total annual energy consumed (with non-electrical energy converted to MWh equiv.)}}{\text{total annual mass of product produced in that year (not sold)}}$$

(Examples include MWh/ounce of gold or MWh/tonne of refined copper)

Sites, of course, would be welcome to perform additional calculations using other input and intermediate materials and output measures, such as the value of the product, but for IRMA's purposes, comparability between sites is important, and calculation of intensity using the mass of product is the most commonly used approach. For example, emissions and energy intensities may be calculated for the mass of input or intermediate materials, but these calculations would be in in addition to, rather than instead of, intensities based on the mass of final products.

Mass units would be expected to be appropriate to the typical annual product output (e.g., could be measured in tonnes, ounces or other).

See Annex 4.5-A for examples of intensity metrics for different mineral commodities. Comments on the content of this Annex, and also the approach taken in 4.5.2.5 are welcome.

CONSULTATION QUESTION 4.5-7: Do you agree with the proposed method(s) of reporting GHG intensity and energy intensity? If not, please suggest what metrics would be more appropriate, and why.

4.5.4. Greenhouse Gas and Energy Management

NOTE FOR 4.5.4: The name of the criterion has changed. It was 'Emissions Reduction Strategies' in the 2018 Mining Standard.

Also, we are proposing to delete requirement 4.5.3.3 from the 2018 Mining Standard, which required that the entity demonstrate that greenhouse gas reductions strategies had been investigated and documented. To get to the point of outlining actions to reduce emissions in the revised 4.5.4.1.a, below, the entity will necessarily have investigated options and IRMA is proposing to place greater emphasis on action (implementation) than the underpinning investigations.

4.5.4.1. A site-level management plan is in place and implemented that:

a. Outlines specific measures and actions to achieve:
   i. The site-level Scope 1, Scope 2 and Scope 3 greenhouse gas reduction targets set out in the policy;
   ii. The site-level energy reduction targets set out in the policy; and

[16] Mass units shall be appropriate to the final product (e.g., tonnes, ounces). See Annex 4.5-A for examples.

iii. The site-level targets for the proportion of energy consumed at the site that comes from renewable sources;

b. Assigns implementation of actions, or oversight of implementation, to responsible staff;[17]

c. Includes an implementation schedule; and

d. Includes estimates of human resources and budget required and a financing plan to ensure that funding is available for the effective implementation of the plan.

NOTE FOR 4.5.4.1: REVISED. This was 4.5.3.1 in the 2018 Mining Standard. We have updated this requirement to be more consistent with management plan expectations in other IRMA chapters.

4.5.4.2. On a yearly basis, the entity:

a. Evaluates the effectiveness of its actions to reduce greenhouse gas and energy consumption and increase use of renewable energy;

b. Determines if the site is on track to meet the targets in its policy; and

c. If the site is not on track with its targets, the management plan is updated with timebound corrective actions that will enable the site to still meet its policy targets and the goals of Paris Agreement.

NOTE FOR 4.5.4.2: REVISED. This was requirement 4.5.3.2 in the 2018 Mining Standard. That requirement stipulated that progress toward emissions reduction targets be demonstrated. We have added that progress toward the (new) energy and renewables targets also be demonstrated.

Also, we have added a step to evaluate the effectiveness of the actions that are implemented (a similar step in other IRMA chapters), since that will be necessary for determining progress on targets and have added that the entity develop and implement corrective actions if current actions are not enough to meet targets.

4.5.5. Carbon Offsets

NOTE: This is a NEW criterion. Based on the literature, it appears that carbon offsets can play a valid role in the transition to a low carbon economy but should be an option of 'last resort' that is only pursued once all reasonable opportunities to reduce emissions at source have been implemented.

A range of approaches to carbon offsets is apparent in different ESG standards. Some standards are silent on the concept of offsets, others focus on transparency in the reporting of offset design, implementation and credibility, and some exclude offsets from calculations of absolute emissions or emissions intensity.

Rather than stay silent on the use of offsets, IRMA is proposing to add criterion 4.5.5 to clearly articulate expectations related to the use of offsets when developed at the site. See Consultation Question 4.5-9, below, regarding offsets purchased in the form of carbon credits (and similar mechanisms) from third party providers.

CONSULTATION QUESTION 4.5-8: Do you agree with the proposed approach to offsets? If not, what would you change and why?

CONSULTATION QUESTION 4.5-9

Background: As well as being directly involved in the design and implementation of a carbon offset (or commissioning the same) at its site or at a remote location, an entity may choose instead to purchase carbon credits to offset its emissions. Credits are certificates representing quantities of greenhouse gas emissions that have been kept out of the air or removed from it by a third party.

Different international bodies and agencies assign a range of strengths and weaknesses to the use of carbon credits and the extent to which these can effectively limit greenhouse gas emissions. For example, the Net-

[17] If work is carried out by third party contractors, then there needs to be a staff employee responsible for overseeing the quality of work, timelines, etc.

Zero Asset Owner Alliance convened by the UNEP's Financial Initiative considers carbon credits to be complementary to decarbonization efforts and a means of compensating for unabated emissions, but that "asset owners' immediate efforts must foster the rapid and deep cutting of GHG emissions as a priority."[18]

IRMA has not yet taken a decision on including requirements related to the use of carbon credits and is seeking guidance from stakeholders on whether and how such credits should be addressed in the revised Mining Standard, if there are appropriate limits to their application (for example, perhaps they are suitable for meeting Scope 3 targets but not Scope 1 and 2), and how credits can be verified to ensure a measurable benefit arises from their use.

Question: Should IRMA include a requirement addressing the use of carbon credits and if yes, what limits (if any) should be put in place, and what expectations are reasonable with respect to establishing the credibility of the credit issuer?

4.5.5.1. If a carbon offset is used to help the site progress towards or meet its emissions reductions targets, the site demonstrates that the mitigation hierarchy has been followed to avoid or minimize greenhouse gas emissions (prioritizing reduction at source) and thereby minimize the carbon offset required.

4.5.5.2. The calculation of required offsets:

a. Follows a credible methodology; and
b. Does not include carbon captured from site revegetation[19] unless:
    i. Carbon emissions arising from land use changes during site construction and operation are included in the calculation of the carbon offset required; or
    ii. The carbon stock of rehabilitated land per unit area exceeds that of the original pre-mining (baseline) land (in which case the excess carbon stock relative to the baseline can be included).

NOTE FOR 4.5.5.2: Rehabilitation (revegetation) of disturbed areas is good practice and can be accomplished as an ongoing process and/or at closure of the facility. However, the carbon capture associated with such revegetation can only be used to reduce the size of the carbon offset required if the carbon emissions associated with the original (construction related) and ongoing (operational) site disturbance have already been accounted for. Otherwise, the situation arises where emissions from site disturbance (for example, released during soil removal and stripping of vegetation) are not quantified (in other words, assigned a zero value), while revegetation appears to create a net benefit (when in fact it may only be partially balancing the original unquantified disturbance-related carbon emissions).

Similarly, if the habitat on the rehabilitated land contains more carbon than the original habitat, the increment can be included (representing the net gain from baseline to rehabilitated conditions). Revegetation will also only be admissible if its long-term durability has been demonstrated (see 4.5.4.3) as required for other offset designs.

4.5.5.3. For a carbon offset project undertaken or commissioned by the entity, the offset design, implementation, and monitoring are:

a. Developed by competent professionals using credible methods;
b. Developed in consultation with potentially affected communities and Indigenous Peoples, as relevant;
c. Validated by a credible third-party expert;
d. Based on an existing nature-based or technical approach that has been proven at an appropriate scale relevant to the offset required;[20]

[18] UNEP. The Net in Net Zero: The role of negative emissions in achieving climate alignment for asset owners. p. 6. https://www.unepfi.org/wordpress/wp-content/uploads/2021/09/AOA_Negative-Emissions.pdf

[19] For example, revegetation that occurs during progressive or future mine site rehabilitation.

[20] Nature-based initiatives "naturally" sequester carbon in the environment (e.g., reforestation, wetland rejuvenation, soil improvement projects). Technical solutions are those that achieve either carbon avoidance (e.g., renewable power and fuels, energy efficiency) or provide carbon

e. Implemented with the free, prior and informed consent of affected Indigenous Peoples and the agreement of affected communities, as relevant; and

f. Able to deliver long-term (>100 years) carbon capture.

NOTE FOR 4.5.5.3: This is NEW. The requirements are based on good practice and analysis of the potential weaknesses of carbon offset projects (that undermine their capacity to deliver real and sustained carbon capture). We have drawn from, for example, guidance developed by the Carbon Offset Research and Education initiative of the Stockholm Environment Institute and Greenhouse Gas Management Institute,[21] principles developed by the Integrity Council for the Voluntary Carbon Market,[22] analysis by the UN's High-Level Expert Group on the net zero emissions commitments of non-state entities,[23] and climate change adaptation data collated by the Nature-based Solutions Initiative.[24]

4.5.6. Reporting and Disclosure on Greenhouse Gas Emissions and Energy Consumption

4.5.6.1. The greenhouse gas and energy policy (4.5.1.1) and management plan (4.5.4.1) are publicly available.

NOTE FOR 4.5.6.1: REVISED. This was 4.5.4.1 in the 2018 Mining Standard.

We are proposing to add that the greenhouse gas and energy management plan also be made publicly available. Although not required for all management plans in the IRMA chapter, there are certain plans that are required to be public, and several need to be shared with stakeholders to give them an opportunity to provide feedback on the plans (e.g., reclamation and closure plans, adaptive management plan for water, resettlement action plans).

Development and implementation of environmental management plans – including GHG management plans – are a legal requirement for industrial operations in many jurisdictions. Disclosure of GHG management plans is rarely mandatory, but voluntary publication is becoming more common as companies seek to anticipate (and remain ahead of) future requirements. For example, mining companies in Australia are taking a proactive stance, publishing detailed GHG management plans.[25]

CONSULTATION QUESTION 4.5-10: Do you support the proposal that GHG management plans be made publicly available? If not, why not?

4.5.6.2. The methods used to measure energy use and calculate Scope 1, 2 and (if relevant) 3 emissions, and, if relevant, to calculate offsets, are publicly available.

NOTE FOR 4.5.6.2: This is NEW. We are proposing disclosure of the methodology because there is no agreed best methodology for calculating emissions and energy use. Various other mining standards allow government-developed methodologies, while others point to internationally recognized methods like those in the GHG Protocol or ISO Standards, etc. At this point in time, rather than prescribe a particular method to be

removal, storage and sequestration (e.g., Carbon capture, utilization, and storage (CCUS), direct air capture (DAC) and bioenergy with carbon capture and storage (BECCS)).

[21] Broekhoff, D. et al. 2019. Securing Climate Benefit: A Guide to Using Carbon Offsets. (Stockholm Environment Institute and GHG Management Institute). https://www.offsetguide.org/wp-content/uploads/2020/03/Carbon-Offset-Guide_3122020.pdf

[22] The Integrity Council for the Voluntary Carbon Market. "The Core Carbon Principles." https://icvcm.org/the-core-carbon-principles/

[23] UN's High-Level Expert Group on the net zero emissions commitments of non-state entities. 2022. Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities and Regions. https://www.un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf

[24] Nature-based Solutions Initiative web site. Explore research projects by climate change adaptation at: https://www.naturebasedsolutionsinitiative.org/research/projects/

[25] E.g., Albemarle Kemerton Lithium Plant: https://www.albemarle.com/storage/wysiwyg/greenhouse_gas_management_plan_-_alb_kemerton_plant_final_1.pdf;
Pinjarra Alumina Refinery Efficiency Upgrade: https://www.alcoa.com/australia/en/pdf/greenhouse_management_plan_final_feb_07.pdf;
Telfer gold-copper mine: https://www.newcrest.com/sites/default/files/2021-11/Telfer%20Greenhouse%20Gas%20Management%20Plan.pdf;
Tomingley Gold Project: https://www.alkane.com.au/wp-content/uploads/2018/02/Air-Quality-and-Greenhouse-Gas-Management-Plan-R5-final-for-approval.pdf

used by all IRMA participants, IRMA is asking for transparency in the methods being used so that others can evaluate for themselves the basis for the emissions and energy use calculations.

4.5.6.3. Either the actual calculations and data behind the annual energy consumption and Scope 1, 2 and, as relevant, Scope 3 emissions and offset values reported in 4.5.6.4, or evidence of third-party verification of the data and calculations are publicly available.

NOTE FOR 4.5.6.3: This is NEW. We are proposing that in addition to the methods used, the actual calculations leading to the final annual emissions and energy use numbers are made public. Again, this enables stakeholders to review the work, so that they can have confidence in the values being publicly cited in 4.5.6.4. An acceptable alternative to publishing the actual calculations would be the verification of the data by a credible third-party noted in 4.5.6.3. Evidence of third-party verification could be a statement with the name and credentials of the verifier and date of review, or a certificate or report, etc.

Regarding offsets, this is similar to Mining Association of Canada's Climate Change Protocol, which requires that entities' annual public reporting includes: "Where offsets are used to meet targets, a calculation of offsets as a percentage of total emissions generated at the facility . . ." [26]

4.5.6.4. Data on energy use and Scope 1, 2 and 3 greenhouse gas emissions from the site are publicly reported on an annual basis. At minimum, this includes:

a. The site's total energy consumption;
b. Disaggregated energy consumption data that details at a minimum delivered energy, energy from energy minerals consumed on-site, renewable energy purchased from external suppliers and renewable energy generated at the site;
c. The site's total energy intensity, and basis for the site's calculation of energy intensity;
d. The site's Scope 1 GHG emissions as CO_2e or as the seven greenhouse gases defined in the Kyoto Protocol (CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PCFs), sulfur hexafluoride (SF_6) and nitrogen trifluoride (NF_3);
e. The site's Scope 2 GHG emissions as CO_2e or as the seven greenhouse gases defined in the Kyoto Protocol (CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PCFs), sulfur hexafluoride (SF_6) and nitrogen trifluoride (NF_3);
f. The site's GHG emissions intensity, and basis for the site's calculation of GHG emissions intensity;
g. The site's estimate of Scope 3 emissions according to the greenhouse gases and relevant categories of emissions noted in 4.5.3.2.b (according to the timebound commitments noted for upstream and downstream Scope 3 emissions in 4.5.2.1.c and 4.5.2.1.d respectively);
h. Quantified progress towards meeting targets for Scope 1, 2 and (if relevant) 3 emissions, energy reduction and the proportion of energy consumed at the site that comes from renewable sources;
i. A description of the corrective actions required to address targets that are not on track and quantified progress toward full implementation of these actions; and
j. The percentage of greenhouse gas emissions reductions (Scope 1, 2 and/or 3) that has been achieved through carbon offsetting (rather than source reduction).

NOTE FOR 4.5.6.4: REVISED. The 2018 Mining Standard required disclosure of site or corporate-level greenhouse gas emissions (equivalent to sub-requirements d and e, above), progress toward greenhouse gas reduction targets (similar to h, above), and efforts taken to reduce emissions (similar to i, above).

Sub-requirements 4.5.6.4 (a), (b), (c), (f), (g), and (j) are NEW.

[26] Mining Association of Canada. Toward Sustainable Mining Climate Change Protocol. p. 10. https://mining.ca/wp-content/uploads/dlm_uploads/2023/04/Climate-Change-Protocol-English.pdf

Many standards now require site or asset level public reporting of Scope 1 and 2 greenhouse gas emissions and energy use data (integrated into sub-requirements 4.5.6.4 (a), (b), (c)), and some are beginning to refer to Scope 3 emissions (as per sub-requirement (g)).

Re: 4.5.6.4.h on reporting of progress towards targets, SBTi Net Zero criteria includes requirements that progress against targets be reported on an annual basis including emissions and removals related to Scope 1, Scope 2 and Scope 3.[27]

And regarding offsets, 4.6.5.4.j is similar to an expectation in MAC TSM that requires public reporting of "Where offsets are used to meet targets, a calculation of offsets as a percentage of total emissions generated at the facility…"[28]

We are proposing an approach of increased data transparency, both so that stakeholders in the mineral supply chain can understand and make use of the data in their own reporting efforts, and to address 'greenwashing' concerns raised by multiple stakeholders around reporting of GHG emission targets and progress in achieving these. We do not believe that increasing transparency implies additional effort on the part of sites, as we are not requiring disclosure of information and data beyond what is necessary to calculate energy consumption and GHG emissions.

IRMA can add guidance that it expects full and transparent disclosure of energy, greenhouse gas and offset related methods and data except where redaction and/or aggregation of data are justified by reason of commercial sensitivity, competitive advantage, protection of intellectual property or related constraints.

CONSULTATION QUESTION 4.5-11: Do you support the proposed approach for greater transparency in greenhouse gas and energy data? If not, what would you change and why?

4.5.6.5. Carbon offset design, implementation, and monitoring activities, including third-party-verified carbon capture data, are publicly available.

NOTE FOR 4.5.6.5: NEW. We are proposing this because others are also beginning to expect greater transparency on carbon offsets. For example, the European Parliament and Council are currently considering adoption of the Carbon Removal Certification Framework (CRCF) Regulation Proposal,[29] which contains rules to monitor, report and verify the authenticity of carbon removals taking place inside the European Union/European Economic Area and appears likely to require disclosure of information and data to demonstrate the credibility of offsets (and carbon credits). Similarly, the International Sustainability Standards Board (ISSB) confirmed that its proposed Climate-Related Disclosures[30] would require a company to disclose the number of carbon offsets necessary to achieve the company's net zero goals, including certain factors required for users to understand the credibility and integrity of the offsets.

NOTES

None.

CROSS REFERENCES TO OTHER CHAPTERS

This table will be added when the new content for all chapters is finalized and approved.

[27] SBTi Corporate Net-Zero Standard Criteria. Version 1.1. 2023. p. 12. https://sciencebasedtargets.org/resources/files/Net-Zero-Standard-Criteria.pdf

[28] Mining Association of Canada. Toward Sustainable Mining Climate Change Protocol. p. 10. https://mining.ca/wp-content/uploads/dlm_uploads/2023/04/Climate-Change-Protocol-English.pdf

[29] European Parliament and Council. 2022. Proposal for a Regulation on an EU certification for carbon removals. https://climate.ec.europa.eu/document/fad4a049-ff98-476f-b626-b46c6afdded3_en

[30] International Sustainability Standards Board web site: "Climate-related Disclosures." https://www.ifrs.org/projects/work-plan/climate-related-disclosures/

GLOSSARY OF TERMS USED IN THIS CHAPTER

PROPOSED NEW DEFINITIONS

Carbon Offset

A carbon offset broadly refers to a reduction in GHG emissions – or an increase in carbon storage (e.g., through land restoration or the planting of trees) – that is used to compensate for emissions that occur elsewhere.

Source: https://www.offsetguide.org/understanding-carbon-offsets/what-is-a-carbon-offset/

CO_2e

A carbon dioxide equivalent or CO_2 equivalent, abbreviated as CO_2e is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same GWP.

Source: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Carbon_dioxide_equivalent

Credible Method/Methodology

A method/methodology that is widely recognized, accepted, and used by experts and practitioners in a particular field of study.

Energy Consumption

The total use of energy from fossil fuel and non-fossil fuel sources (including renewables), whether delivered in the form of electricity, steam, heat (combustion) or cooling.

Entity

A company, corporation, partnership, individual, or other type of organization that is effectively in control of managing an exploration, mining or mineral processing project or operation.

Exploration

A process or range of activities undertaken to find commercially viable concentrations of minerals to mine and to define the available mineral reserve and resource. May occur concurrent with and on the same site as existing mining operations.

Mineral Processing

Activities undertaken to separate valuable and non-valuable minerals and convert the former into an intermediate or final form required by downstream users. In IRMA this includes all forms of physical, chemical, biological and other processes used in the separation and purification of the minerals.

Mining

Activities undertaken to extract minerals, metals and other geologic materials from the earth. Includes extraction of minerals in solid (e.g., rock or ore) and liquid (e.g., brine or solution) forms.

Operation

The set of activities being undertaken for the purpose of extracting and/or processing mineral resources, including the running and management of facilities and infrastructure required to support the activities, and the ongoing legal, environmental, social and governance activities necessary to maintain the business endeavor.

Project

The development phases before a mining or mineral processing operation can begin (e.g., exploration, pre-feasibility, feasibility, conceptual design, planning, permitting). Includes all desk-top and field-based activities, including exploration activities, needed to inform and develop a project proposal, support the environmental

and social impact assessment of a proposal, generate information necessary to fulfill regulatory and permitting requirements, engage with stakeholders and rights holders, and maintain the entity's business endeavor.

Scope 1

Direct GHG emissions that occur from sources that are owned or controlled by the site, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.; emissions from chemical production in owned or controlled process equipment.

Source: Slightly adapted text derived from GHG Protocol

Scope 2

GHG emissions from the generation of purchased electricity consumed by the site. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organizational boundary of the site. Scope 2 emissions physically occur at the facility where electricity is generated.

Source: Slightly adapted text derived from GHG Protocol

Scope 3

All other indirect emissions. Scope 3 emissions are a consequence of the activities of the site, but occur from sources not owned or controlled by the site. Some examples of Scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services.

Source: Slightly adapted text derived from GHG Protocol

Site

An area that is owned, leased, or otherwise controlled by the entity and where mining-related activities are proposed or are taking place.

EXISTING DEFINITIONS

Affected Community

A community that is subject to risks or impacts from a project/operation.

Baseline

A description of existing conditions to provide a starting point (e.g., pre-project condition) against which comparisons can be made (e.g., post-impact condition), allowing the change to be quantified.

Competent Professionals

In-house staff or external consultants with relevant education, knowledge, proven experience, and necessary skills and training to carry out the required work. Competent professionals would be expected to follow scientifically robust methodologies that would withstand scrutiny by other professionals. Other equivalent terms used may include: competent person, qualified person, qualified professional.

REVISED. Deleted reference to Chapter 4.1.

Consultation

An exchange of information between an entity and its stakeholders that provides an opportunity for stakeholders to raise concerns and comment on the impacts and merits of a proposal or activity before a decision is made. In principle the entity should take into account the concerns and views expressed by stakeholders in the final decision.

Corporate Owner(s)

The corporation(s) or other business institution(s) including any private or state-run enterprises that have complete or partial financial interest in or ownership of a project/operation.

REVISED. Changed wording from mining project to project/operation.

Free, Prior and Informed Consent (FPIC)

Consent based on: engagement that is free from external manipulation, coercion and intimidation; notification, sufficiently in advance of commencement of any activities, that consent will be sought; full disclosure of information regarding all aspects of a proposed project or activity in a manner that is accessible and understandable to the people whose consent is being sought; acknowledgment that the people whose consent is being sought can approve or reject a project or activity, and that the entities seeking consent will abide by the decision.

Indigenous Peoples

An official definition of 'Indigenous' has not been adopted by the UN system due to the diversity of the world's Indigenous Peoples. Instead, a modern and inclusive understanding of 'Indigenous' includes peoples who: identify themselves and are recognized and accepted by their community as Indigenous; demonstrate historical continuity with pre-colonial and/or pre-settler societies; have strong links to territories and surrounding natural resources; have distinct social, economic, or political systems; maintain distinct languages, cultures, and beliefs; form non-dominant groups of society; and resolve to maintain and reproduce their ancestral environments and systems as distinctive peoples and communities. In some regions, there may be a preference to use other terms such as tribes, first peoples/nations, aboriginals, Adivasi, and Janajati. All such terms fall within this modern understanding of 'Indigenous'.

REVISED. Removed the term "ethnic groups" as this is broadly applicable to other populations that are not considered Indigenous Peoples and could make it challenging to audit.

Mitigation Hierarchy

The mitigation hierarchy is a set of prioritized steps to alleviate environmental (or social) harm as far as possible through avoidance, minimization, and restoration of adverse impacts. Compensation/offsetting are only considered to address residual impacts after appropriate avoidance, minimization, and restoration measures have been applied.

Revegetation

Revegetation is the task of reseeding or replanting forbs, grasses, legumes, and other plants (sometimes including shrubs and trees) so as to provide cover to decrease erosion, provide for soil stability, and provide forage for wildlife or livestock or to otherwise return the site to a useable state.

Stakeholders

Individuals or groups who are directly or indirectly affected by a project/operation, such as rights holders, as well as those who may have interests in a project/operation and/or the ability to influence its outcome, either positively or negatively.

REVISED. Changed wording from persons to individuals, and from project to project/operation.

Suppliers

Providers of goods, services, or materials to a project/operation.

ANNEXES AND TABLES

ANNEX 4.5-A: Intensity metrics for different mineral/metal commodities

Mineral/Metal	Greenhouse Gas Intensity Metric
Aggregates	tonne of CO_2e/tonne of aggregate
Aluminum/Aluminium	tonne of CO_2e /tonne of aluminum
Antimony	tonne of CO_2e /tonne of antimony
Barite	tonne of CO_2e /tonne of barite
Bauxite	tonne of CO_2e /tonne of bauxite
Boron	tonne of CO_2e /tonne of boron
Chromium	tonne of CO_2e /tonne of chromium
Coal (metallurgical)	tonne of CO_2e /tonne of metallurgical coal
Cobalt	tonne of CO_2e /tonne of cobalt
Copper	tonne of CO_2e /tonne of copper
Diamonds	tonne of CO_2e /carat of diamonds
Gemstones	tonne of CO_2e /carat of gemstones
Gold	tonne of CO_2e/oz of gold
Iridium	tonne of CO_2e /oz of iridium
Iron	tonne of CO_2e /tonne of iron
Iron ore	tonne of CO_2e /tonne of iron ore
Lead	tonne of CO_2e /tonne of lead
Limestone	tonne of CO_2e /tonne of limestone
Lithium	tonne of CO_2e /tonne of lithium (industrial grade)
Lithium	tonne of CO_2e /tonne of lithium (battery grade)
Magnesium	tonne of CO_2e /tonne of magnesium
Manganese	tonne of CO_2e /tonne of manganese
Molybdenum	tonne of CO_2e /kg of molybdenum
Nickel	tonne of CO_2e /tonne of nickel
Niobium	tonne of CO_2e /kg of niobium
Osmium	tonne of CO_2e /oz of osmium
Palladium	tonne of CO_2e /oz of palladium
Phosphates	tonne of CO_2e /tonne of phosphates
Platinum	tonne of CO_2e/oz of platinum
Potash	tonne of CO_2e /tonne of potash
Rare earth elements	tonne of CO_2e /kg of rare earth elements
Rhodium	tonne of CO_2e /oz of rhodium
Ruthenium	tonne of CO_2e /oz of ruthenium
Sand	tonne of CO_2e /tonne of sand
Silver	tonne of CO_2e /oz of silver
Tantalum	tonne of CO_2e /kg of tantalum
Tin	tonne of CO_2e /tonne of tin
Tungsten	tonne of CO_2e /tonne of tungsten
Vanadium	tonne of CO_2e /kg of vanadium
Zinc	tonne of CO_2e /tonne of zinc