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GRI Standards Project for Alignment of Sector Standards with New and Revised Topic Standards – Exposure draft

Comments to be received by 13 July 2025

Background

Sustainability reporting using the GRI Standards enables an organization to publicly disclose its most significant impacts and how it manages these impacts.

The GRI Standards are a system of interrelated Standards, where the Sector Standards build on cross-sectoral GRI Topic Standards to report information on sustainability impacts. When existing Topic Standards are revised or new ones developed, the GRI Sector Standards need to be assessed against the new disclosures and aligned accordingly, to maintain consistency and ensure sector organizations use the most up-to-date disclosures to account for their impacts.

This project concerns the alignment of *GRI 11: Oil and Gas Sector 2021*, *GRI 12: Coal Sector 2022*, *GRI 13: Agriculture, Aquaculture and Fishing Sectors 2022*, and *GRI 14: Mining Sector 2024* with the Topic Standards *GRI 101: Biodiversity 2024*, *GRI 102: Climate Change 2025*, and *GRI 103: Energy 2025.*

How to read this document

The proposed changes included in this document are limited to the topics in the respective Sector Standards that have reporting expectations linked to the new and revised Topic Standards mentioned. This covers the topics on GHG emissions, climate adaptation, resilience and transition, biodiversity, and natural ecosystem conversion. Topic descriptions have been revised to reflect the language and concepts used in the Topic Standards and for internal coherence. Summary of changes can be found in the Annex of this document.

To facilitate understanding alignment changes made into the reporting sections:

- New Topic Standard disclosures are marked in blue underline.
- Superseded Topic Standard disclosures and sector reporting covered by new/revised Topic disclosures are marked in ~~strikethrough~~.
- Sector reporting for which feedback is still sought is marked in bright red.

Public comment period

This document is published for public comment by the Global Sustainability Standards Board (GSSB), the independent standard-setting body of GRI.

Any interested party can submit comments on this draft by 13 July 2025 via this online questionnaire. As required by the GSSB Due Process Protocol, only comments submitted in writing and in English will be considered. Comments will be published on the GRI website and considered a matter of public record. Instructions to submit comments are outlined on the first page of the online questionnaire.

For questions regarding the exposure draft or the public comment period, please send an email to sector@globalreporting.org.

Explanatory memorandum

This explanatory memorandum sets out the objectives of the GRI Standards Project for Alignment of Sector Standards with New and Revised Topic Standards. It also includes the significant proposals resulting from this project and summarizes the Global Sustainability Standards Board (GSSB)'s involvement and views on the development of the draft.

Objectives for the project

The GRI Sector Standards guide organizations to report information on topics that are likely to be material for the specific sector, based on well-evidenced impacts. Each topic lists the relevant GRI Topic Standard disclosures for reporting by that sector. Within the GRI reporting model, an organization with an applicable Sector Standard is required to report the GRI Topic Standard disclosures listed for that topic, or provide a reason for omission, to be considered as reporting "in accordance with" the GRI Standards.

The GSSB has committed to an ambitious work program, including revising all existing GRI Topic Standards. This triggers a need to align the published Sector Standards with new or revised Topic Standards to preserve the linkage between Topic and Sector Standards.

The *GRI 101: Biodiversity 2024* will be effective for sustainability reports published as of 1 January 2026. The existing Sector Standards *GRI 11: Oil and Gas Sector 2021*, *GRI 12: Coal Sector 2022*, and *GRI 13: Agriculture, Aquaculture and Fishing Sectors 2022* will thus need to be aligned with *GRI 101* before this date.[1]

With the approval of *GRI 102: Climate Change 2025* and *GRI 103: Energy 2025* Standards, the alignment exercise also includes the climate change related topics in the published Sector Standards.

The project follows the GSSB's Due Process Protocol. The SD determined that the alignment of the existing Sector Standards with the revised biodiversity and climate contents would not require the appointment of a dedicated technical committee, as members of the project teams for the Sector and Topic Standards in question were all available for the project implementation. Thus, the views of the original technical committees and/or working groups are considered as well represented.

For more information on the project, consult the project proposal.

Methodology

The changes to the Sector Standards are limited to the alignment with the new and revised Topic Standards, ensuring consistency within the system of GRI Standards. Broader revisions of the Sector Standards, for example, to adapt them to new external instruments or evolving stakeholder expectations, are not in scope.

The Standards Division has mapped the changes in the revised Topic Standards to previous contents, cross-referencing the new contents to the relevant sections in the existing Sector Standards. This has generated changes to the list of likely material topics, topic statements, topics descriptions, and reporting sections. An overview of changes per topic in each Sector Standard can be found in Table 1.

While the alignment was not expected to result in changes in the naming or number of likely material topics listed in each Sector Standards, the redrawn boundaries of some of the revised GRI Topic Standards have necessitated a simplification to avoid duplicate reporting. To the degree possible, the project attempts to balance integrity towards the original list of likely material topics as determined by each Sector Standard Working Group, while incorporating the most recent concepts, language and structure included in the revised Topic Standards. As a result, SD proposes to merge the GHG

[1] *GRI 14: Mining Sector 2024* already refers to the *GRI 101* disclosures, as the two Standard development processes took place in parallel.

emissions and Climate adaptation, resilience, and transition topics in *GRI 11*, *GRI 12*, and *GRI 14*. The same approach was not feasible for *GRI 13*, as the boundary of the topic 13.1 Emissions goes beyond GHG emissions, also incorporating other air pollutants.

Rationale for merging the GHG emissions and climate topics

The Working Groups for the Sector Standards for oil, gas, coal, and mining regarded energy and greenhouse gas (GHG) emissions as inherently linked. This was due to the fact that energy consumption and choices are the primary drivers of GHG emissions. As a result, in three of the Sector Standards (GRI 11, GRI 12, and GRI 14), energy and GHG emissions were combined under one topic called “GHG emissions”.

Strategic considerations related to climate adaptation and transition were considered as separate from GHG emissions mitigation. At the time of developing these Sector Standards, only one relevant disclosure on climate change existed, in the Topic Standard *GRI 201: Economic Performance 2016*, capturing climate-related financial risks and opportunities.

With the introduction of the new and revised Climate and Energy Standards, a different thematic structure has emerged. As a result of the revision, Energy remains a standalone topic, while aspects related to GHG emissions, climate adaptation, and transition are located in the Climate Standard. This presents challenges for alignment with the existing Sector Standards structure.

A key limitation is that creating a new material topic titled "Energy" would not be feasible, as this was not the agreed outcome of the original working groups. Additionally, within the new Climate Change Standard, climate transition and GHG emissions are now deeply interconnected; for instance, the transition plan disclosure is directly linked to disclosures on GHG emissions targets. Separating these topics would be impractical, given their interdependencies. Moreover, the new expansive management disclosures in the Climate Standard already integrate GHG emissions mitigation, reducing the necessity of maintaining separate topic categories for sector-specific reporting. Therefore, merging the GHG emissions and Climate adaptation, resilience and transition topics into a single reporting area would not result in a loss of relevant information.

While modifications to the list of likely material topics were initially considered out of scope, in this instance, such an adjustment appears to be the most logical and effective approach. It will likely provide greater clarity and ease of reporting for organizations and reduce the risk of duplicate reporting.

Significant proposals

This section summarizes the main changes implemented into the existing Sector Standards resulting from the alignment exercise.

GRI 11: Oil and Gas Sector 2021 and ***GRI 12: Coal Sector 2022***

<u>Alignment with GRI Biodiversity Standard</u>

Topic statement and description of topics 11.4 Biodiversity and 12.5 Biodiversity are aligned with the language and terminology as per *GRI 101: Biodiversity 2024*.

The following changes are proposed for the reporting section, based on SD assessment and the original Oil, Gas, and Coal Working Group recommendations:

- *GRI 101: Biodiversity 2024*: All disclosures apart from GRI 101-3 Access and benefit-sharing, are assessed as relevant for organizations in the oil and gas and coal sectors to report.

- Sector-specific reporting: From the four additional sector recommendations, only one is assessed as partly covered, while others are fully covered by *GRI 101*.
    - A public comment question will be asked to confirm the relevance of the recommendation on policy commitments and their application to future operations, in the light of the expansive reporting already included in GRI 101.

Alignment with GRI Climate Change and Energy Standards

Topics GHG emissions and Climate adaptation, resilience and transition are merged into one topic, named 'Climate change'. The topic description and topic statement are updated to reflect the inclusion of both topics, aligning with the scope of *GRI 102.*

The following changes are proposed for the reporting section, based on SD assessment and the original Oil, Gas, and Coal Working Group recommendations:

- *GRI 102: Climate Change 2025*: All disclosures are assessed as relevant for organizations in the oil and gas and coal sectors to report.

- *GRI 103: Energy 2025:* All disclosures except Disclosure 103-5 Reduction in energy consumption are assessed as relevant for organizations in the oil and gas sector to report.
    - Expectations corresponding to Disclosure 103-5: Reduction in energy consumption were not included in GRI 11 or GRI 12, hence it is not listed as relevant for the sectors to report.

- Sector-specific reporting: From the additional sector recommendations and sector disclosures across the two affected topics in GRI 11 and GRI 12, the following are assessed as not or only partially covered by the new Topic Standards on climate change and energy:
    - Flaring and venting (Ref. 11.1.1).
    - Breakdown of gross direct (Scope 1) GHG emissions by type of source (Ref. 11.1.5 and 12.1.5).
    - Transition plans at annual general meetings of shareholders (Ref. 12.2.1). A PCP question to be asked on its relevance in the light of the more extensive transition plan reporting in GRI 102.
    - Impacts of climate change on the organization's operations or revenue, including development of reserves, early closures, and production volumes (Ref. 11.2.2 and 12.2.2).
    - Capex allocated in investments such as development of new reserves, renewable sources, CO_2 removals, and R&D (Ref. 11.2.2 and 12.2.2).
    - Net mass of CO_2 captured and removed (Ref. 11.2.2 and 12.2.2).
    - Divestments from coal assets (Ref 12.2.2).

GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022

Alignment with GRI Biodiversity Standard

The topic statements and descriptions of topics 13.3 Biodiversity and 13.4 Natural ecosystem conversion are aligned with the language and terminology as per *GRI 101: Biodiversity 2024*.

The following changes are proposed for the reporting section, based on SD assessment and the original Agriculture, Aquaculture and Fishing Working Group recommendations:

- *GRI 101: Biodiversity 2024*: All disclosures are assessed as relevant for organizations in the agriculture, aquaculture, and fishing sectors to report.

- Sector-specific reporting: From the four additional sector recommendations, the following are assessed as not or only partially covered by GRI 101:
    - Preventing and managing escapes of farmed aquatic organisms (Ref. 13.3.1).
    - Details on aquatic organisms produced, juvenile seeds stocks, and feed (Ref 13.3.6).
    - Details on species of aquatic organisms caught or harvested (Ref. 13.3.7).
    - Details on policies or commitments to reduce or eliminate natural ecosystem conversion (13.4.1).
    - Production in and sourcing of products from deforestation- or conversion-free lands (Ref. 13.4.2 and 13.4.3)
    - Size and location of natural ecosystems converted in own and suppliers' operations (Ref. 13.4.4 and 13.4.5).

Alignment with GRI Climate Change and Energy Standards

Topics 13.1 Emissions and 13.2 Climate adaptation and resilience are kept separate, as the topic 13.1 encompasses a wider scope than GHG emissions by also incorporating other emissions to air. The name of topic 13.2 is changed to “Climate adaptation” to align with GRI 102, where “resilience” is understood as a term indicating a financial dimension. The topic descriptions and topic statements are aligned with the language and terminology as per GRI 102.

The following changes are proposed for the reporting section, based on SD assessment and the original Agriculture, Aquaculture and Fishing Working Group recommendations:

- *GRI 102: Climate Change 2025*: All disclosures, apart from GRI 102-3 Just transition, are assessed as relevant for organizations in the agriculture, aquaculture, and fishing sectors to report. A public comment question will be posed to collect more views on the relevance of disclosure 102-3.

- *GRI 103: Energy 2025:* No energy disclosures were included in GRI 13 and GRI 103 disclosures are hence not listed as relevant for the sector to report.

- Sector-specific reporting: From the additional sector recommendations listed across the two topics, one is assessed as not covered by *GRI 102*.
    - Reporting land use change emissions as part of Scope 1 and Scope 3 emissions (Ref. 13.1.2 and 13.1.4).

GRI 14: Mining Sector 2024

Alignment with GRI Climate Change and Energy Standards

Topics GHG emissions and Climate adaptation, resilience and transition are merged into one topic, named ‘Climate change’. The topic description and topic statement are updated to reflect the inclusion of both topics, aligning with the scope of *GRI 102.*

The following changes are proposed for the reporting section, based on SD assessment and the original Mining Working Group recommendations:

- *GRI 102: Climate Change 2025*: All disclosures are assessed as relevant for organizations in the mining sector to report.

- *GRI 103: Energy 2025:* Disclosures 103-1: Energy policies and commitments, 103-2: Energy consumption and self-generation within the organization; 103-3: Upstream and downstream energy consumption and 103-4: Energy intensity are assessed as relevant for organizations in the mining sector to report.
    - Expectations corresponding to disclosure 103-5: Reduction in energy consumption were not included in GRI 14, hence it is not listed as relevant for the sector to report.

- Sector-specific reporting: From the additional sector recommendations listed across the two topics, the following are assessed as not or only partly covered by *GRI 102*.
    - Breakdown of the Scope 1 and 2 GHG emissions, and emissions intensity rate, by mine site (Ref. 14.1.5, 14.1.6 and 14.1.8)
    - Land use change emissions for Scope 1 emissions (Ref. 14.1.5).
    - Effects of climate change on the organization’s contributions to economic development and payments to governments (Ref. 14.2.2).

Superseded publications

The alignment of *GRI 11: Oil and Gas Sector 2021*, *GRI 12: Coal Sector 2022*, *GRI 13: Agriculture, Aquaculture and Fishing Sectors 2022*, and *GRI 14: Mining Sector 2024* with the revised biodiversity, climate change, and energy Topic Standards is not considered a major revision of the Sector Standards. However, the alignment has implications on the reporting expectations for organizations in these sectors and requires issuing a new publication.

The SD proposes to time the publications to correspond with the effective dates of the new and revised GRI Topic Standards in scope for this alignment project. In practice, this means:

- Releasing all language versions of the three Sector Standards (GRI 11, GRI 12, and GRI 13) aligned with *GRI 101: Biodiversity 2024*, on 1 January 2026, to coincide with the effective date of GRI 101.
- Releasing all language versions of the four Sector Standards aligned with *GRI 102: Climate Change 2025* and *GRI 103: Energy 2025*, on 1 January 2027, to coincide with the effective dates of GRI 102 and 103.

Contents

GRI 11: Oil and Gas Sector 2021

Topic 11.1 Climate change

The biggest contributor to climate change is greenhouse gas (GHG) emissions, the impacts of which are occurring at an accelerated rate. Organizations have a responsibility to contribute to climate change mitigation and adaptation, including by developing and implementing transition and adaptation plans that align with the principles of just transition. This topic covers GHG emissions, actions taken to transition to less GHG-emissions intensive economic activities, and climate change adaptation, including impacts on workers, local communities, and Indigenous Peoples.

The oil and gas sector's activities and use of its products are responsible for a large portion of two major greenhouse gas (GHG) emissions: carbon dioxide (CO_2) and methane (CH_4). Globally, it is estimated that the sector is responsible for a quarter of all anthropogenic emissions of CH_4, which has a notably higher global warming potential than CO_2. Recent measurements indicate that available figures on CH_4 emissions from the sector could be underestimated. Other GHGs from oil and gas activities include nitrous oxide (N_2O), hydrofluorocarbons (HCFs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).

Signatories of the Paris Agreement have committed to keeping global warming well below 2°C above pre-industrial levels while pursuing efforts to limit global temperature rise to 1.5ºC [58]. However, available fossil fuel reserves far exceed the consumption limit needed to stay within these limits [78]. This means organizations in the oil and gas sector need to set GHG emissions reduction targets, modify their business models, and invest in renewable energy, as well as adopt technologies to remove CO_2 from the atmosphere [68], and nature-based solutions to mitigate climate change, such as reforestation, afforestation, and coastal and wetland restoration.

GHG emissions from oil and gas activities are classified as Scope 1 GHG emissions in the case of sources owned or controlled by the organization or Scope 2 GHG emissions in the case of purchased and acquired electricity, heating, cooling, and steam consumed by the organization. Currently, 15% of the world's energy-related GHG emissions come from producing and distributing oil and gas [36].

Scope 1 GHG emissions come from fuel combustion during production, process emissions, such as those during loading and tankage, and fugitive emissions, such as those from piping and equipment leaks. A substantial source of the sector's Scope 1 GHG emissions is flaring and venting, which aims to dispose of gas that cannot be contained or handled otherwise for safety, technical, or economic reasons. These practices occur during oil and gas production, storage, and refining.

Box 1. Flaring and venting

When gas needs to be disposed of, it may be flared (burned off) or vented (released without being burned). Flaring converts gas to CO_2 while venting releases CH_4 directly into the atmosphere. Given that CH_4 has a higher global warming potential than CO_2, routing associated gases to an efficient flare system instead of venting is considered best practice and there is wide agreement that routine venting should be eliminated.

Flaring also represents a major source of GHG emissions. While large amounts of gases resulting from oil and gas activities are used or conserved, flaring still routinely occurs. According to the World Bank, routine flaring occurs "during normal oil production operations in the absence of sufficient facilities or amenable geology to re-inject the produced gas, utilize it on-site, or dispatch it to a market". Increases in shale oil production have further contributed to volumes of flaring.

The amount of natural gas flared in 2018 resulted in emissions of approximately 275 megatons of CO_2, as well as CH_4, black carbon, and N_2O.

See references [34], [46], and [48] in the Bibliography.

Scope 2 GHG emissions originate from stationary and mobile sources (e.g., transportation of materials, products, or waste) and the activities of extraction, oil refining, liquefaction and regasification of natural gas, and operation of facilities and equipment. The depletion of traditional oil and gas resources has led the sector to move production to more difficult settings, which may involve more complex extraction methods such as offshore deep-water drilling or oil sands mining. Despite improvements in production efficiency, extracting these oil and gas resources can increase the amount of energy used during production and transportation and result in higher GHG emissions.

The sector also faces expectations to address Scope 3 GHG emissions related to the use of oil and gas products. These constitute the most significant GHG emissions for the sector and over half of global CO_2 emissions [33]. The majority of Scope 3 GHG emissions originate from combustion processes related to construction, electricity and heat generation, manufacturing, and transportation. These emissions can increase with higher energy demands.

Actions to reduce Scope 1 and Scope 2 GHG emissions linked to extracting and distributing oil and gas offer important and immediate opportunities for the sector to contribute to reducing global GHG emissions. Actions to reduce Scope 3 GHG emissions can include changing the portfolio of products and services from high-carbon products and services towards low-carbon alternatives.

Transitioning to less GHG emissions-intensive economic activities creates uncertainty about the future demand for oil and gas [67] [68]. A decrease in demand will translate into lower utilization of existing production facilities and decreased development of reserves. Depending on the rate of this transition, some fields and facilities may need to be re-evaluated or written off prematurely, becoming stranded assets. This will have impacts on workers, especially when jobs are terminated, and may create challenges related to employability and desirable re-employment opportunities.

The transition may affect employment, government revenues, and economic development in regions where the sector operates. More frequent closures are less likely to be counterbalanced by openings, as has been the case in the past. Closure of operations without adequate provisions for decommissioning and rehabilitation may also result in an economic burden for governments and local communities (see also topic 11.7 Closure and rehabilitation), particularly in countries where oil and gas production provide a large percentage of revenues.

According to the International Labor Organization, a just transition involves greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities, and leaving no one behind. Achieving a just transition requires recognizing the different dependency levels of workers, local communities, and national economies on the oil and gas sector [79]. Actions that contribute to a just transition include providing adequate advance notice of closures, collaborating with governments and unions, advocating for climate-consistent policy (see also topic 11.22 Public policy), up- and re-skilling and redeploying workers, and making alternative investments in the affected communities. Meaningful engagement with stakeholders early on, including Indigenous Peoples and local communities, is also critical to achieving a just transition.

Reporting on climate change

If the organization has determined climate change to be a material topic, this sub-section lists the disclosures identified as relevant for reporting on the topic by the oil and gas sector.

STANDARD	DISCLOSURE	SECTOR STANDARD REF #
Management of the topic		
GRI 3: Material Topics 2021	Disclosure 3-3 Management of material topics *Additional sector recommendations* ~~• Describe policies, commitments, and actions of the organization to prevent or mitigate the impacts of the transition to a low-carbon economy on workers and local communities.~~ ~~• Report the level and function within the organization that has been assigned responsibility for managing risks and opportunities due to climate change.~~ ~~• Describe the board's oversight in managing risks and opportunities due to climate change.~~ ~~• Report whether responsibility to manage climate change-related impacts is linked to performance assessments or incentive mechanisms, including in the remuneration policies for highest governance body members and senior executives.~~ ~~• Describe the climate change-related scenarios used to assess the resilience of the organization's strategy, including a 2°C or lower scenario.~~ • Describe actions taken to manage flaring and venting and the effectiveness of actions taken.	11.1.1
Topic Standard disclosures		
GRI 102: Climate Change 2025	Disclosure 102-1 Transition plan for climate change mitigation ~~Disclosure 201-2 Financial implications and other risks and opportunities due to climate change~~ *Additional sector recommendations* ~~• Report the emissions potential for proven and probable reserves.[2]~~ ~~• Report the internal carbon-pricing and oil and gas pricing assumptions that have informed the identification of risks and opportunities due to climate change.~~ • Describe how climate change-related risks and opportunities affect or could affect the organization's operations or revenue, including: – development of currently proven and probable reserves; – potential write-offs and early closure of existing assets; – oil and gas production volumes for the current reporting period and projected volumes for the next five years.	11.1.2
	Disclosure 102-2 Climate change adaptation plan	11.1.3

~~[2] The definition of reserves used by the organization for this additional sector recommendation should be the same as the definition used in its consolidated financial statements or equivalent documents.~~

	Disclosure 102-3 Just transition	11.1.4
	Disclosure 102-4 GHG emissions reduction targets and progress ~~Disclosure 305-5 Reduction of GHG emissions~~ ~~*Additional sector recommendations*~~ • ~~Report how the goals and targets for GHG emissions are set, specify whether they are informed by scientific consensus, and list any authoritative intergovernmental instruments or mandatory legislation the goals and targets are aligned with.~~ • ~~Report the Scopes (1, 2, 3) of GHG emissions, activities, and business relationships to which the goals and targets apply.~~ • ~~Report the baseline for the goals and targets and the timeline for achieving them.~~	11.1.5
	~~Disclosure 305-1 Direct (Scope 1) GHG emissions~~ Disclosure 102-5 Scope 1 GHG emissions *Additional sector recommendations* • ~~Report the percentage of gross direct (Scope 1) GHG emissions from CH_4.~~ • Report the breakdown of gross Scope 1 GHG emissions by type of source (e.g., stationary combustion, process, fugitive).	11.1.6
	~~Disclosure 305-2 Energy indirect (Scope 2) GHG emissions~~ Disclosure 102-6 Scope 2 GHG emissions	11.1.7
	~~Disclosure 305-3 Other indirect (Scope 3) GHG emissions~~ Disclosure 102-7 Scope 3 GHG emissions	11.1.8
	~~Disclosure 305-4 GHG emissions intensity~~ Disclosure 102-8 GHG emissions intensity	11.1.9
	Disclosure 102-9 GHG removals in the value chain Report net mass of CO_2 in metric tons captured and removed from the atmosphere (CO2 stored less the GHG emitted in the process).[3]	11.1.10
	Disclosure 102-10 Carbon credits	11.1.11
GRI 103: Energy 2025	Disclosure 103-1 Energy policies and commitments	11.1.12
	~~Disclosure 302-1 Energy consumption within the organization~~ Disclosure 103-2 Energy consumption and self-generation within the organization	11.1.13
	~~Disclosure 302-2 Energy consumption outside of the organization~~ Disclosure 103-3 Upstream and downstream energy consumption	11.1.14
	~~Disclosure 302-3 Energy intensity~~	11.1.15

[3] The mass of the CO_2 captured using carbon capture and storage less the mass of CO_2 emitted as a result of or during the process, is sometimes known as 'net reduction of emissions' [69].

	Disclosure 103-4 Energy intensity	
Additional sector disclosures		
~~Describe the organization's approach to public policy development and lobbying on climate change, including:~~ • ~~the organization's stance on significant issues related to climate change that are the focus of its participation in public policy development and lobbying, and any differences between these positions and its stated policies, goals, or other public positions;~~ • ~~whether it is a member of, or contributes to, any representative associations or committees that participate in public policy development and lobbying on climate change, including:~~ – ~~the nature of this contribution;~~ – ~~any differences between the organization's stated policies, goals, or other public positions on significant issues related to climate change; and the positions of the representative associations or committees.~~[6] Report the percentage of capital expenditure (CapEx) that is allocated to investments in: – prospection, exploration, and development of new reserves; – energy from renewable sources (by renewable energy source); – technologies to remove CO_2 from the atmosphere and nature-based solutions to mitigate climate change; – other research and development initiatives that can address the organization's climate change risks.	11.1.16

Topic 11.4 Biodiversity

Biodiversity is the variability among living organisms. It includes diversity within species, between species, and of ecosystems. Biodiversity not only has intrinsic value, but is also vital to human health, food security, economic prosperity, and mitigation of climate change and adaptation to its impacts. This topic covers impacts on biodiversity, including genetic diversity, animal and plant species, and ecosystems.

Oil and gas activities typically require large-scale developments that have impacts on biodiversity and ecosystem services. These impacts can limit the availability and accessibility of natural resources or degrade their quality. Impacts on biodiversity and ecosystem services may also affect the well-being and livelihoods of local communities and Indigenous Peoples (see also topic 11.15 Local communities and topic 11.17 Rights of Indigenous Peoples).

Direct drivers of biodiversity loss influence biodiversity and ecosystem processes, leading to impacts such as degradation of ecosystems, habitat fragmentation, and animal mortality. Oil and gas activities may contribute to the direct drivers through land and sea use change, which can result in soil erosion and sedimentation of waterways, exploitation of natural resources, climate change, pollution, and the introduction of invasive alien species.

Impacts can result from onshore and offshore activities, including land clearance; seismic testing and well drilling; construction of facilities, pipelines and roads; transportation; water discharge; disposal of drilling waste; and spills and leaks. Threats to biodiversity will increase as easily accessible oil and gas resources are depleted and oil and gas activities move into more remote areas. Impacts on biodiversity can be more significant when oil and gas activities occur in or near ecologically sensitive areas and may extend well beyond the geographic boundaries and the lifetime of sites (see also topic 11.7 Closure and rehabilitation).

The sector's activities can also contribute to cumulative impacts on biodiversity. For example, the expansion of onshore oil and gas activities, along with the installation of new access routes, leads to land clearance, causing habitat fragmentation and ecosystem conversion. This can increase the area's use or attract other sectors to operate in the same area, further intensifying impacts. Changes to land use to accommodate the sector's activities can exacerbate the effects of climate change if they result in the removal of carbon sinks. In turn, climate change is likely to alter species' distribution, functioning, and interactions, reducing ecosystems' capacity to adapt. Impacts can worsen with increasing temperatures (see also topic 11.1 Climate change).

To limit and manage their impacts on biodiversity, many oil and gas organizations use the mitigation hierarchy tool to help inform their actions to balance or outweigh negative impacts on biodiversity. The mitigation hierarchy follows avoidance, minimization, restoration and rehabilitation, and offset. Actions to avoid negative impacts are prioritized, as is minimizing those impacts when avoidance is not possible. Restoration and rehabilitation measures should be implemented when negative impacts cannot be avoided or minimized. Offsetting measures may be applied to residual negative impacts after all other measures have been applied. [118]

Reporting on biodiversity

If the organization has determined biodiversity to be a material topic, this sub-section lists the disclosures identified as relevant for reporting on the topic by the oil and gas sector.

STANDARD	DISCLOSURE	SECTOR STANDARD REF #
Management of the topic		
GRI 3: Material Topics 2021	Disclosure 3-3 Management of material topics ~~*Additional sector recommendations*~~ ~~Report whether application of the mitigation hierarchy has informed actions to manage biodiversity-related impacts.~~	11.4.1
Topic Standard disclosures		
GRI 101: Biodiversity 2024	Disclosure 101-1 Policies to halt and reverse biodiversity loss ~~304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas~~ *Additional sector recommendations* Report whether the organization's policies and commitments to halt and reverse biodiversity loss apply to future operations and to operations beyond ecologically sensitive areas.	11.4.2
	Disclosure 101-2 Management of biodiversity impacts	11.4.3
	Disclosure 101-4 Identification of biodiversity impacts	11.4.4
	Disclosure 101-5 Locations with biodiversity impacts ~~Disclosure 304-2 Significant impacts of activities, products and services on biodiversity~~ ~~*Additional sector recommendations*~~ • ~~Report significant impacts on biodiversity with reference to affected habitats and ecosystems.~~	11.4.5
	Disclosure 101-6 Direct drivers of biodiversity loss	11.4.6
	Disclosure 101-7 Changes to the state of biodiversity ~~Disclosure 304-3 Habitats protected or restored~~	11.4.7
	Disclosure 101-8 Ecosystem services ~~Disclosure 304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations~~	11.4.8

GRI 12: Coal Sector 2022

Topic 12.1 Climate change

The biggest contributor to climate change is greenhouse gas (GHG) emissions, the impacts of which are occurring at an accelerated rate. Organizations have a responsibility to contribute to climate change mitigation and adaptation, including by developing and implementing transition and adaptation plans that align with the principles of just transition. This topic covers GHG emissions, actions taken to transition to less GHG-emissions intensive economic activities, and climate change adaptation, including impacts on workers, local communities, and Indigenous Peoples.

Studies show that approximately half of the total anthropogenic carbon dioxide (CO_2) emissions since 1750 have occurred in the last 40 years, mostly due to the increased use of fossil fuels, including coal [42]. Besides CO_2, coal operations also cause the emission of methane (CH_4), nitrous oxide (N_2O), and ozone (O_3). CH_4 has a significantly higher global warming potential than CO_2; when considering its impact over 100 years, one ton of CH_4 is equivalent to 28 to 36 tons of CO_2 [49] [61]. Coal mining is estimated to be responsible for 11% of global anthropogenic CH_4 emissions [54], although recent measurements indicate that CH_4 emissions from energy production could be underestimated [53].

Signatories of the Paris Agreement have committed to keeping global warming well below 2°C above pre-industrial levels while pursuing efforts to limit temperature rise to 1.5°C. However. available fossil fuel reserves far exceed the consumption limit needed to stay within these limits [83]. This means organizations in the sector need to set GHG emissions reduction targets, close operations, modify their business models to reduce the reliance on thermal coal, invest in new technologies to remove CO_2 from the atmosphere, and create carbon sinks.

Coal mining activities consume significant amounts of energy. Unless renewable energy sources provide the necessary power, mining operations generate CO_2 emissions. These are classified as Scope 1 GHG emissions in the case of sources owned or controlled by the organization or Scope 2 GHG emissions in the case of purchased and acquired electricity, heating, cooling, and steam consumed by the organization.

The amount of energy used in coal mining and the resulting CO_2 emissions depend on several factors, such as the method of mining, mine depth, geology, mine productivity, and degree of refining required. The most energy-consuming activities include transportation, exploration, drilling, excavation, extraction, grinding, crushing, milling, pumping, and ventilation. Extraction and transportation in underground mines might require more energy than surface mining due to, for example, greater requirements for hauling, ventilation, and water pumping. Use of explosives for blasting, mine fires and other incidents, and closure and rehabilitation activities are also sources of GHG emissions.

CH_4 emissions from coal mines are released into the atmosphere during and after the mining process. Coal mine methane (CMM) can be released via degasification systems and ventilation air from underground coal mines. CMM can also be released through seepage from abandoned or closed mines through vent holes or cracks in the ground, coal seams of surface mines, and fugitive emissions from storage and transportation. Underground mines are responsible for most of the Scope 1 GHG emissions from CH_4 due to the higher gas content of deeper seams.

For coal, end-use activities are responsible for the most significant GHG emissions, classified as Scope 3 GHG emissions. These emissions mostly originate from electricity and heat generation, steel production, and cement manufacturing. Of all energy sources, coal has the highest GHG emissions intensity when combusted and is the single largest source of global CO_2 emissions. Thermal coal,

which is mainly used for electricity generation, typically releases more than twice the amount of GHGs than natural gas per unit of electricity produced [57]. Steel production uses metallurgical coal, with three-quarters of the energy demand being met by coal [59].

Since coal emits the largest amount of CO_2 and has the highest intensity of emissions per unit of energy among fossil fuels, burning coal is commonly the first activity governments seek to suppress in fulfilling their commitments under the Paris Agreement. The transition to less GHG emissions-intensive economic activities has commenced, resulting in a declining trend in coal consumption. [76] While alternatives for electricity generation exist, steelmakers currently still lack an economically feasible alternative for coal, leading to a longer transition timeline. Technological solutions are being tested that removes, or captures, the GHGs from burning coal, such as carbon capture and storage. However, the technology is not progressing at the rate necessary to meet the emissions reductions needed to limit global temperature rise to 1.5ºC, its environmental impacts are still to be assessed, and new investment remains scarce.

Transitioning to less GHG emissions-intensive economic activities can have substantial negative impacts on organizations, workers, and local communities reliant on coal activities. The transition may also affect employment, government revenues, and economic development in regions where the sector operates. More frequent closures are less likely to be counterbalanced by openings, as has been the case in the past. This will have impacts on workers, especially when jobs are terminated, and may create challenges related to employability and desirable re-employment opportunities. The lack of adequate provisions for closure and rehabilitation may also result in an economic burden for governments and local communities, particularly in countries where coal production provides a large percentage of revenues.

To address the impacts associated with transition risks, coal organizations can diversify away from coal, invest in technological solutions, drive innovation through collaborative sectoral partnerships, and focus on market segments expected to remain operational for longer. However, selling existing coal assets to other entities to reduce an organization's GHG emissions, instead of closing operations, can be detrimental to climate change mitigation efforts. Offloading coal assets to organizations that continue to extract coal does not reduce overall GHG emissions but can instead increase them. If an organization shifts closure and rehabilitation responsibilities to less accountable and inexperienced operators, this may also weaken the management of environmental and socioeconomic impacts from eventual closure (see also topic 12.3 Closure and rehabilitation).

According to the International Labor Organization, a just transition involves greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities, and leaving no one behind. In the coal sector, achieving a just transition requires recognizing the different dependency levels of workers, local communities, and national economies on the coal sector. Actions that contribute to a just transition include providing adequate advance notice of closures, collaborating with governments and unions, advocating for climate-consistent policy (see also topic 12.22 Public policy), up- and re-skilling and redeploying workers, and making alternative investments in the affected communities. Meaningful engagement with stakeholders early on, including Indigenous Peoples and local communities, is also critical to achieving a just transition.

Reporting on climate change

If the organization has determined climate change to be a material topic, this sub-section lists the disclosures identified as relevant for reporting on the topic by the coal sector.

STANDARD	DISCLOSURE	SECTOR STANDARD REF #
Management of the topic		
GRI 3: Material Topics 2021	Disclosure 3-3 Management of material topics *Additional sector recommendations* ~~• Describe policies, commitments, and actions of the organization to prevent or mitigate the impacts of the transition to a low-carbon economy on workers and local communities.~~ ~~• Report the level and function within the organization that has been assigned responsibility for managing risks and opportunities due to climate change.~~ ~~• Describe the highest governance body's oversight in managing risks and opportunities due to climate change.~~ ~~• Report whether responsibility to manage climate change-related impacts is linked to performance assessments or incentive mechanisms, including in the remuneration policies for highest governance body members and senior executives.~~ ~~• Describe the climate change-related scenarios used to assess the resilience of the organization's strategy, including a 2°C or lower scenario.~~	12.1.1
Topic Standard disclosures		
GRI 102: Climate Change 2025	Disclosure 102-1 Transition plan for climate change mitigation ~~Disclosure 201-2 Financial implications and other risks and opportunities due to climate change~~ *Additional sector recommendations* • Report whether the organization's transition plan is a scheduled resolution item at annual general meetings of shareholders (AGM). ~~• Report the emissions potential for proven and probable reserves.4~~ ~~• Report the internal carbon-pricing and coal pricing assumptions that have informed the identification of risks and opportunities due to climate change.~~ • Describe how climate-change related risks and opportunities affect or could affect the organization's operations or revenue, including: – development of currently proven and probable reserves; – potential write-offs and early closure of existing assets; – coal production volumes for the current reporting period and projected volumes for the next five years. • Report planned, ongoing, or completed divestments of coal assets. For each divestment:	12.1.2

~~[4] The definition of reserves used by the organization for this additional sector recommendation should be the same as the definition used in its consolidated financial statements or equivalent documents.~~

	– describe how the organization considered its policy commitments for responsible business conduct;[5] – report whether there are provisions in place to ensure that negative impacts from closure are addressed, and that existing closure and rehabilitation plans are followed by the entity acquiring the asset(s).	
	Disclosure 102-2 Climate change adaptation plan	12.1.3
	Disclosure 102-3 Just transition	12.1.4
	Disclosure 102-4 GHG emissions reduction targets and progress ~~Disclosure 305-5 Reduction of GHG emissions~~ ~~*Additional sector recommendations*~~ • ~~Report how the goals and targets for GHG emissions are set, specify whether they are informed by scientific consensus, and list any authoritative intergovernmental instruments or mandatory legislation the goals and targets are aligned with.~~ • ~~Report the Scopes (1, 2, 3) of GHG emissions, activities, and business relationships to which the goals and targets apply.~~ • ~~Report the baseline for the goals and targets and the timeline for achieving them.~~	12.1.5
	~~Disclosure 305-1 Direct (Scope 1) GHG emissions~~ Disclosure 102-5 Scope 1 GHG emissions *Additional sector recommendations* • ~~Report the percentage of gross direct (Scope 1) GHG emissions from CH_4.~~ • Report the breakdown of gross Scope 1 GHG emissions by type of source (e.g., stationary combustion, process, fugitive).	12.1.6
	~~Disclosure 305-2 Energy indirect (Scope 2) GHG emissions~~ Disclosure 102-6 Scope 2 GHG emissions	12.1.7
	~~Disclosure 305-3 Other indirect (Scope 3) GHG emissions~~ Disclosure 102-7 Scope 3 GHG emissions	12.1.8
	~~Disclosure 305-4 GHG emissions intensity~~ Disclosure 102-8 GHG emissions intensity	12.1.9
	Disclosure 102-9 GHG removals in the value chain • Report net mass of CO_2 in metric tons captured and stored,[6] broken down by: - Carbon captured at the point source;[7]	12.1.10

[5] Policy commitments for responsible business conduct and commitment to respect human rights are reported in Disclosure 2-23 Policy commitments in *GRI 2: General Disclosures 2021*.

[6] ~~Organizations should report the mass of the CO2 captured using carbon capture and storage less the mass of CO2 emitted as a result of or during the process, sometimes also known as 'net reduction of emissions' [71].~~

[7] ~~Point sources include industrial and energy related sources.~~

	- Carbon captured directly from the atmosphere.	
	Disclosure 102-10 Carbon credits	12.1.11
GRI 103: Energy 2025	Disclosure 103-1 Energy policies and commitments	12.1.12
	~~Disclosure 302-1 Energy consumption within the organization~~ Disclosure 103-2 Energy consumption and self-generation within the organization	12.1.13
	~~Disclosure 302-2 Energy consumption outside of the organization~~ Disclosure 103-3 Upstream and downstream energy consumption	12.1.14
	~~Disclosure 302-3 Energy intensity~~ Disclosure 103-4 Energy intensity	12.1.15
Additional sector disclosures		
~~Describe the organization's approach to public policy development and lobbying on climate change, including:~~ • ~~the organization's stance on significant issues related to climate change that are the focus of its participation in public policy development and lobbying, and any differences between these positions and its stated policies, goals, or other public positions;~~ • ~~whether it is a member of, or contributes to, any representative associations or committees that participate in public policy development and lobbying on climate change, including:~~ – ~~the nature of this contribution;~~ – ~~any differences between the organization's stated policies, goals, or other public positions on significant issues related to climate change; and the positions of the representative associations or committees.~~[6] Report the percentage of capital expenditure (CapEx) that is allocated to investments in: ▪ prospection, exploration, acquisition, and development of new reserves; ▪ expansion of current coal mines; ▪ energy from renewable sources (by type of source); ▪ technologies to remove CO_2 from the atmosphere and nature-based solutions to mitigate climate change; ▪ research and development initiatives that can address the organization's risks related to climate change.		12.1.16

Topic 12.5 Biodiversity

Biodiversity is the variability among living organisms. It includes diversity within species, between species, and of ecosystems. Biodiversity not only has intrinsic value, but is also vital to human health, food security, economic prosperity, and mitigation of climate change and adaptation to its impacts. This topic covers impacts on biodiversity, including on genetic diversity, animal and plant species, and ecosystems.

Coal activities typically require large-scale developments that have impacts on biodiversity and ecosystem services. These impacts can limit the availability and accessibility of natural resources or degrade their quality. Impacts on biodiversity and ecosystem services may also affect the well-being and livelihoods of local communities and Indigenous Peoples (see also topics 12.9 Local communities and 12.11 Rights of Indigenous Peoples).

Direct drivers of biodiversity loss influence biodiversity and ecosystem processes, leading to impacts such as degradation of ecosystems, habitat fragmentation, and animal mortality. Coal activities may contribute to the direct drivers of biodiversity loss through land and sea use change, for example, in the form of land clearance for mining, access routes, and waste management facilities, which can result in soil erosion and sedimentation of waterways; exploitation of natural resources by withdrawing and consuming water; through the introduction of invasive alien species; and pollution from, for example, effluent discharges, acid mine drainage, tailings ponds, or overburden piles (see also topics 12.6 Waste and 12.7 Water and effluents).

Different mining methods present distinct impacts on biodiversity. Open-pit mines generate more severe impacts than underground mines due to the progressive deepening and widening of the mining site, increasing the affected areas over time. Open-pit mining is a prominent cause of deforestation, while underground mining can have negative impacts resulting from ground subsidence and groundwater contamination. Impacts on biodiversity can be more significant when coal activities occur in or near ecologically sensitive areas and may extend well beyond the geographic boundaries and the lifetime of sites (see also topic 12.3 Closure and rehabilitation).

The sector's activities can also contribute to cumulative impacts on biodiversity. For example, the expansion of coal activities, along with the installation of new access routes, leads to land clearance, causing habitat fragmentation and ecosystem conversion. This can increase the area's use or encourage other sectors operate in the same area, further intensifying impacts. Changes to land use to accommodate open-pit mining can exacerbate the effects of climate change if they result in the removal of carbon sinks. In turn, climate change is likely to alter species' distribution, functioning, and interactions, reducing ecosystems' capacity to adapt. The impacts are anticipated to worsen with increasing temperatures (see also topic 12.1 Climate change).

To limit and manage their impacts on biodiversity, many coal organizations use the mitigation hierarchy tool to help inform their actions to balance or outweigh negative impacts on biodiversity. The mitigation hierarchy follows avoidance, minimization, restoration and rehabilitation, and offset. Actions to avoid negative impacts are prioritized, as is minimizing those impacts when avoidance is not possible. Restoration and rehabilitation measures should be implemented when negative impacts cannot be avoided or minimized. Offsetting measures may be applied to residual negative impacts after all other measures have been applied. [121].

Reporting on biodiversity

If the organization has determined biodiversity to be a material topic, this sub-section lists the disclosures identified as relevant for reporting on the topic by the coal sector.

STANDARD	DISCLOSURE	SECTOR STANDARD REF #
Management of the topic		
GRI 3: Material Topics 2021	Disclosure 3-3 Management of material topics ~~*Additional sector recommendations*~~ ~~Report whether application of the mitigation hierarchy has informed actions to manage biodiversity-related impacts.~~	12.5.1
Topic Standard disclosures		
GRI 101: Biodiversity 2024	Disclosure 101-1 Policies to halt and reverse biodiversity loss ~~304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas~~ *Additional sector recommendations* Report whether the organization's policies and commitments to halt and reverse biodiversity loss apply to future operations and to operations beyond ecologically sensitive areas.	12.5.2
	Disclosure 101-2 Management of biodiversity impacts	12.5.3
	Disclosure 101-4 Identification of biodiversity impacts	12.5.4
	Disclosure 101-5 Locations with biodiversity impacts ~~Disclosure 304-2 Significant impacts of activities, products and services on biodiversity~~ ~~*Additional sector recommendations*~~ • ~~Report significant impacts on biodiversity with reference to affected habitats and ecosystems.~~	12.5.5
	Disclosure 101-6 Direct drivers of biodiversity loss	12.5.6
	Disclosure 101-7 Changes to the state of biodiversity ~~Disclosure 304-3 Habitats protected or restored~~	12.5.7
	Disclosure 101-8 Ecosystem services ~~Disclosure 304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations~~	12.5.8

GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022

Topic 13.1 Emissions

This topic addresses emissions into the air, including greenhouse gases (GHG), ozone-depleting substances (ODS), nitrogen oxides (NO_x), sulfur oxides (SO_x), and other significant air emissions regarded as pollutants. Emissions can have negative impacts on air quality, ecosystems, and on human and animal health. GHG emissions are the single biggest contributor to climate change.

Agriculture is responsible for a large portion of greenhouse gas (GHG) emissions. From 2007 to 2016, the sector accounted for approximately 13% of carbon dioxide (CO_2), 44% of methane (CH_4), and 82% of nitrous oxide (N_2O) emissions from human activities globally, which was 23% of the total net anthropogenic emissions of GHGs over this period [46].

In agriculture and aquaculture, the highest share of total emissions is associated with land use change, including the conversion of land from a natural ecosystem for use by the sectors [46] (see also topic 13.4 Natural ecosystem conversion). Forests contribute to the reduction of CO_2 by absorbing more carbon than they release, making them a carbon sink. Clearing forests or grasslands results in large amounts of CO_2 being released. Soil and pasture management practices can contribute to the capacity of soil to store carbon or adversely accelerate the release of carbon from the soil into the atmosphere (see topic 13.5 Soil health). Restoring and preserving carbon sinks, such as natural ecosystems and soils, plays an integral role in mitigating climate change (see also topic 13.2 Climate adaptation).

Land management for crop production produces emissions through soil cultivation, including tillage, crop residue decomposition, and burning vegetation and crop residues. This results in the production of CO_2, N_2O, and particulate matter. Fertilizers, pesticides, and fuels used to power machinery and vehicles also release GHG emissions.

Ruminant livestock produce GHG emissions during respiration and digestion. Animal manure also emits gases, such as CH_4, N_2O, and CO_2. Livestock on managed pastures and rangelands was estimated to account for over half of total anthropogenic N_2O emissions from agriculture [46]. CH_4 and N_2O emissions have a higher global warming potential than CO_2.

In animal production and aquaculture, emissions are also associated with animal and fish feed sourcing. These emissions can be caused by natural ecosystem conversion and the feed's production, processing, and transportation. In aquaculture land-based farms, emissions are also released from the combustion of fuel to generate the energy needed to regulate water temperature and circulation.

Fishing activities produce emissions from burning fuels, such as diesel, marine fuel oils, and intermediate fuel oils. These fuels provide the power to fishing vessels to access marine stocks and power onboard fish processing facilities, including freezing or refrigerating fish. Fishing vessels are not necessarily optimized for fuel efficiency, further contributing to emissions. The combustion of fuels also produces localized air pollution, while the use of refrigerants to store fish products can result in the emission of ozone-depleting substances.

Signatories of the Paris Agreement have committed to keeping global warming well below 2°C above pre-industrial levels while pursuing efforts to limit global temperature rise to 1.5ºC This means organizations in the agriculture, aquaculture and fishing sectors need to set GHG emissions reduction

484 targets consistent with the cumulative carbon budgets that set sectoral caps for the total allowed CO_2
485 emissions [42].

486 Organizations in the sectors can reduce emissions by, for example, implementing measures to reduce
487 methane (CH_4) emitted by ruminants through better management of feed and manure, or in crop
488 production, using culture-specific production practices, such as growing rice using alternate wetting
489 and drying methods that reduce CH_4 production.

490

Reporting on emissions

If the organization has determined emissions to be a material topic, this sub-section lists the disclosures identified as relevant for reporting on the topic by the agriculture, aquaculture, and fishing sectors.

STANDARD	DISCLOSURE	SECTOR STANDARD REF #
Management of the topic		
GRI 3: Material Topics 2021	Disclosure 3-3 Management of material topics	13.1.1
Topic Standard disclosures		
GRI 102: Climate Change 2025	Disclosure 102-1 Transition plan for climate change mitigation	13.1.2
	~~Disclosure 305-5 Reduction of GHG emissions~~ Disclosure 102-4 GHG emissions reduction targets and progress	13.1.3
	~~Disclosure 305-1 Direct (Scope 1) GHG emissions~~ Disclosure 102-5 Scope 1 GHG emissions *Additional sector recommendations* • When reporting gross Scope 1 GHG emissions, include land use change emissions.[8]	13.1.4
	~~Disclosure 305-2 Energy indirect (Scope 2) GHG emissions~~ Disclosure 102-6 Scope 2 GHG emissions	13.1.5
	~~Disclosure 305-3 Other indirect (Scope 3) GHG emissions~~ Disclosure 102-7 Scope 3 GHG emissions *Additional sector recommendations* • When reporting gross Scope 3 GHG emissions, include land use change emissions.	13.1.6
	~~Disclosure 305-4 GHG emissions intensity~~ Disclosure 102-8 GHG emissions intensity	13.1.6
	Disclosure 102-9 GHG removals in the value chain	13.1.7
	Disclosure 102-10 Carbon credits	13.1.8
GRI 305: Emissions 2016	Disclosure 305-6 Emissions of ozone-depleting substances (ODS)	13.1.9
	Disclosure 305-7 Nitrogen oxides (NO_X), sulfur oxides (SO_X), and other significant air emissions	13.1.10

[8] Land use change refers to a change in the use or management of land by humans, which may lead to a change in cover; for instance, when cropland is converted to grassland or when forests are converted to cropland. This includes natural ecosystem conversion [48] (see also topic 13.4 Natural ecosystem conversion).

Topic 13.2 Climate adaptation

Organizations contribute to climate change and are simultaneously affected by it. Climate adaptation refers to how an organization adjusts to actual and potential climate-related events and their impacts.

Major impacts of climate change include an increase in extreme weather events and long-term shifts in climate patterns. As a consequence, crop yields and biogeographic suitability have been negatively affected in recent decades.

In agriculture, crops can be damaged and harvests lost due to increased volatility, intensity, and duration of extreme weather events. Warmer winters related to climate change affect fruits and vegetables that need a period of colder weather to produce viable harvests. Land degradation exacerbated by global warming can also lead to increased frequency and severity of flooding, drought, pest prevalence, diseases, heat stress, dry spells, wind, sea-level rise, wave action, and permafrost thaw.

Aquaculture and fishing operations are likely to be affected by water temperature increases, oxygen deficit, sea-level rise, decreased pH levels, and changes in productivity patterns. Higher ocean temperatures also means continued losses of marine habitats and species. Aquaculture and inland fishing activities are also affected by changes in precipitation and water management, increased stress on freshwater resources, and the frequency and intensity of extreme weather events. In tropical and less developed regions, small-scale fishers are particularly vulnerable to climate change-related impacts.

An organization's failure to adapt to climate change-related impacts can lead to disruptions in operations, increased occupational health and safety impacts, loss of livelihood, and food insecurity. These disruptions can affect an organization's workers, suppliers, customers, as well as smallholder farmers, fishers, Indigenous Peoples, and local communities. Disruptions in food production mean that between 34 and 600 million more people could suffer from hunger by 2080, depending on how climate change-related scenarios unfold [53] (see also topic 13.9 Food security).

Organizations can respond to climate change-related impacts by taking adaptation actions, including technological solutions. For example, in agriculture, low or no-till farming can reduce soil erosion, leading to improved soil and water quality. Another important adaptation strategy for the sectors is the diversification in production through a wider genetic base with improvements in the tolerance of heat and drought. Mitigating food loss (see also topic 13.9 Food security) is another measure that contributes to less land and fewer natural resources being needed to produce the same output, thereby reducing GHG emissions.

Preserving indigenous and local knowledge of biodiversity can also be a contributing factor in enhancing adaptation to climate change. Indigenous and local knowledge often focuses on preserving ecosystems and offers adaptive strategies to cope with unfavorable conditions in local areas.

Reporting on climate adaptation

If the organization has determined climate adaptation to be a material topic, this sub-section lists the disclosures identified as relevant for reporting on the topic by the agriculture, aquaculture, and fishing sectors.

STANDARD	DISCLOSURE	SECTOR STANDARD REF #
Management of the topic		
GRI 3: Material Topics 2021	Disclosure 3-3 Management of material topics	13.2.1
Topic Standard disclosures		
GRI 102: Climate Change 2025	~~Disclosure 201-2 Financial implications and other risks and opportunities due to climate change~~ Disclosure 102-2 Climate change adaptation plan ~~*Additional sector recommendations*~~ • ~~Describe the climate change-related scenarios used for identifying the risks and opportunities posed by climate change.~~	13.2.2

Topic 13.3 Biodiversity

Biodiversity is the variability among living organisms. It includes diversity within species, between species, and of ecosystems. Biodiversity not only has intrinsic value, but is also vital to human health, food security, economic prosperity, and mitigation of climate change and adaptation to its impacts. This topic covers impacts on biodiversity, including genetic diversity, animal and plant species, and ecosystems.

Biodiversity is essential for food production and provides a wide range of ecosystem services.

Direct drivers of biodiversity loss influence biodiversity and ecosystem processes, leading to impacts such as degradation of ecosystems, habitat fragmentation, and animal mortality, and can lead to species loss or extinction. Agriculture, aquaculture, and fishing activities may contribute to the direct drivers of biodiversity loss through land and sea use change, mainly in the form of natural ecosystem conversion, such as deforestation (see also topic 13.4 Natural ecosystem conversion), which can result in soil erosion and sedimentation of waterways, exploitation of natural resources by extracting species, and pollution. Biodiversity generally declines as agriculture, aquaculture, or fishing activities intensify.

Biodiversity can be negatively affected by monoculture. Growing the same crops or rearing the same animal species year after year may increase production but it also decreases agrobiodiversity on farms and plantations. Impacts on biodiversity can also extend beyond farms and plantations. In crop production, continuous monocropping can result in a buildup of pests and diseases, usually requiring higher volumes of pesticides, which can be toxic to non-target species, including pollinators. About 40% of invertebrate pollinator species face extinction, particularly bees and butterflies [71].

Animal production can be a major source of surplus nitrogen and phosphorous pollution, leading to eutrophication in adjacent lakes and rivers, rendering them uninhabitable for aquatic organisms (see also topic 13.7 Water and effluents). Aquaculture activities have similar impacts due to a buildup of fish excrement in waterbodies. These impacts can negatively affect the availability of fishery resources and food for local communities.

Aquaculture can also result in negative impacts on local biodiversity through escapes from aquaculture farms, which can compete with the area's native species. Poor feeding practices can result in excess or insufficient feed for fish, adding to disease outbreaks and aquatic pollution. The presence of extra feed can attract wild fish and predators to the water column.

Fishing is one of the most significant causes of declining marine biodiversity. This is largely due to overfishing, bycatch, and illegal, unreported, and unregulated fishing (IUU). From 1974 to 2017, the proportion of the world's fish stocks classified as overfished increased to 34.2%, with only about two-thirds of global fish stocks deemed as biologically sustainable [65] [68].

Overfishing can change the composition of species, which in turn can lead to changes in predator-prey relationships and cause shifts in trophic structures. Overfishing can be more difficult to prevent in international waters, where efforts to manage stock sustainably are further complicated when fish move across country borders.

Fishmeal and fish oil are rich in protein and are typically used as fish and animal feed ingredients. Fishing products used for feed can be derived from forage fish or fishing by-products, including trimmings and offcuts. Overfishing forage fish stocks used for feed increases pressure on the wild trophic structures. In aquaculture, further pressure on fish stocks can also be driven by using juvenile seeds captured in the wild.

Certain fishing practices, for example, bottom trawling in ecologically sensitive areas, can damage the seabed's physical structure, affecting bottom plants, corals, sponges, fish, and other aquatic organisms. This practice can profoundly change how natural benthic ecosystems function or lead to their destruction. Seabed damage can also result in carbon dioxide (CO_2) emissions.

A phenomenon known as ‘ghost fishing’ can threaten both target and non-target species, potentially killing endangered and protected species and damaging underwater habitats. This phenomenon occurs when fishing gear is lost or discarded and can continue to trap species indiscriminately. Lost or discarded fishing gear also contributes to marine plastic pollution (see also topic 13.8 Waste).

About 80% of terrestrial biodiversity is found in Indigenous Peoples’ lands and forests [76]. Respecting Indigenous Peoples’ rights to land and natural resources can also make a profound contribution to biodiversity conservation (see topic 13.14 Rights of Indigenous Peoples and topic 13.13 Land and resource rights).

Reporting on biodiversity

If the organization has determined biodiversity to be a material topic, this sub-section lists the disclosures identified as relevant for reporting on the topic by the agriculture, aquaculture, and fishing sectors.

STANDARD	DISCLOSURE	SECTOR STANDARD REF #
Management of the topic		
GRI 3: Material Topics 2021	Disclosure 3-3 Management of material topics *Additional sector recommendations* The following additional sector recommendation is for organizations in the aquaculture sector: • Describe the approach to preventing and managing escapes of farmed aquatic organisms.	13.3.1
Topic Standard disclosures		
GRI 101: Biodiversity 2024	Disclosure 101-1 Policies to halt and reverse biodiversity loss	13.3.2
	Disclosure 101-2 Management of biodiversity impacts	13.3.3
	Disclosure 101-3 Access and benefit-sharing	13.3.4
	Disclosure 101-4 Identification of biodiversity impacts	13.3.5
	Disclosure 101-5 Locations with biodiversity impacts ~~Disclosure 304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas~~	13.3.6
	Disclosure 101-6 Direct drivers of biodiversity loss ~~Disclosure 304-2 Significant impacts of activities, products and services on biodiversity~~ ~~*Additional sector recommendations*~~ ~~Report significant impacts on biodiversity with reference to affected habitats and ecosystems.~~	13.3.7
	Disclosure 101-7 Changes to the state of biodiversity ~~Disclosure 304-3 Habitats protected or restored~~	13.3.8
	Disclosure 101-8 Ecosystem services ~~Disclosure 304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations~~	13.3.9

The following additional sector disclosures are for organizations in the aquaculture sector: • For each species of aquatic organisms produced, report: - species scientific name; - volume in metric tons; - farming methods; - production site. • For juvenile seeds stocks captured in the wild that are used as input to aquaculture production, report: - species scientific name; - volume in metric tons; - fishing methods; - locations of origin; - stock status, including the stock status assessments or systems used.[9] • Report the use of fishing products in feed, including the following: - species scientific name; - whether the whole fish or fish waste (trimmings, offcuts, and offal) is used; - locations of origin; - stock status, including the stock status assessments or systems used.	13.3.10
The following additional sector disclosure is for organizations in the fishing sector:[10] • For each species of aquatic organisms harvested, including non-target species, report: - species scientific name; - volume in metric tons; - fishing methods; - locations of origin; - stock status, including the stock status assessments or systems used.[11]	13.3.11

[9] The organization can use any stock status assessments or systems that are relevant to the location of origin and species.

[10] Requirement 101-6-b-i in *GRI 101: Biodiversity 2024* requires information on wild species harvested at the organization's sites with the most significant impacts on biodiversity, where its activities lead or could lead to the exploitation of natural resources. This information can support the reporting for additional sector disclosure 13.3.11.

[11] The organization can use any stock status assessments or systems that are relevant to the location of origin and species.

Topic 13.4 Natural ecosystem conversion

Natural ecosystem conversion refers to the human-induced change of a natural ecosystem to another use or a profound change in a natural ecosystem's species composition, structure, or function. This topic covers impacts related to natural ecosystem conversion, including land clearance, severe degradation, or the introduction of management practices that lead to substantial and sustained change in natural ecosystems' former species composition, structure, or function.

Natural ecosystems offer important ecosystem services, including absorbing and storing vast quantities of carbon dioxide (CO_2). When natural ecosystems are converted, stored carbon can be released into the atmosphere, contributing to greenhouse gas (GHG) emissions and climate change. Estimates show that the loss of primary tropical forests in 2019 resulted in the release of more than 2 billion tons of CO_2 [86] (see topics 13.1 Emissions and 13.2 Climate adaptation). Conversion of natural ecosystems can also lead to the loss of biodiversity acceleration of soil erosion, and increased runoff and water pollution (see also topics 13.3 Biodiversity, 13.5 Soil health and 13.7 Water and effluents).

In agriculture and aquaculture sectors, natural ecosystem conversion can occur when terrestrial and aquatic ecosystems are used for animal breeding, grazing, crop production, aquaculture production, and ancillary activities. This can occur rapidly, with a substantial change taking place in a short time, or gradually, with incremental changes over a long time.

Conversion of terrestrial ecosystems can include the conversion of forests, grasslands, woodlands, or savannas. Deforestation occurs when primary and secondary forests are cleared, often by burning. Deforestation in tropical rainforests can have severe impacts because they provide habitats for many of the world's species.

Aquaculture operations can result in clearing mangroves, salt marshes, and wetlands or profound and sustained changes to the coastal, lake, and river ecosystems to make them fit for aquatic farming sites. Aquaculture also relies heavily on crops, such as soy, for fish feed, which can contribute to the conversion of terrestrial ecosystems. Feed ingredients need to be traceable to identify and prevent the potential negative impacts associated with conversion (see topic 13.23 Supply chain traceability).

The rate of deforestation and other forms of conversion in the agriculture sector has been increasing to give way to plantations and pastures [91]. Deforestation and other forms of conversion occur in the supply chains of beef, soy, palm oil, cocoa, coffee, rubber, and other products. To be deemed deforestation- and conversion-free, products must be assessed as not causing or contributing to natural ecosystem conversion after an appropriate cut-off date.

People can be displaced due to physical changes to the landscapes surrounding their communities or degradation and depletion of natural resources or other ecosystem services that the community relies on (see also topic 13.12 Local communities and topic 13.13 Land and resource rights). Loss of natural ecosystems and resources can also cause food insecurity. For Indigenous Peoples, natural ecosystem conversion can result in the loss of cultural and spiritual heritage and livelihoods and affect the rights to self-determination and self-governance (see also topic 13.14 Rights of Indigenous Peoples).

Reporting on natural ecosystem conversion

If the organization has determined natural ecosystem conversion to be a material topic, this sub-section lists the disclosures identified as relevant for reporting on the topic by the agriculture, aquaculture, and fishing sectors.

STANDARD	DISCLOSURE	SECTOR STANDARD REF #
Management of the topic		

GRI 3: Material Topics 2021	Disclosure 3-3 Management of material topics
	
	Additional sector recommendations
	• Describe policies or commitments to reduce or eliminate natural ecosystem conversion, including target[12] and cut-off dates[13], for the following:
	  - the organization's own production;
	  - sourcing of terrestrial animal and fish feed;
	  - products sourced by the organization for aggregation, processing, or trade.
	• Describe how the organization ensures that its suppliers comply with its natural ecosystem conversion policies and commitments, including through sourcing policies and contracts.
	• Report the organization's participation in multi-stakeholder, landscape[14], or sectoral initiatives intended to reduce or eliminate natural ecosystem conversion.
	• Describe the tools and systems used to monitor natural ecosystem conversion in the organization's activities, supply chain, and sourcing locations.
		13.4.1

Additional sector disclosures		
Report the percentage of production volume from land owned, leased or managed by the organization determined to be deforestation- or conversion-free, by product, and describe the assessment methods used.[15]		13.4.2
For products sourced by the organization, report the following by product: • the percentage of sourced volume determined to be deforestation- or conversion-free, and describe the assessment methods used;		13.4.3

[12] A target date is defined by the Accountability Framework as "the date by which [the organization] intends to have fully implemented its commitment or policy" [92].

[13] Cut-off dates may differ between commodities and regions. Appropriate cut-off dates can be selected based on sector-wide or regional cut-off dates, or those specified in certification programs, legislation, voluntary initiatives, or be based on the availability of monitoring data. More guidance on identifying appropriate cut-off dates can be found in the Accountability Framework initiative Operational Guidance on Cutoff Dates [93].

[14] Landscapes refer to natural and/or human-modified ecosystems, often with a characteristic configuration of topography, vegetation, land use, and settlements. Landscape initiatives refer to how organizations in the production and sourcing of agricultural products need to work beyond their own supply chains to address sustainability issues and support positive outcomes for the people and sourcing locations. These definitions are based on Food and Agriculture Organization, Landscape approaches: key concepts [84] and Proforest, Landscape initiatives [88].

[15] Assessment methods can include monitoring, certification, sourcing from low-risk jurisdictions with no or negligible recent conversion, or sourcing from verified suppliers.

• the percentage of sourced volume for which origins are not known to the point where it can be determined whether it is deforestation- or conversion-free, and describe actions taken to improve traceability.	
Report the size in hectares, the location, and the type[16] of natural ecosystems converted since the cut-off date on land owned, leased, or managed by the organization.[17]	13.4.4
Report the size in hectares, the location, and the type of natural ecosystems converted since the cut-off date by suppliers or in sourcing locations.[18]	13.4.5

[16] ~~Natural ecosystem type can be characterized by biome, vegetation type, or high conservation value status relevant to the region and regulatory context.~~ The organization can report ecosystem types using the biomes or ecosystem functional groups in the IUCN Global Ecosystem Typology. Alternatively, the organization can report according to another global classification, national classification, or register. If the organization cannot use ecosystem classifications, it can use land use classifications (e.g., Globio land use categories) instead.

[17] Requirement 101-6-a-i in *GRI 101: Biodiversity 2024* requires information on natural ecosystems converted at the organization's sites with the most significant impacts on biodiversity where its activities lead or could lead to land and see use change. This information can support in compiling the information for additional sector disclosure 13.4.4.

[18] 'Requirement 101-6-e in *GRI 101: Biodiversity 2024* requires information on natural ecosystems converted for products and services in its supply chain with the most significant impacts on biodiversity where its activities lead or could lead to land and see use change. This information can support in compiling the information for additional sector disclosure 13.4.5.

GRI 14: Mining Sector 2024

Topic 14.1 Climate change

The biggest contributor to climate change is greenhouse gas (GHG) emissions, the impacts of which are occurring at an accelerated rate. Organizations have a responsibility to contribute to climate change mitigation and adaptation, including by developing and implementing transition and adaptation plans that align with the principles of just transition. This topic covers GHG emissions, actions taken to transition to less GHG-emissions intensive economic activities, and climate change adaptation, including impacts on workers, local communities, and Indigenous Peoples.

Mining activities are energy-intensive and contribute to greenhouse gas (GHG) emissions. The primary GHG emitted through the sector's activities is carbon dioxide (CO_2). Other GHGs from mining activities include methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).

To combat climate change, signatories to the Paris Agreement have committed to transition to less GHG emissions-intensive economic activities. Organizations in the mining sector are increasingly expected to set GHG emissions reduction targets and reduce GHG emissions in line with the latest scientific evidence on the effort needed to limit global warming to 1.5°C above pre-industrial levels [42].

Most GHG emissions from mining activities are associated with the use of fossil fuel-powered vehicles in excavation and material transfer, for example, and the consumption of self-generated and purchased electricity. Therefore, most emissions in the mining sector are Scope 1 GHG emissions from sources owned or controlled by the organization, and Scope 2 GHG emissions from the generation of purchased or acquired electricity, heating, cooling, and steam.

Mining organizations are also under increasing scrutiny over Scope 3 GHG emissions in their upstream and downstream value chains. For organizations mining gold and other precious metals, the most substantial Scope 3 GHG emissions tend to originate upstream, namely, from purchased goods and services. Where minerals require extensive refining, such as smelting, most Scope 3 GHG emissions tend to originate downstream, namely from processing of sold products, where coal is used as an energy source. Examples include the manufacture of steel, aluminum, and cement.

The amount of energy used at a mine and the resulting GHG emissions depends on several factors, such as mining method, mine depth, geology, mine productivity, and the degree and method of processing required. For example, most of the energy needs of open pit mines are associated with extensive soil and rock movement and longer haul distances, while underground mines have greater pumping, ventilation, cooling, and hoisting-related energy requirements. Beyond the total energy consumption, the GHG emissions intensity of mining activities can vary according to mine design and planning, operational practices, and the energy source used. Coal as a fuel source has the highest GHG emissions intensity compared to other fossil fuels, typically releasing more than twice the amount of GHGs than natural gas per unit of electricity produced.

GHG emissions can also increase due to human-induced changes in the use or management of land, which may lead to a change in land cover. For instance, when forests are cleared to enable mineral extraction and the supporting infrastructure (see also topic 14.4 Biodiversity). Land use change emissions are more prevalent in surface mining due to the greater land use requirements and often lower-grade ores. Methane (CH_4) can also be released through extraction, venting, or as fugitive emissions. Closure activities can further contribute to GHG emissions. However, the rehabilitation of mine sites can be used to capture CO_2 with appropriate reclamation and post-reclamation strategies.

To reduce Scope 1 and Scope 2 GHG emissions, mining organizations can implement energy efficiency measures, electrify equipment, and switch to renewable or low-carbon fuel sources. In some cases, GHG emissions reduction initiatives such as the electrification of a mine may also bring shared power to local communities and businesses. However, it can pose additional challenges to communities, including increased pressure on regional and national energy grids, energy supply disruptions, job losses, or new environmental challenges (see also topics 14.8 Closure and rehabilitation and 14.9 Economic impacts).

Changing climatic conditions, rising sea levels, and increasing intensity and frequency of extreme weather events can have negative impacts on workers, suppliers, local communities, Indigenous Peoples, and infrastructure. Climate change has been found to aggravate the impacts of mining on the local environment, disrupting biodiversity (see also topic 14.4 Biodiversity), affecting water quality and quantity, and exacerbating water stress (see also topic 14.7 Water and effluents). Climate change also heightens the risks of tailings storage facility failures due to increased rainfall (see also topic 14.6 Tailings and 14.15 Critical incident management). Rising temperatures can have negative impacts on air quality through the retention of particulate matter, which can exacerbate the impacts of air pollution (see also topic 14.3 Air emissions), while creating drier conditions in mining areas. These impacts can have implications for the health, safety, well-being, and livelihoods of local communities, Indigenous Peoples, and workers. They can also increase competition for natural resources, which disproportionately affects women [70] (see also topic 14.10 Local communities).

Beyond reducing GHG emissions, mining organizations can help local communities adapt to climate change. This includes planning for post-mining land use, preserving natural resources for agriculture, promoting climate change-resilient economic growth, and enhancing emergency preparedness. They can also help improve access to energy and water by partnering with governments on shared renewable energy projects, implementing energy-saving programs, and sharing water resources.

The transition to less GHG emissions-intensive economic activities is expected to increase demand for critical minerals needed for clean energy technologies, such as cobalt, copper, lithium, nickel, and rare earth elements. If managed well, this can present opportunities for mineral-rich countries through positive economic development (see also topic 14.9 Economic impacts). However, an increase in negative impacts on the environment and human rights is recognized as a major risk. Many minerals that face rising demand are extracted from regions vulnerable to political instability, institutional weakness, and human rights violations. Mining in these areas can trigger or exacerbate conflict, corruption, environmental damage, and labor abuses (see also topic 14.25 Conflict-affected and high-risk areas).

Reporting on climate change

If the organization has determined climate change to be a material topic, this sub-section lists the disclosures identified as relevant for reporting on the topic by the mining sector.

STANDARD	DISCLOSURE	SECTOR STANDARD REF #
Management of the topic		
GRI 3: Material Topics 2021	Disclosure 3-3 Management of material topics ~~• Describe the climate change-related scenarios used to assess the resilience of the organization's strategy, including a well-below 2°C, preferably 1.5°C, scenario.[19]~~ ~~• Report whether the organization has a climate change adaptation plan in place, and if so, provide a summary of the plan and the progress made in implementing the plan, and describe how engagement with stakeholders has informed the plan.~~	14.1.1
Topic Standard disclosures		
GRI 102: Climate Change 2025	Disclosure 102-1 Transition plan for climate change mitigation	14.1.2
	Disclosure 102-2 Climate change adaptation plan ~~Disclosure 201-2 Financial implications and other risks and opportunities due to climate change~~ *Additional sector recommendations* • Describe how changes to the organization's operations, revenue, or expenditures due to climate change affect or could affect its contributions to economic development and its payments to governments.	14.1.3
	Disclosure 102-3 Just transition	14.1.4
	Disclosure 102-4 GHG emissions reduction targets and progress	14.1.5
	Disclosure 102-5 Scope 1 GHG emissions ~~Disclosure 305-1 Direct (Scope 1) GHG emissions~~ *Additional sector recommendations* • When reporting the gross Scope 1 GHG emissions, include land use change emissions.[20]	14.1.6

~~19 The Paris Agreement aims at holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels [67]. Scientific evidence released after the Paris Agreement came into force shows that limiting global warming to 1.5°C 'would substantially reduce projected losses and damages related to climate change in human systems and ecosystems compared to higher warming levels' [64].~~

[20] Land use change refers to a change in the use or management of land by humans, which may lead to a change in land cover. It covers changes to terrestrial ecosystems, such as when forests are converted to enable mineral extraction and supporting infrastructure. Guidance on calculating land use change emissions can be found in the IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry [59] and its 2019 updates [60].

	• Report a breakdown of the gross Scope 1 GHG emissions by mine site.	
	~~Disclosure 305-2 Energy indirect (Scope 2) GHG emissions~~ Disclosure 102-6 Scope 2 GHG emissions *Additional sector recommendations* • Report a breakdown of the gross location-based Scope 2 GHG emissions by mine site. • If applicable, report a breakdown of the gross market-based Scope 2 GHG emissions by mine site.	14.1.7
	~~Disclosure 305-3 Other indirect (Scope 3) GHG emissions~~ Disclosure 102-7 Scope 3 GHG emissions	14.1.8
	~~Disclosure 305-4 GHG emissions intensity~~ Disclosure 102-8 GHG emissions intensity • Report a breakdown of emissions intensity by mine site.	14.1.9
	Disclosure 102-9 GHG removals in the value chain	14.1.10
	Disclosure 102-10 Carbon credits	14.1.11
GRI 103: Energy 2025	Disclosure 103-1 Energy policies and commitments	14.1.12
	~~Disclosure 302-1 Energy consumption within the organization~~ Disclosure 103-2 Energy consumption and self-generation within the organization	14.1.13
	~~Disclosure 302-2 Energy consumption outside of the organization~~ Disclosure 103-3 Upstream and downstream energy consumption	14.1.14
	~~Disclosure 302-3 Energy intensity~~ Disclosure 103-4 Energy intensity	14.1.15

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Annex 1: Assessment of existing disclosures and log of proposed changes to Sector Standards

GRI Sector Standard	Topic	Disclosure	REF #	Assessment
GRI 11: Oil and Gas Sector 2021	11.1 GHG emissions	Describe actions taken to manage flaring and venting and the effectiveness of actions taken.	11.1.1	Flaring and venting are not explicitly mentioned in GRI 102-1, yet measures to manage this practice is critical to understanding an organizations impacts on GHG emissions in the oil and gas sector. Recommendation to be retained under 3-3.
GRI 11: Oil and Gas Sector 2021	11.1 GHG emissions	Disclosure 302-1 Energy consumption within the organization[21]	11.1.2	Disclosure requirements covered by GRI 103-2.
GRI 11: Oil and Gas Sector 2021	11.1 GHG emissions	Disclosure 302-2 Energy consumption outside of the organization	11.1.3	Disclosure requirements covered by GRI 103-3.
GRI 11: Oil and Gas Sector 2021	11.1 GHG emissions	Disclosure 302-3 Energy intensity	11.1.4	Disclosure requirements covered by GRI 103-4.
GRI 11: Oil and Gas Sector 2021	11.1 GHG emissions	Disclosure 305-1 Direct (Scope 1) GHG emissions	11.1.5	Disclosure requirements covered by GRI 102-5.
GRI 11: Oil and Gas Sector 2021	11.1 GHG emissions	Report the percentage of gross direct (Scope 1) GHG emissions from CH4.	11.1.5	Recommendation is covered by 102-5. Where needed, percentage can be calculated based on requirement 102-5-b: "provide a breakdown of gross Scope 1 GHG emissions by CO2, CH4, N2O, HFCs, PFCs, SF6, and NF3, in metric tons and

[21] The assessment of Topic Standard disclosures' coverage in the new and revised GRI Topic Standards is only listed once and not repeated for each Sector Standard.

				metric tons of CO2 equivalent". Recommendation to be removed.
GRI 11: Oil and Gas Sector 2021	11.1 GHG emissions	Report the breakdown of gross direct (Scope 1) GHG emissions by type of source (stationary combustion, process, fugitive).	11.1.5	Information used to be a recommendation to GRI 305-1, and has been included as optional reporting ("can") in the guidance for 102-5. However, it was deemed as important to highlight reporting this information by the oil, gas, and coal working group for this sector. Recommendation to be retained under 102-5.
GRI 11: Oil and Gas Sector 2021	11.1 GHG emissions	Disclosure 305-2 Energy indirect (Scope 2) GHG emissions	11.1.6	Disclosure requirements covered by GRI 102-6.
GRI 11: Oil and Gas Sector 2021	11.1 GHG emissions	Disclosure 305-3 Other indirect (Scope 3) GHG emissions	11.1.7	Disclosure requirements covered by GRI 102-7.
GRI 11: Oil and Gas Sector 2021	11.1 GHG emissions	Disclosure 305-4 GHG emissions intensity	11.1.8	Disclosure requirements covered by GRI 102-8.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Describe policies, commitments, and actions of the organization to prevent or mitigate the impacts of the transition to a low-carbon economy on workers and local communities.	11.2.1	Recommendation is covered by Requirement 102-1. Recommendation to be removed.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Report the level and function within the organization that has been assigned responsibility for managing risks and opportunities due to climate change.	11.2.1	Recommendation is covered by Requirements 102-1 and 102-2. Recommendation to be removed.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Describe the highest board's oversight in managing risks and opportunities due to climate change.	11.2.1	Recommendation is covered by Requirements 102-1-d. Recommendation to be removed.

GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Report whether responsibility to manage climate change-related impacts is linked to performance assessments or incentive mechanisms, including in the remuneration policies for highest governance body members and senior executives.	11.2.1	Recommendation is covered in the guidance of Disclosure 102-1. Recommendation to be removed.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Describe the climate change-related scenarios used to assess the resilience of the organization's strategy, including a 2°C or lower scenario.	11.2.1	Recommendation covered by Disclosure 102-1. Recommendation to be removed.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	201-2 Financial implications and other risks and opportunities due to climate change	11.2.2	Disclosure requirements covered by GRI 101-2 and 101-2.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Report the emissions potential for proven and probable reserves.	11.2.2	Recommendation is covered by guidance to 102-1. Recommendation to be removed.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Report the internal carbon-pricing and oil and gas pricing assumptions that have informed the identification of risks and opportunities due to climate change.	12.2.2	Recommendation is covered by guidance of Disclosure 102-1. Recommendation to be removed.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Describe how climate-change related risks and opportunities affect or could affect the organization's operations or revenue, including: - development of currently proven and probable reserves; - potential write-offs and early closure of existing assets; - oil and gas production volumes for the current reporting period and projected volumes for the next five years.	11.2.2	The recommendation is related to an organization's transition plan and how it's linked to its strategy. Requirement 102-1-e provides guidance that the organization should report "planned changes to its portfolio of products and services to deliver the transition plan. This includes plans to reduce the portfolio of high-carbon products and services and increase the portfolio of low-carbon products and services." However, the sector recommendations are more specific and could leave a gap. Recommendations to be retained under GRI 102-1.

GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Report the percentage of capital expenditure (CapEx) that is allocated to investments in: - prospection, exploration, and development of new reserves; - energy from renewable sources (by type of source); - technologies to remove CO2 from the atmosphere and nature-based solutions to mitigate climate change; - other research and development initiatives that can address the organization's risks related to climate change.	11.2.2	Guidance to GRI 102-1-e recommends organizations to report how its R&D activities are aligned with its transition plan (not financial value). Guidance to GRI 102-1-c expects CapEx and OpEx incurred from the transition plan. However, the CapEx asked for oil, gas, and coal is not necessarily part of transition plan expenditure, and may risk being unreported if left out. Recommendations to be retained as additional sector disclosures.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Report net mass of CO2 in metric tons captured and removed from the atmosphere (CO stored less the GHG emitted in the process)[2]	11.2.2	Additional sector recommendation is partly covered by Disclosure 102-9. PCP question to be asked whether disclosure 102-9 covers the reporting expectation or whether a sector recommendation should be retained.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	305-5 Reduction of GHG emissions	11.2.3	Disclosure requirements covered by 102-4.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Report how the goals and targets for GHG emissions are set, specify whether they are informed by scientific consensus, and list any authoritative intergovernmental instruments or mandatory legislation the goals and targets are aligned with.	11.2.3	Recommendation covered by disclosure 102-4. Recommendation to be removed.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Report the Scopes (1, 2, 3) of GHG emissions, activities, and business relationships to which the goals and targets apply.	11.2.3	Recommendation covered by disclosure 102-4. Recommendation to be removed.
GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Report the baseline for the goals and targets and the timeline for achieving them	11.2.3	Recommendation covered by disclosure 102-4. Recommendation to be removed.

GRI 11: Oil and Gas Sector 2021	11.2. Climate adaptation, resilience and transition	Describe the organization's approach to public policy development and lobbying on climate change, including: - the organization's stance on significant issues related to climate change that are the focus of its participation in public policy development and lobbying, and any differences between these positions and its stated policies, goals, or other public positions; - whether it is a member of, or contributes to, any representative associations or committees that participate in public policy development and lobbying on climate change, including: - the nature of this contribution; - any differences between the organization's stated policies, goals, or other public positions on significant issues related to climate change; and the positions of the representative associations or committees.	11.2.4	Sector disclosure covered by Requirement 102-1. Sector disclosure to be removed.
GRI 11: Oil and Gas Sector 2021	11.4 Biodiversity	Describe policies and commitments to achieving no net loss or a net gain to biodiversity on operational sites; and whether these commitments apply to existing and future operations and to operations beyond areas of high biodiversity value.	11.4.1	Recommendation partly covered by GRI 101-1, however it does not relate to future operations. Recommendation on future operations and beyond areas of high biodiversity value to be retained under 101-1.
GRI 11: Oil and Gas Sector 2021	11.4 Biodiversity	Report whether application of the mitigation hierarchy has informed actions to manage biodiversity-related impacts.	11.4.1	Sector recommendation covered by GRI 101-2. Recommendation to be removed.
GRI 11: Oil and Gas Sector 2021	11.4 Biodiversity	304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	11.4.2	Disclosure requirements covered by GRI 101-5.
GRI 11: Oil and Gas Sector 2021	11.4 Biodiversity	304-2 Significant impacts of activities, products and services on biodiversity	11.4.3	Disclosure requirements covered by GRI 101-6 and 101-7.
GRI 11: Oil and Gas Sector 2021	11.4 Biodiversity	Report significant impacts on biodiversity with reference to affected habitats and ecosystems.	11.4.3	Sector recommendation covered by the 101-7. Recommendation to be removed.

GRI 11: Oil and Gas Sector 2021	11.4 Biodiversity	304-3 Habitats protected or restored	11.4.4	Disclosure requirements covered by 101-2 and 101-7.
GRI 11: Oil and Gas Sector 2021	11.4 Biodiversity	Describe how the application of the mitigation hierarchy, if applicable, has resulted in: - areas protected through avoidance measures or offset measures; - areas restored through on-site restoration measures or offset measures.	11.4.4	Sector recommendation is covered by GRI 101-2
GRI 11: Oil and Gas Sector 2021	11.4 Biodiversity	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	11.4.5	Disclosure requirements covered by GRI 101-7.
GRI 12: Coal Sector 2022	12.1 GHG emissions	All sector recommendations	12.1.1-12.1.8	See assessment for GRI 11.
GRI 12: Coal Sector 2022	12.2 Climate adaptation, resilience, and transition	All sector recommendations	12.2.1	See assessment for GRI 11.
GRI 12: Coal Sector 2022	12.2 Climate adaptation, resilience, and transition	Report whether the organization has a transition plan in place. If so, report whether it is a scheduled resolution item at annual general meetings of shareholders (AGM), if applicable.	12.2.1	Recommendation not covered by GRI 102. A public comment question to be asked on the relevance of this aspect in the light of the more extensive requirements regarding transition plans in GRI 102.
GRI 12: Coal Sector 2022	12.2 Climate adaptation, resilience, and transition	201-2 Financial implications and other risks and opportunities due to climate change	12.2.2	*See assessment for GRI 11*
GRI 12: Coal Sector 2022	12.2 Climate adaptation, resilience, and transition	Report net mass of CO2 in metric tons captured and stored, broken down by: - Carbon captured at the point source; - Carbon captured directly from the atmosphere.	12.2.2	Additional sector recommendation is partly covered by Disclosure 102-9. PCP question to be asked whether disclosure 102-9 covers the reporting expectation or whether a sector recommendation needs to be retained.

GRI 12: Coal Sector 2022	12.2 Climate adaptation, resilience, and transition	Report planned, ongoing, or completed divestments of coal assets. For each divestment: - describe how the organization considered its policy commitments for responsible business conduct; - report whether there are provisions in place to ensure that negative impacts from closure are addressed, and that existing closure and rehabilitation plans are followed by the entity acquiring the asset(s).	12.2.2	Requirement 102-1-e requires reporting on transition plans in the context of the organization's strategy. Guidance for organizations recommends reporting "planned changes to its portfolio of products and services to deliver the transition plan. This includes plans to reduce the portfolio of high-carbon products and services and increase the portfolio of low-carbon products and services". However, the sector recommendation goes into more detail and warrants a specific focus. Recommendation to be retained under GRI 102-1.
GRI 12: Coal Sector 2022	12.4 Biodiversity	All disclosures and sector recommendations	12.4.1-12.4.5	See assessment for GRI 11.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.1 Emissions	When reporting on gross direct (Scope 1) GHG emissions in metric tons of CO2 equivalent, include land use change emissions.	13.1.2	Land use change emissions not covered by GRI 102. Recommendation to be retained under disclosure 102-5.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.1 Emissions	When reporting on gross other indirect (Scope 3) GHG emissions in metric tons of CO2 equivalent, include land use change emissions.	13.1.4	Land use change emissions not covered by GRI 102. Recommendation to be retained under disclosure 102-7.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.2 Climate adaptation and resilience	Describe the climate change-related scenarios used for identifying the risks and opportunities posed by climate change.	13.2.2	Recommendation covered by Disclosure 102-1. Recommendation to be removed.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.3 Biodiversity	Organizations in the aquaculture sector: Describe the approach to preventing and managing escapes of farmed aquatic organisms	13.3.1	Recommendations not covered by GRI 101. Recommendations to be retained under GRI 101-2 Management of biodiversity impacts
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.3 Biodiversity	304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	13.3.2	Disclosure requirements covered by GRI 101-5.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.3 Biodiversity	304-2 Significant impacts of activities, products and services on biodiversity	13.3.3	Disclosure requirements covered by GRI 101-6 and 101-7.

GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.3 Biodiversity	304-3 Habitats protected or restored	13.3.4	Disclosure requirements covered by GRI 101-2 and 101-7.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.3 Biodiversity	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	13.3.5	Disclosure requirements covered by GRI 101-7.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.3 Biodiversity	Organizations in the aquaculture sector: For each species of aquatic organisms produced, report: - species scientific name; - volume in metric tons; - farming methods; - production site. For juvenile seeds stocks captured in the wild that are used as input to aquaculture production, report: - species scientific name; - volume in metric tons; - fishing methods; - locations of origin; - stock status, including the stock status assessments or systems used. Report the use of fishing products in feed, including the following: - species scientific name; - whether the whole fish or fish waste (trimmings, offcuts, and offal) is used; - locations of origin; - stock status, including the stock status assessments or systems used	13.3.6	Disclosures partly covered by Disclosure 101-6 Direct drivers of biodiversity loss. However, 101-6 asks for wild species, sector disclosure on produced. Gaps remain the farming and fishing methods. Disclosures to be retained.

GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.3 Biodiversity	Organizations in the fishing sector: For each species of aquatic organisms caught or harvested, including non-target species, report: - species scientific name; - volume in metric tons; - fishing methods; - locations of origin; - stock status, including the stock status assessments or systems used.	13.3.7	Additional sector disclosures are not covered by GRI 101. Disclosures to be retained.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.4 Natural ecosystem conversion	• Describe policies or commitments to reduce or eliminate natural ecosystem conversion, including target and cut-off dates, for the following: - the organization's own production; - sourcing of terrestrial animal and fish feed; - products sourced by the organization for aggregation, processing, or trade. • Describe how the organization ensures that its suppliers comply with its natural ecosystem conversion policies and commitments, including through sourcing policies and contracts. • Report the organization's participation in multi-stakeholder, landscape, or sectoral initiatives intended to reduce or eliminate natural ecosystem conversion. • Describe the tools and systems used to monitor natural ecosystem conversion in the organization's activities, supply chain, and sourcing locations.	13.4.1	Recommendations largely covered by GRI 101-1. However, as the topic solely focuses on natural ecosystem conversion, disclosures are suggested to be retained under GRI 3-3 under this dedicated topic on natural ecosystem conversion.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.4 Natural ecosystem conversion	Report the percentage of production volume from land owned, leased or managed by the organization determined to be deforestation- or conversion-free, by product, and describe the assessment methods used.	13.4.2	Additional sector disclosures not covered by GRI 101. Disclosures to be retained.

GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.4 Natural ecosystem conversion	For products sourced by the organization, report the following by product: - the percentage of sourced volume determined to be deforestation- or conversion-free, and describe the assessment methods used; - the percentage of sourced volume for which origins are not known to the point where it can be determined whether it is deforestation- or conversion-free, and describe actions taken to improve traceability.	13.4.3	GRI 101-4 covers identification of impacts generally, and GRI 101-5-d asks to report those products and services in the supply chain with the most significant impacts and recommends reporting on traceability. Disclosure 13.4.3 goes into more detail on deforestation and warrants a sector focus. Additional disclosures to be retained.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.4 Natural ecosystem conversion	Report the size in hectares, the location, and the type of natural ecosystems converted since the cutoff date on land owned, leased, or managed by the organization	13.4.4	Disclosure partly covered by GRI 101-6-a, but sector addition has a focus on only one driver. Public comment question to be asked how likely it is for organizations to report both topics on biodiversity and natural ecosystem conversion, or only one of the two. If both topics are likely to be reported, this information is covered by the biodiversity disclosures.
GRI 13: Agriculture, Aquaculture, and Fishing Sectors 2022	13.4 Natural ecosystem conversion	Report the size in hectares, the location, and the type of natural ecosystems converted since the cut-off date by suppliers or in sourcing locations.	13.4.5	Disclosure partly covered by GRI 101-6-a, but sector addition more narrowly focused on one driver. Public comment question to be asked how likely it is for organizations to report both topics on biodiversity and natural ecosystem conversion, or only one of the two. If both topics are likely to be reported, this information is covered by the biodiversity disclosures.
GRI 14: Mining Sector 2024	14.1 GHG emissions	Report a breakdown of the gross direct (Scope 1) GHG emissions by mine site.	14.1.5	Recommendation covered by guidance to 102-5. However, as this was the present in the corresponding, superseded disclosure 305-1, and deemed important by the Mining Working Group to highlight for the sector, recommendation is retained under GRI 102-5.

GRI 14: Mining Sector 2024	14.1 GHG emissions	Report a breakdown of the gross location-based energy indirect (Scope 2) GHG emissions by mine site.	14.1.6	Recommendation covered by guidance to 102-6. However, as this was the present in the corresponding, superseded disclosure 305-2, and deemed important by the Mining Working Group to highlight for the sector, recommendation is retained under GRI 102-6.
GRI 14: Mining Sector 2024	14.1 GHG emissions	Report a breakdown of the GHG emissions intensity ratio by mine site.	14.1.8	Recommendation covered by guidance to 102-8. However, as this was the present in the corresponding, superseded disclosure 305-4, and deemed important by the Mining Working Group to highlight for the sector, recommendation is retained under GRI 102-8.
GRI 14: Mining Sector 2024	14.2 Climate adaptation and resilience	Describe the climate change-related scenarios used to assess the resilience of the organization's strategy, including a well-below 2°C, preferably 1.5°C, scenario.	14.2.1	Recommendation covered by Disclosure 102-1.
GRI 14: Mining Sector 2024	14.2 Climate adaptation and resilience	Report whether the organization has a climate change adaptation plan in place, and if so, provide a summary of the plan and the progress made in implementing the plan, and describe how engagement with stakeholders has informed the plan.	14.2.1	Recommendation covered by Disclosure 102-2.
GRI 14: Mining Sector 2024	14.2 Climate adaptation and resilience	Describe how the substantive changes in operations, revenue, or expenditure due to climate change affect or could affect the organization's workers and suppliers, its contributions to economic development, and its payments to governments.	14.2.2	Recommendation partly covered by Disclosure 102-2. However, the economic dimension, including payments to governments, are not explicitly mentioned. Recommendation to be retained under 102-2.