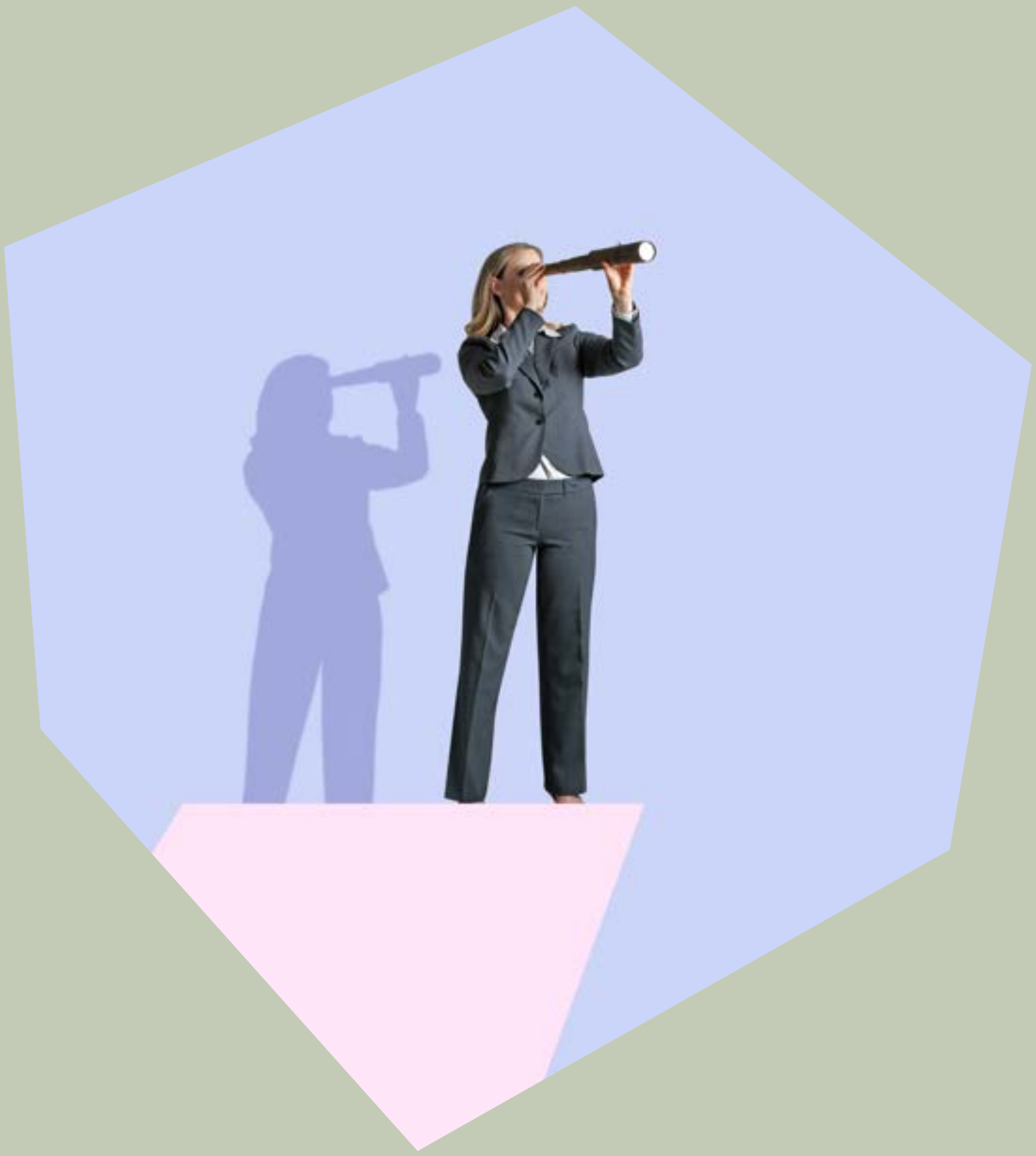
Managing uncertainty *in sustainability disclosure*

World Business Council *for Sustainable Development*

Contents

Executive summary



Executive summary

A company's sustainability strategy and performance can significantly impact its financial performance. Investors, management teams and other stakeholders often find value in information that links financial and sustainability performance to support their decision-making processes.

However, quantifying and communicating the impact of sustainability performance on corporate and financial results is challenging, caused by inherent uncertainties.

To explore these challenges, WBCSD commissioned a study to support effective sustainability disclosure. This study, undertaken with input from WBCSD members and stakeholders with expertise in sustainability, financial accounting and reporting, analyzed how companies approach uncertainty in sustainability disclosure.

This report presents the study's findings, focusing on approaches companies can use to manage uncertainties when preparing and disclosing sustainability information according to the European Sustainability Reporting Standards (ESRS) and the IFRS Sustainability Disclosure Standards (IFRS S1 and S2) collectively and hereafter referred to as the 'ISSB Standards'.

The report highlights two main challenges:

1. Navigating **uncertainty** when preparing and presenting sustainability information.
2. Using **estimates and assumptions** when disclosing the financial effects of sustainability-related risks and opportunities.

Three main categories of uncertainty are identified:

1. **What to disclose**: navigating differences between different reporting requirements.
2. **Preparation for disclosure**: choosing methodologies, measuring inputs and outputs, and using systems.
3. **Quantity of disclosure**: deciding the extent and dimensions of disclosure and considering materiality concepts in management information and external disclosure preparation.

Also, the report identifies four important and inter-related uncertainty themes:

1. **Integrating and connecting requirements**: aligning sustainability and financial reporting cycles, processes, and outputs.
2. **Evaluating what and how much to disclose**: applying judgment to determine focus and volume of information.
3. **Making assumptions**: using consistent methods, approaches, and data for sustainability disclosure.
4. **Measurements and estimates**: disclosing metrics and estimates that provide meaningful sustainability information.

Report structure

The report is organized around four main themes. Each theme follows a consistent structure, providing an overview, commentary, ideas & resources, and examples.

Theme 1 - Integrating and connecting requirements

The ESRS and ISSB Standards are applied by companies alongside other disclosure requirements, including those relating to financial statements. These standards require sustainability and financial information to be aligned with the sustainability and financial reporting cycles, processes, and disclosure outputs.

This theme explores these requirements in detail and covers:

- → Adapting risk management, governance, investment decision-making, and finance to support sustainability disclosure.
- → Building team capacity to combine traditional financial analysis with sustainability-related risk and opportunity estimation skills.
- → Connecting requirements for coherence and comprehensibility.

Theme 2 - Evaluating what and how much to disclose

Determining the focus and volume of information to disclose is a major area of uncertainty. Although ESRS and ISSB Standards prescribe what to report and provide some guidance on preparation, it is for management to apply their judgment to establish the extent of reporting, using materiality assessments and determinations.

This theme explores these issues in detail and covers:

- → The disclosure of management judgments under ISSB and ESRS.
- → Use judgment for materiality and significance.
- → Materiality and Enterprise Risk Management.
- → How and where decision-making needs should be considered.
- → Uncertainty relating to future events.
- → Avoid claims of vagueness, exaggeration, incompleteness, ambiguity, and/or greenwashing.

Theme 3 - Making assumptions

ESRS and ISSB Standards allow for the use of assumptions to inform judgments and estimates, including estimated measurements. Both require consistency in methods, approaches and underlying data and extending this requirement to the use of assumptions. Assumptions must be fully described and explained, sometimes requiring additional disclosures, and/or sensitivity analyses, and/or the use of scenarios.

These issues are explored in more detail and include:

- → When and how assumptions can be used in sustainability disclosure.
- → The characteristics of credible assumptions.
- → Disclosure of assumptions.
- → Assumptions relating to the future.

Theme 4 - Measurements and estimates

Metrics lie at the heart of meaningful sustainability disclosure; some are mandatory, while others are subject to management's judgment. This theme outlines the necessary information and characteristics that should be disclosed to provide context, minimize uncertainty, and maximize utility.

It includes:

- → The circumstances in which measurements can be expressed quantitatively or qualitatively.
- → Different approaches to estimation when data is unavailable or unreliable, especially across the value chain.
- → Estimating financial effects of sustainability-related risks and opportunities when effects are uncertain or difficult to distinguish from other impacts.
- → Methods of measuring inputs, outputs, and outcomes relevant to sustainability-related disclosure.

Conclusion and caveat

This report supports effective sustainability disclosure by addressing uncertainty-related challenges, explaining requirements that cause uncertainties, and offering ideas, resources, and examples to help companies manage or reduce uncertainty when preparing and presenting sustainability information.

As the sustainability disclosure landscape evolves, efforts to harmonize and simplify reporting regimes are ongoing. Therefore, this analysis and the approaches described in this study are interim measures to support companies in easing the burdens associated with uncertainties, such as disclosing the financial effects of sustainability-related impacts, risks and opportunities (IROs).

Introduction

Introduction

The Corporate Performance & Accountability (CP&A) program at WBCSD was created to empower members to navigate the complex, evolving regulatory landscape for transparent reporting and long-term value creation.

The CP&A team supports WBCSD members as they navigate those aspects of reporting and disclosure that are particularly challenging, where complexity and confusion threaten to limit decision-making and transparency. Challenges, complexity and confusion arise when disclosure requirements are insufficiently clear about how information should be prepared and presented and/or exactly what is sufficient to satisfy the needs of information users.

This report focuses on two particular challenges:

- → **Uncertainty** when preparing and presenting sustainability information according to European Sustainability Reporting Standards (ESRS) and the ISSB Standards (IFRS S1 & S2); and
- → The use of **estimates and assumptions** in relation to the disclosure of the **financial effects** of sustainability-related risks and opportunities as required by ESRS and IFRS S1 & S2.

Interest in how to address these challenges was confirmed in interviews with WBCSD members and stakeholders, with interviews also providing useful insights about the technical and practical implications of the challenges for preparers and users of information.

What is the purpose of this report?

Uncertainty can hinder effective disclosure by reducing transparency and decision-usefulness, causing management reluctance, lack of comparability, and excessive explanations about omissions. Ineffective sustainability disclosure can impact the valuation applied to companies and the allocation of capital to them.

- → This report aims to support sustainability disclosure by addressing uncertainty-related challenges, providing ideas, resources, and examples to help companies manage or reduce uncertainty when preparing and presenting sustainability information.

Who is this report for?

This report is for companies facing uncertainties about disclosing sustainability information according to the requirements of the European Sustainability Reporting Standards (ESRS) and the ISSB Standards (IFRS S1 and S2). It offers technical details, guidance on the approaches to handle uncertainty, and examples of how some leading companies manage uncertainty in their disclosures.

What types of uncertainties does this report cover?

This report addresses uncertainties about:

- → **What to disclose**; how to navigate differences between reporting requirements from a range of stakeholders.
- → **How to prepare information for disclosure**; choosing methodologies, measuring inputs and outputs, and adapting systems for sustainability disclosures.
- → **How much to disclose**; how to navigate tensions due to the varying definitions of materiality and presenting materiality judgments in reports.

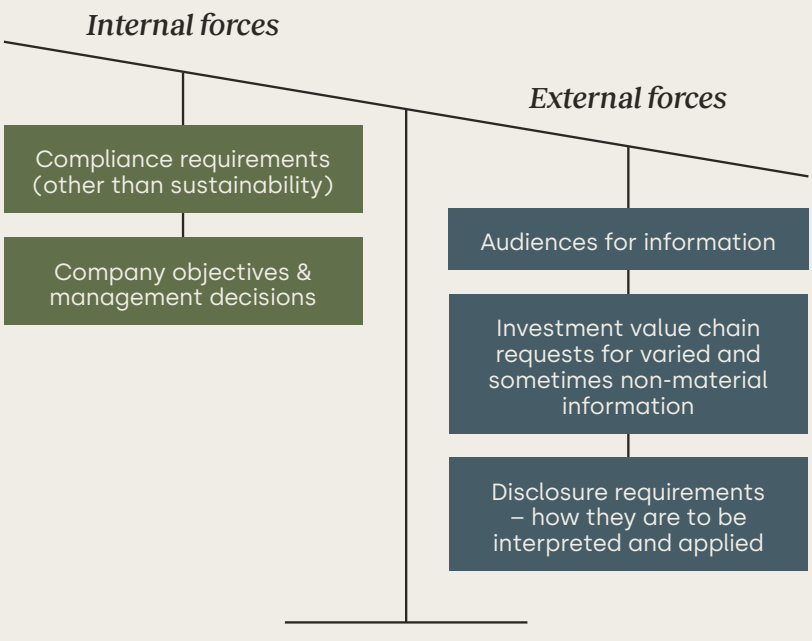
What are the sources of uncertainty?

Sources of uncertainty can be:

- → **Internal**, for example a lack of detail on sustainability policies, skills gaps, and unreliable data. **External**, for example inconsistent policies, unclear regulation, a lack of pricing signals, investor behavior or information needs, and an absence of guidance.

Both internal and external sources uncertainties may have a temporal dimension, especially when disclosing information about future events, activities or risks. Uncertainty may also originate from a lack of access to facts or data, necessitating estimates and assumptions must be used.

Figure 1: Sources of uncertainty



What is the scope of this report?

The report considers general uncertainties based on the **four uncertainty themes** and specific uncertainties related to the ISSB Standards and the ESRS Set 1 General Requirements for disclosing the **financial effects** of sustainability-related impacts, risks and opportunities (IROs).

It does not cover sectors or subjects to specific disclosure requirements, or those required by any other territorially specific standards.

Developed with input from WBCSD members and stakeholders with expertise in sustainability accounting and reporting, the four uncertainty themes reflect the most challenging issues companies face when preparing and presenting sustainability information.

The report applies to various sustainability topics, including climate change, biodiversity & ecosystems, pollution, water & marine sources, workforce, value chain, communities, consumers and others. However, many of the ideas, resources and examples focus on climate, given its well-established global consensus on challenges and disclosure requirements.

Four uncertainty themes

- → Integrating and connecting requirements
- → Evaluating what to disclose
- → Making assumptions
- → Measurements and estimates

These themes are interconnected. For example, evaluation relies on management using judgment to reduce uncertainty. Assumptions inform those judgments and estimates may be used to express the results of evaluation and assumptions in disclosures.

While the themes are considered separately because of different requirements and interpretations, the links between them should also be considered.

Financial effects

The report provides commentary, ideas, resources, and examples on the uncertainties in disclosing the financial effects of sustainability-related IROs. It focuses on IFRS S1 and ESRS requirements, detailed in Appendix 1, and is limited to IFRS Accounting Standards, excluding national or other generally accepted accounting standards. Challenges are compounded by factors outside the study's scope, such as the lack of consensus on pricing environmental and social externalities.

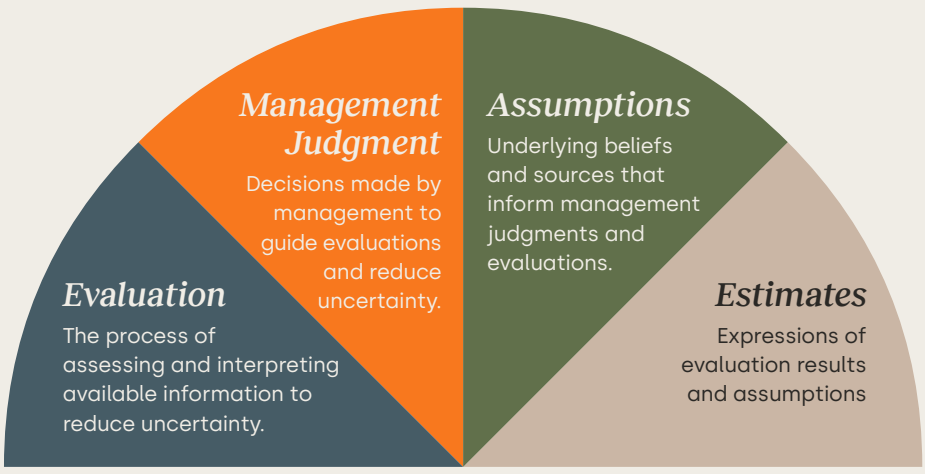
Cross-cutting challenges

Several cross-cutting challenges influence the degree of uncertainty companies might experience across the four themes identified by this study.

Time horizons

Sustainability disclosure regimes often require forward-looking information. This includes information about possible future sustainability impacts on the company, the environment, and society, together with their anticipated financial effects.

Figure 2: Links between uncertainty themes



Forward-looking information may also be required about targets that seek to mitigate or adapt sustainability-related IROs, explain possible changes in performance, outcomes, portfolio construction, funding requirements and strategic resilience to sustainability-related risks and impacts. Aspects of uncertainty associated with forward-looking disclosures are generally managed using cautionary language. In some instances, financial accounting standards explain how to deal with uncertainty. For example, International Accounting Standard 37: Provisions, Contingent Liabilities and Contingent Assets, or IAS 37, include criteria for determining when a provision or contingent liability must be recognized for financial accounting purposes. However, disclosure requirements that depend on quantification and the monetary estimation of anticipated sustainability-related IROs present challenges in the absence of standardized methods.

Satisfying users' information needs

Companies and stakeholders consulted as part of this study consistently highlighted that they face uncertainty arising from how information users, including investors, judge credibility and how they use sustainability disclosures in their assessments and decision-making.

These uncertainties include:

- → Balancing requirements in ESRS and ISSB Standards with investor-driven (investors or third-party information providers such as ESG Raters) requests for information which can take up significant amounts of time, be focused on non-material issues, have uncertain utility and lack alignment with ESRS and ISSB requirements.
- → Tailoring information to users' needs through reports or engagement activities.
- → Structuring and balancing the provision of qualitative and quantitative information required by active equity investors, which (in general terms) require a combination of information & data on companies' operating contexts, positioning and exposure to assess the relevance of sustainability trends and key value drivers within a value chain. They may also need information on management strategy and responses and understanding of company outputs and performance to assess potential impacts on revenues, costs, capital expenditure, operational expenditure, assets, liabilities, etc.
- → Assessing the extent to which formal reports and disclosure satisfy active investor information needs. While management commentary and quantitative data supplied in formal reporting represent key elements supporting fundamental analysis, such analysis also requires other types of corporate & investor communication e.g. investor engagement, market days and analyst meetings.

Uncertainty for users of sustainability disclosure

Users of sustainability disclosure (actors in the investment value chain) experience the effects of uncertainty in various ways including:

- → Understanding the processes, tools and methodologies used by companies in their disclosures.
- → Assessing whether companies have sufficiently clarified the assumptions made in preparing and disclosing performance information.
- → Evaluating the consistency and comparability of approaches used within sectors.
- → Relating specific disclosures to their assessment of the potential future performance of companies.

Assurance and uncertainty

Auditors and assurance professionals play a key role in supporting companies to ensure that their assessment approaches, methodologies used, estimates and calculation process, inputs and assumptions, are checked and can be relied upon by the users of sustainability related disclosure.

In addition, assurers can check connectivity and coherence between accounting and sustainability disclosures and make recommendations to aid clarity. Further information on the specific requirements of relevant assurance standards regarding estimates is available in Theme 4 'The role of assurance – estimates and forward-looking information'.

Contextual background and caveats

The sustainability disclosure landscape continues to evolve. There are ongoing efforts aimed at reducing the reporting burden by simplifying requirements, improving interoperability, and harmonizing the rules. Given the fast-paced changes and ongoing harmonization efforts, the approaches suggested in this report are intended as interim guidance. They aim to help companies navigate uncertainties by providing practical ways to disclose the financial impacts of sustainability-related risks, opportunities, and effects, thereby easing the reporting burden.

Companies are keen to put in place processes, systems and practices that will support the estimation or calculation of financial effects of sustainability-related IROs. However, in the absence of detailed guidance, and while disclosure practices are emerging to respond to the new financial effects requirements, most are understandably hesitant to develop or implement processes that might prove unnecessary or unsuitable when and if further guidance is issued by standard setters or other parties.

Similarly, as the ideas suggested here are provisional approaches, caution should be taken in embedding the approaches into existing systems and processes or when developing new processes.

How is this report structured?

Each of the four uncertainty themes are structured as follows:

1. Overview

An outline of the types of questions that arise from uncertainty within the theme.

2. Commentary

Summarizing and clarifying aspects of the relevant requirements for the theme and the ways in which they can be interpreted. The commentary aids understanding of the requirements and signposts in ESRS and ISSB Standards.

3. Ideas and resources

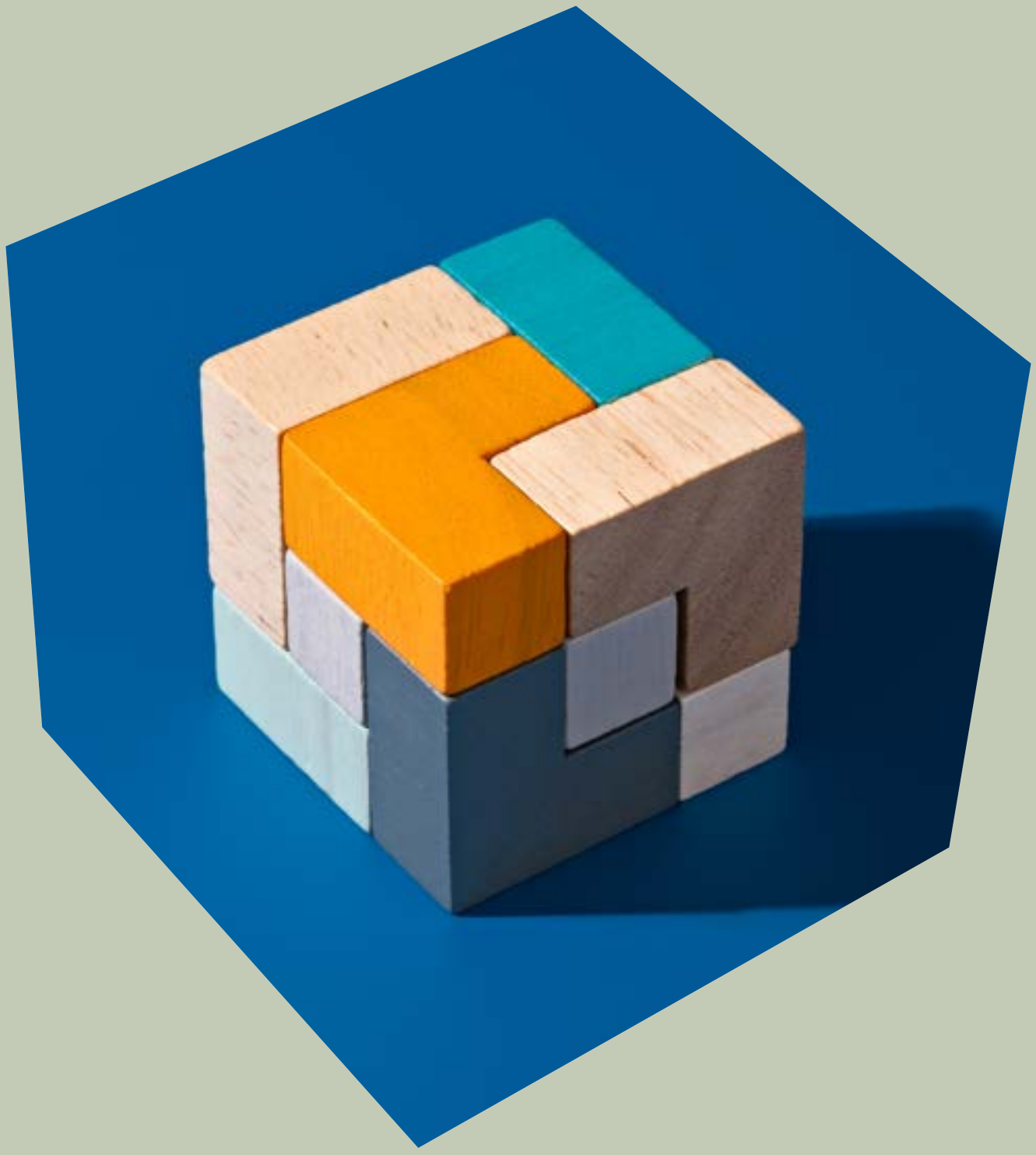
Suggestions on how disclosures could be approached, including any easements that might apply and the techniques that could be used to manage uncertainty. It also includes references to useful resources.

4. Examples

Illustration from disclosures by leading companies are used as inspiration and to demonstrate approaches taken to aspects of uncertainty covered in this study.

Note: many of the examples relate to climate change disclosure and in some cases may refer to periods prior to the release of ISSB and ESRS (as examples of practice driven by these standards are emergent and ongoing).

Theme 1 - *Integrating and connecting requirements*



01.

01. Theme 1 - *Integrating and connecting requirements*

Overview

- → Use and adaptation of existing practices, such as those relating to risk management, governance, investment decision-making, and finance to support sustainability disclosure.
- → Building capacity within teams and functions; for example, to combine traditional financial analysis with the skills needed to estimate and account for the financial effects of sustainability-related risks and opportunities.
- → Connecting requirements for coherence and clarity.

Commentary

ESRS and ISSB Standards build on, and interact with, a range of existing operational, management and disclosure practices, including risk management, governance, and remuneration practices and requirements. These standards recognize that their requirements will, as appropriate, need to be **integrated** into existing practices and disclosures, including those relating to risk management, governance, and financial statements. Sustainability disclosures must align with financial statements on timing, reporting period, and format, supporting integration and coherence. Furthermore, sustainability disclosures and financial statements information must be **connected** as described in the 'Requirements on integrating and connecting information' section below.

The IASB and ISSB are committed to facilitating "the delivery of a coherent and comprehensive system of general-purpose financial reporting that includes sustainability-related financial disclosures and financial statements".[1] Financial and sustainability standards cannot therefore be regarded in isolation but need to be applied together.[2] A few concepts, definitions and principles, such as the qualitative characteristics of decision-useful information[3] and the definition of materiality are aligned across IASB and ISSB Standards. It should also be noted that some organizations have identified amendments to existing IFRS Accounting Standards that could be beneficial for users of financial information and, indirectly, financial stability, e.g. the European Systemic Risk Boad (ESRB) report 'Climate-related risks and accounting'.[4]

Requirements on integrating and connecting information

ISSB - summary and navigator

- → Disclose process integration including:
  - whether controls and procedures to support the oversight/governance of sustainability-related risks and opportunities are **integrated** with other internal functions? (IFRS S1. 29(b)(ii)). **Note**: if oversight of sustainability-related risks and opportunities is integrated with governance processes, the entity shall **integrate** the disclosures on governance instead of providing separate disclosures on governance for each sustainability-related risk and opportunity (IFRS S1. B41(b)).
  - whether processes to identify, assess, prioritize and monitor sustainability-related risks and opportunities are integrated into the overall risk management process? (IFRS S1. 43(a) and 44(c)).
- → Explain the **connections** between disclosures provided across sustainability-related financial disclosures and other general purpose financial reports published by the entity, such as its related financial statements (IFRS S1. 21(b) ii) and 23)). IFRS S1 provides examples of the types of connections that could be made including between:
  - The strategy and financial performance, for when a sustainability-related opportunity leads to increases in revenue (IFRS S1. B40(a) and B43).
  - The strategy and risks, such as between strategic operational restructuring and risks to workforce composition (IFRS S1. B40(b) and B44(b)).
  - The strategy and metrics the company uses to measure progress against strategic targets (IFRS S1. B43).
  - Sustainability-related risks and opportunities and financial position, performance and cash flows over time due to, for example, changes in demand and consumer preferences (IFRS S1. B44(a)).
  - Use of natural resources or changes in the supply chain and changes in sustainability-related risks and opportunities or changes in financial effects such as effects on production costs or mitigation and investment plans (IFRS S1. B43).
  - A commitment to a sustainability-related target and the entity's financial position and performance, even when the commitment does not yet meet the applicable recognition criteria (IFRS S1. B40).

- Governance, strategy and risk management (IFRS S1. B41(a)(i)).
- Narrative information and quantitative information including metrics and targets and information in the related financial statements (IFRS S1. B41(a)(ii) and B43).
- Disclosures about various sustainability-related risks and opportunities (IFRS S1. B41(b)).

→ When connecting information, companies should:

- Explain the connections, cross-refer to information in other parts of general-purpose financial reporting and use consistent data, assumptions and units of measurement (IFRS S1. B42).
- Be clear and concise and avoid unnecessary duplication (IFRS S1. B42(a) and (b)).
- Disclose information about significant differences between the data and assumptions used in preparing sustainability related information and the financial statements respectively (IFRS S1. B42).

Figure 3: ISSB's summary of tools that facilitate connected information[5]

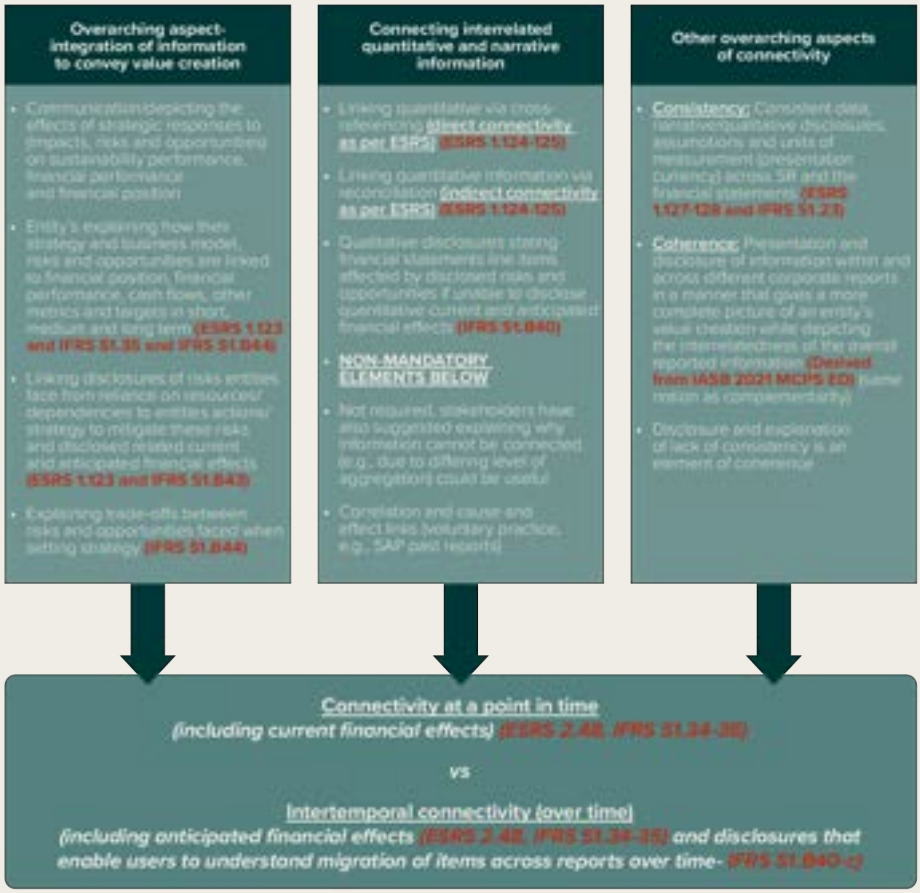
ESRS - summary and navigator

→ Describe the relationships between different pieces of information including:

- The undertaking shall describe the relationships between different pieces of information. Doing so could require connecting narrative information on governance strategy and risk management to related metrics and targets (ESRS 1. 123).
- When the sustainability statement includes monetary amounts or other quantitative data points that exceed a threshold of materiality and that are presented in the financial statements (direct connectivity between information disclosed in sustainability statement and information disclosed in financial statements) the undertaking shall include a reference to the relevant paragraph of its financial statements where the corresponding information can be found (ESRS 1. 124).
- The sustainability statement may include monetary amounts or other quantitative datapoints that exceed a threshold of materiality and that are either an aggregation of or a part of monetary amounts or quantitative data presented in the undertaking's financial statements (indirect connectivity between information disclosed in sustainability statement and information disclosed in financial statements). If this is the case, the undertaking shall explain how these amounts or data points in the sustainability statement relate to the most relevant amounts presented in the financial statements. This disclosure should include a reference to the line item and/or to the relevant paragraphs of its financial statements where the corresponding information can be found. Where appropriate, a reconciliation may be provided, and it may be presented in a tabular form (ESRS 1. 125). **Note**: EFRAG's Connectivity Project: Connectivity Considerations and Boundaries of Different Annual Report Sections[6] (page 27) provides an example[7] of how such connections can be direct or indirect.

- In the case of information not covered by paragraphs 124 and 125 the undertaking shall explain based on a threshold of materiality the consistency of significant data assumptions and qualitative information included in its sustainability statement with the corresponding data assumptions and qualitative information included in the financial statements (ESRS 1. 126).
- Consistency as required by paragraph 126 shall be at the level of a single datapoint and shall include a reference to the relevant line item or paragraph of notes to the financial statements. When significant data assumptions and qualitative information are not consistent, the undertaking shall state that fact and explain the reason (ESRS 1. 127).
- Examples of items for which the explanation in paragraph 126 is required are:
  a. when the same metric is presented as of the reporting date in financial statements and as a forecast for future periods in the sustainability statement; and
  b. when macroeconomic or business projections are used to develop metrics in the sustainability statement, and they are also relevant in estimating the recoverable amount of assets, the amount of liabilities, or provisions in financial statements (ESRS 1. 128).
- Topical and sector-specific ESRS may include requirements to include reconciliations or to illustrate consistency of data and assumptions for specific Disclosure Requirements. In such cases, the requirements in those ESRS shall prevail (ESRS 1. 129).

Figure 4: Diagrammatic synthesis of connectivity-related concepts[8]



Uncertainty - financial effects

- How to integrate requirements set by the ISSB and ESRS to disclose the current and anticipated effects of sustainability-related risks and opportunities with the IFRS Accounting Standards.[9]
- At what point do requirements under existing accounting standards end, and sustainability disclosure requirements begin, and what is the relationship between the accounting and sustainability standards?

Commentary - financial effects

Some accounting and/or disclosure requirements relating to the preparation and presentation of financial statements **already** apply to certain financial effects from sustainability-related risks and opportunities on a company's financial performance, position and cash flows, but only within **the boundaries of financial reporting**.

Those boundaries might apply, and information about the current and anticipated financial effects of sustainability-related risks and opportunities might not feature in financial statements when:[10]

→ The financial effects relate to non-recognized assets or liabilities or do not otherwise satisfy the financial statements' recognition, measurement, disclosure, or presentation criteria.

→ Sustainability-related risks and opportunities do not affect the financial position, performance, or cash flows of the company as at the reporting date, or their effects cannot be measured accurately enough to make disclosures useful or to determine whether there are such effects.

→ The timing of those effects exceeds the period covered by financial statements, and/or the life of the assets and liabilities included in the financial statement.

→ The nature of sustainability information might mean that it is only appropriate to disclose it outside the financial statements.

→ Sustainability-related information may be embedded (and therefore not separately presented) in the financial statements' line items.

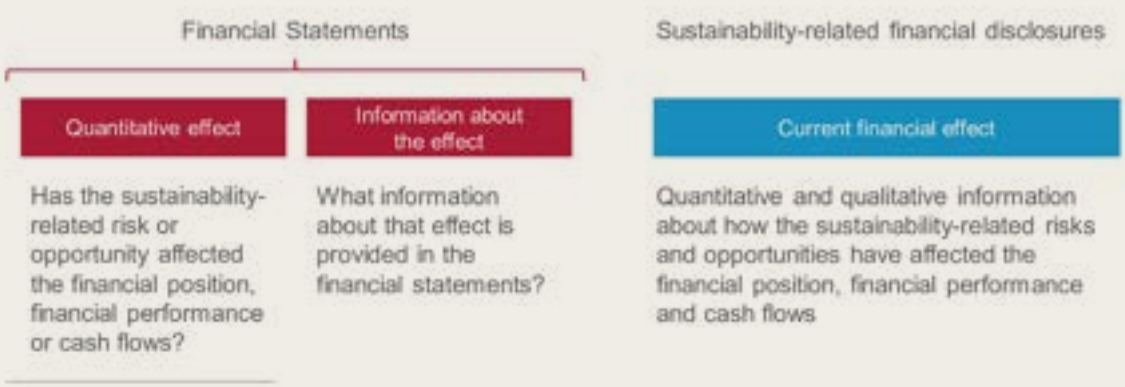
→ There are differences in the level of aggregation in financial statements versus sustainability statements.

→ IFRS Accounting requirements are not sufficiently clear to warrant inclusion of sustainability information in the financial statements.

→ There is no requirement to make a note in the financial statements, but some explanation about the financial effects might assist users of this information. Figure 5 below illustrates how sustainability disclosures should be used to provide explanations about entries in the financial statements that are affected by a sustainability-related risk or opportunity.

Requirements in sustainability standards could be interpreted to cover the 'residue' of information not required by financial accounting standards because of their prescriptions, timeframes, or recognition rules. Identifying the 'residue' involves understanding the boundaries and prescriptions of financial accounting and how they might interact with sustainability-related financial information.

Figure 5: Interactions between financial statements and current financial effects disclosure[11]



Ideas and resources

The following requirements and ideas are relevant when considering how to approach the requirements on integration and connection summarized above, including the requirement to connect financial statements and sustainability information:

- **Understand the boundaries** of financial accounting (as above) and agree how boundaries will be applied in public disclosures with finance department colleagues. There is also the need to consider how and to what extent actions and commitments motivated by sustainability objectives give rise to disclosure requirements covered by financial reporting requirements. For instance, with regard to power purchase agreements, companies would need to consider whether and how both 'IFRS 13 Fair Value Measurement' and 'IFRS 9 Financial instruments' might apply – for further detail see Chapter 8 of EY's 'Applying IFRS – Connected Financial Reporting: Accounting for Climate Change'.[12] In addition, the IFRS has made a Tentative Agenda Decision[13] on under what conditions a company's commitment to reduce or offset its greenhouse gas (GHG) emissions might represent a constructive obligation for the entity under IAS 37 and therefore whether a constructive obligation created by such a commitment meets the criteria in IAS 37 for recognizing a provision and, if a provision is recognized, whether the expenditure required to settle it is recognized as an expense or as an asset.
- **Cross-reference** – ISSB Standards and ESRS[14] allow information to be included in sustainability-related disclosures by referring directly to the financial statements. Some information required for sustainability disclosure might already appear in the financial statements, and cross-referencing might simplify disclosure and reduce duplication in these circumstances.
- **Consistent data and assumptions** – data and assumptions used in preparing sustainability-related financial information must be fully consistent with the corresponding data and assumptions used in preparing the related financial statements (IFRS S1. 23 and ESRS 1. 90). See also Uncertainty Theme 3 - Making assumptions.
- **Recognition criteria** – if sustainability-related risks affect assets that do **not** satisfy the recognition criteria for financial accounting purposes, information is not generally required by financial accounting standards. However, information about sustainability-related risks and opportunities is not constrained by definitions of assets and liabilities nor the criteria for recognizing them (IFRS S1. BC69).
- **Identify functions** – within the organization that can contribute to adapting existing processes and identifying connections between strategies, actions, risks, financial outcomes etc. Figure 6 lists the functions that might need to be involved, including corporate finance functions (management and financial accounting) to provide input on disclosures about the financial effects of sustainability-related risks and opportunities, investment and financing decisions and valuation implications of sustainability disclosure.
- **Gap analysis** – conduct a gap analysis to identify systems and processes that can be used or need to be adapted to support sustainability disclosure. For example, use the analysis to evaluate the suitability of processes in terms of the criteria used to identify and prioritize risks, opportunities and impacts described in COSO guidance "Achieving Effective Internal Control Over Sustainability Reporting: Building trust and confidence through the COSO Internal Control – Integrated Framework" (noted in the Additional resources section below).
- Use **governance arrangements and controls** for an integrated approach to financial and sustainability reporting, as outlined in "Building Trust in Sustainability Reporting and Preparing for Assurance: Governance Controls for Sustainability Information"[15] by IFAC, GAA and WMB.
- **Disclosure strategy** – record the steps taken and planned to integrate sustainability into the work of existing functions and processes and actions to support connections between relevant actions, decisions and outcomes.
- **Big picture** – in addition to connecting financial statements and sustainability disclosures, consider the broader context reflected in the company's public disclosures. For example, information about carbon market participation, going concern, viability, EU taxonomy compliance and so on might have some bearing on what and how information is connected. EFRAG's Connectivity Project Initial Paper[16] explains different aspects of connectivity-related concepts.

Figure 6: Functions contributing to integration and connections

Additional resources

- The IFRS Accounting Standard Exposure Draft, entitled "Climate-related and Other Uncertainties in the Financial Statements: Proposed Illustrative Examples",[17] provides examples of cases in which climate-related risks, transition plans, and GHG emissions regulations already require companies to make disclosures or accounting entries under accounting standards.
- The IASB has produced educational material on the effects of climate-related matters on financial statements. Both the Exposure Draft and the educational material focus on the application of existing financial accounting standards to sustainability-related risks and opportunities.
- EY's publication[18] "Connected Financial Reporting: Accounting for Climate Change" May 2024.
- EY's publication[19] "Climate-related financial disclosure: Good Group Climate (International) Limited. For the reporting period 1 January 2025 to 31 December 2025.
- European Systemic Risk Board[20] – "Climate-related risks and accounting" April 2024.
- EFRAG Connectivity Project Initial Paper[21] – "Connectivity considerations and boundaries of different annual report sections" June 2024.
- IFRS Foundation Connectivity Resources[22] including a webcast series explaining how IFRS Accounting Standards and IFRS Sustainability Disclosure Standards complement each other.
- COSO "Achieving Effective Internal Control Over Sustainability Reporting: Building trust and confidence through the COSO Internal Control – Integrated Framework".
- COSO and WBCSD "Enterprise Risk Management – Applying enterprise risk management to environmental, social and governance-related risks" October 2018.

Examples

In Figure 7, CRH highlights the integration of its carbon reduction target with operational programs and activities, capital expenditure plans, internal investment criteria and expectations about revenues and profitability.

Figure 7: CRH: integration of carbon target with operational activities[23]

CRH has an absolute carbon dioxide (CO_2) emissions reduction target of 30% by 2030 (from a 2021 base year) inclusive of organic business growth. The Science Based Targets initiative (SBTi) has validated our targets in line with a 1.5°C trajectory. A significant portion of the actions required to deliver on the 2030 roadmap are based on known technologies, well-established operational excellence programs and activities in which CRH has a proven track record of delivery. CRH's roadmap includes incremental capital expenditure of approximately $150 million per annum on average, which is subject to strict internal investment criteria and the net business benefit is expected to increase revenues and profitability. In 2024, our Scope 1 and 2 absolute carbon emissions decreased by 4%, from 31.0 million tonnes in 2023 to 29.7 million tonnes in 2024, as we made further progress implementing the key levers in our decarbonization roadmap which offset the impact of an increase in emissions arising from changes in our business portfolio. Our cement-specific net CO_2 emissions per tonne of cementitious product reduced to 537kg (562kg in 2023). We are also continuing to advance our contribution to the circular economy, preserving scarce natural resources and using more recycled materials in construction. In 2024, we recycled 44.7 million tonnes of by-products and wastes, sourced internally and from other industries, for use as alternative materials and fuels in our products and processes (43.9 million tonnes in 2023).

In Figure 8, CLP explains how climate risk management is integrated into the company's risk management process. See also the diagram on page 131 of the same report, the Group-Level Risk Review Process on page 132, and the close link between risk management and CLP's Integrated Framework of Internal Control on page 133.

Figure 8: CLP: integration of climate risk into wider risk management process[24]

Sustainability-related and climate-related risks are integrated into CLP's risk governance and risk management process along with all other types of risks, forming a crucial component of the Group-wide Risk Management Framework. The company identifies these risks through its annual materiality assessments and a comprehensive series of top-down and bottom-up risk review processes. Climate scenario analysis and assessment of relevant physical and transition risks are also conducted in line with Climate Vision 2050. As with other material risks, CLP applies a consistent risk matrix to evaluate sustainability-related and climate-related risks with oversight and assurance from management to the Board.

In Figure 9, Enel expresses the upside or downside risks associated with chronic physical climate-related risks in terms of the effect on EBITDA/year, quantifying climatic effects with financial metrics.

Figure 9: Enel: assessment of risks arising from chronic physical phenomena[25]

Chronic phenomena

The initial scenario analysis has shown that **chronic structural changes will take place in the recent trends of physical variables, which will be appreciable in the long term**. However, in order to obtain an indicative estimate of the potential impacts and to anticipate the possibility of the early onset of chronic effects, **it is possible to test sensitivity of the Industrial Plan to the factors potentially affected by the physical scenario**, taking into account historical weather variability and expected long-term climate changes. The existing Industrial Plan was drafted based on the information contained in the average scenarios for chronic phenomena, which allowed for consideration of the possible effects of trends in climatic variables. The table below shows the results of this analysis.

Upside scenario Downside scenario

Scenario phenomena	Risk/ opportunity category	Description	Time horizon	Description of impact	GBL involved	Scope	Quantification - Impact type	Upside/ Downside	Quantification - range <€100 mil	€100-300 mil	>€300 mil
Chronic physical	Market	**Risk/ opportunity**: increased or decreased **electricity demand**	Medium/ long term	Electricity demand is also influenced by temperature, fluctuations in which can impact the business. Although structural changes should not emerge in the short term, sensitivity analyses of variations in electricity demand are used, in line with the climate scenarios analyzed	Global Generation, Global Grids	Enel Group	EBITDA/year	Upside		●	
								Downside		●	
Chronic physical	Market	**Risk/ opportunity**: increase or decrease in **renewable generation**	Medium/ long term	Renewable generation is influenced by the availability of resources, fluctuations in which can impact the business. Although structural changes should not emerge in the short term, the sensitivity of the Group's results was assessed using sensitivity analyses considering historical meteorological volatility and variations in generation potential in the different climate scenarios	Global Generation	Enel Group	EBITDA/year	Upside		●	
								Downside		●	

Figure 10 is an extract from ArcelorMittal's SEC filing explaining the judgments and assumptions made to include impairment and decommissioning costs in its financial statements due to uncertainties around regulation, technology and other factors associated with the climate transition.

Figure 10: ArcelorMittal: judgments and estimates about impairment and decommissioning costs[26]

Impairment of tangible and intangible assets, including goodwill: Value in use calculations relating to flat steel operations in the EU and in Canada, which apply the BF-BOF route, include the impact of decarbonization at the level of cash flow projections as decarbonization is necessary to maintain the level of economic benefits expected to arise from the assets in their current condition considering the legal obligation of carbon neutrality for these operations; accordingly the Company developed assumptions in determining related capital expenditures which reflect announced commitments and initiatives in place, costs associated with operating the new technologies which are expected to be deployed in the short to medium term, commodity prices and carbon emission costs on the basis of historical experience and expectations of future changes. This requires to assess the future development in supply, technology change, production changes and other important factors. For other operations, discount rates are increased to include a risk premium relative to the future estimated decarbonization cost. Due to economic developments, uncertainties over the pace of transition to low-emission technologies, political and environmental actions that will be taken to meet the carbon reduction goals, regulatory changes and emissions activity arising from climate-related matters, the Company's assumptions used in the recoverable amount calculations, such as capital expenditure, carbon emission costs, level of public funding and other assumptions are inherently uncertain, which could result in significant changes to value in use calculations in future periods and affect impairment assessments.

Decommissioning costs: Over the next ten years, the retirement of certain above-mentioned assets in the context of the transition to low-carbon steelmaking infrastructures may lead to certain decommissioning costs. The Company considered such costs in its value in use calculations but it has not recognized decommissioning provisions related to decarbonization as the obligating event has not occurred yet. Decommissioning cost estimates are based on the known regulatory and external environment. These cost estimates may change in the future including as a result of the transition to a lower carbon economy.

The following extract, taken from a compilation of the feasibility of new technologies across all relevant geographies, outlines the risk of Holcim failing to achieve its decarbonization targets if technical and financial considerations inhibit development of CCUS and other decarbonization technologies. Uncertainties here are largely around regulatory support for technology. The extract also discusses the potential impacts on financial reporting arising from technological obsolescence, including impairment to operating assets or reduction of their useful lives.

Figure 11: Holcim: feasibility of CCUS[27]

Description: The inability to deliver Carbon Capture Utilization and Storage (CCUS) projects or develop necessary technologies that meet both technical and financial expectations could inhibit Holcim from achieving its decarbonization targets.

Potential impact: The successful scaling up of CCUS relies on accurate projections of external factors such as compatibility with CO_2 usage opportunities, climate regulations, market acceptance of low carbon products, the existence of large transportation infrastructure as well as other aspects of viability and scalability. In addition, there are contingencies related to the management of the projects especially in regard to the management of technical interfaces and the relationships with stakeholders (public administrations, partners, suppliers, communities). In the long term, should CCUS be confirmed as the main technology to remove CO_2, there is a risk of stranded assets where CCUS is not feasible (absence of transport infrastructure, insufficient storage capacities, insufficient renewable power or water supply, etc.), and may subsequently risk the loss of leadership in the decarbonization journey. The pathway from 2030 to 2050 also integrates a large range of both new and established decarbonization technologies including novel binders (calcined clay), zero-emission vehicles and low-clinker cements. For the latter, higher prices for mineral components (MIC) such as slag and fly ash challenge our CO_2 reduction roadmap, as the integration of MIC in our cement production process is a key lever for the reduction of clinker factor and thus reduction of our CO_2 footprint.

Impacts on financial reporting: Useful lives of assets may be affected by climate-related matters because of transitional risks such as technological obsolescence. It can also lead to impairment of operating assets. Sustainability is now a key factor considered by the Group in any investment decision. The transition to lower-emission technologies will impact the allocation of future CapEx. The Group's R&D expenditures are aligned with the strategy to focus on new and alternative technologies that, as a result of diverse research initiatives, may either impact CapEx or R&D costs in the statement of income, depending on the success of the initiatives.

Our response: We investigate every opportunity, at every stage of a building's life cycle, to eliminate emissions and build smarter and better. Leveraging proven processes and existing technologies, we are optimizing our own consumption of resources, using low-carbon energy and fuel, and reducing our water use. In line with our "Strategy 2025 - Accelerating Green Growth", we are accelerating the decarbonization of our own operations to become a net-zero company by switching to renewable energy, developing new formulations, adopting decarbonized mobility and harnessing advanced technologies such as carbon capture, utilization and storage (CCUS). Furthermore, in 2024 the Group continued to successfully demonstrate its ability to bolster its net-zero future through CCUS with an additional project selected by the European Union (EU) Innovation Fund to capture a total of 5 million tons of CO_2 from 2030. With seven projects now selected for EU Innovation Fund grants and additional projects at an advanced stage of planning, we are further reinforcing our solid portfolio of CCUS projects globally. Based on various technologies, robust partnerships and value chains, these sites are well positioned to become net-zero cement plants and drive our Group to net zero. Holcim is a partner of choice in the CCUS ecosystem in Europe and continues to actively engage with public authorities, industry partners, customers and communities. In addition, new economic conditions could emerge in the long term (steady development of e-fuels, growing usage of captured CO_2 by the chemical industry) and drive a significant shift from CO_2 storage to CO_2 utilization, improving the profitability of CCUS and offering new prospects for this business model. Holcim also continues to explore promising opportunities such as smart design, novel binders, kiln electrification and the use of hydrogen.

Figure 12 describes the processes behind the conclusion, based in part on the subjective judgment of senior executives, that BHP's decarbonization plans have no material impact on the remaining useful lives of the fleet of assets in the reporting year.

Figure 12: BHP: Decarbonization strategy and economic life of property[28]

The Group currently acquires carbon credits primarily for regulatory purposes. The Group's plan is to achieve its FY2030 operational (Scopes 1 and 2 from operated assets) GHG emissions target through structural abatement, but if there is an unanticipated shortfall in the pathway to achieve the target, there may be a need to surrender voluntary carbon credits to close the performance gap. The Group will not use regulatory carbon credits when determining whether it has achieved its FY2030 target. The Group may also sell carbon credits, depending on internal use requirements, or originate carbon credits through project development or direct investment. Acquired carbon credits are recognised as an asset initially at cost and are subsequently subject to impairment and/or net realisable value assessments. Classification of the asset reflects the intended manner of use:

- → Inventory – where the intended use is uncertain or the carbon credit is available for trading purposes (either separately or 'bundled' with sale of a commodity); or
- → Intangible asset – held for regulatory or voluntary surrender

Obligations arising from greenhouse gas emission schemes, such as the Australian Safeguard Mechanism (which requires its largest industrial facilities to surrender eligible carbon credits when their Scope 1 GHG emissions exceed a progressively declining legislated limit, known as the baseline) are recognised as a liability at the reporting date when the Group has an obligation.

During FY2024, the Group surrendered approximately US$1 million in carbon credits (~47,000 t CO_2-e) to satisfy Australian assets' FY2023 Safeguard Mechanism obligations. There were no voluntary surrenders.

As at 30 June 2024, the Group recognised:

- → Approximately US$23 million in carbon credits within intangible assets (with no carbon credits classified as inventory).
- → An obligation of US$17 million, representing the FY2024 requirement to surrender eligible carbon credits under the Safeguard Mechanism. The Group intends to satisfy this liability through the surrender of carbon credits in FY2025.

Useful economic lives of property, plant and equipment

The determination of useful lives of the Group's PP&E requires judgment, including consideration of the Group's climate change strategy, targets and goals, decarbonisation plans and the possible impact of transition risks on demand for the Group's commodities.

Useful lives are reviewed each reporting period, including to ensure they do not exceed the remaining expected operating life of the operation in which they are utilised. The remaining lives of the Group's operations reflect the Group's planning range and its underlying climate-related assumptions.

A key component of the Group's operational decarbonisation strategy is the displacement of diesel within the Group's operations, particularly the haul truck fleet. The Group is supporting the development of new equipment by original equipment manufacturers, including entering into partnerships focused on the development and trialling of electric locomotives and haul trucks.

While technical and commercial development of the technology needed is progressing, the Group's operational plans generally assume replacement of haul trucks, and other diesel powered equipment, at the end of their useful lives in line with the Group's regular fleet renewal programs. For example, a significant proportion of the Group's existing WAIO mining fleet is due for replacement prior to the expected availability of battery electric vehicle solutions. As such, the Group's decarbonisation plans have not had a material impact on the estimated remaining useful lives of the Group's existing fleet of assets in FY2024.

Expenditure on operational (Scopes 1 and 2 from operated assets) decarbonisation

The Group set a medium-term target to reduce its operational GHG emissions (Scopes 1 and 2 from operated assets) by at least 30 per cent from the Group's FY2020 baseline levels by FY2030 and a long-term goal to achieve net zero operational GHG emissions by CY2050. The FY2020 baseline for the medium-term target and subsequent performance is adjusted for acquisitions, divestments and methodology changes.

While the Group's operational GHG emissions increased in FY2024, compared to FY2023, largely as emissions from organic growth exceeded reductions from decarbonisation activities, the Group remains on track to meet its FY2030 target. Operational decarbonisation activities during FY2024 continued to focus on transitioning the Group's electricity supply to renewable sources and continuing to progress projects in relation to displacement of diesel. Expenditure in relation to diesel displacement and fugitive methane is expected to increase towards the second half of the decade, with capital expenditure in these areas not material in FY2024.

Figure 13: ICAEW: water scarcity and impairment[29]

A winery has one location consisting of 500 acres of vineyards, and agricultural and capital assets currently valued at $100m. It has scientific data projecting water reserves in different locations combined with projected harvests versus required yields.

Management projects that water scarcity will negatively affect its yield starting in five years and peaking in 10 years. As a result, the sustainability and finance managers determine that they will have to relocate no later than 10 years from now, which means that the company's existing agricultural and capital assets will ultimately be abandoned. The agricultural and capital assets (valued today at $100m) will need to be assessed for possible impairment, and its amortization may need to be accelerated such that its residual value will be zero by year 10. Assuming no immediate impairment is required, the company will subsequently recognize a $10m annual expense (for simplicity) in the income statement and an additional amortization provision in the balance sheet.

The company would further update its capital asset note to advise users of the planned asset abandonment and its financial effect over its revised future useful life. Additionally, information about the new planned site should be disclosed; this will be done in the Management Discussion & Analysis (MD&A) section of the general-purpose financial statements until land is acquired, construction starts, or an existing winery (asset) is purchased in accordance with generally accepted accounting principles and financial reporting standards.

Figure 14 outlines Equinor's approach to variable remuneration in the context of the delivery of strategic sustainability goals.

Figure 14: Equinor: climate and energy transition goals and remuneration policies[30]

The receipt of variable remuneration depends on individual and company performance and is subject to a holding period requirement for some elements. Performance-based variable remuneration was capped in accordance with the relevant Norwegian state guidelines. In Equinor, how we deliver is as important as what we deliver, and KPIs and behaviour goals applicable for an executive are therefore weighted equally when setting the individual bonus level. One of the common KPIs used to decide the annual variable pay (bonus) component of variable pay for all executives is "Upstream CO_2 intensity: <= 7 kg/boe". In the behaviour part of the performance assessment there is a common goal to transform own organisation to deliver on our purpose and become a leading company in the energy transition.

Executive remuneration policy

The executive remuneration policy which was approved by the 2023 annual general meeting serves as the basis for the 2024 remuneration report, and is available on Equinor's website at **Executive remuneration policy — Equinor**.

Figure 15 describes how Mondi assesses the impact of climate change on estimates of future cash flows, as well as the assumptions used to value forestry assets and useful economic lives of property, plant and equipment.

Figure 15: Mondi: climate change in financial statements[31]

Management has considered the impact of climate change in preparing these consolidated financial statements, in particular in the context of the disclosures included in the Strategic report, including the Group's Net-Zero GHG emission reduction targets as detailed in the Mondi Action Plan 2030 (MAP2030) Taking Action on Climate section on pages 41-45. These considerations, which are integral to the Group's strategy, did not have a material impact on the accounting estimates and judgments, including the following areas:

- → Fair value of forestry assets – refer to note 15
- → Estimates of future cash flows used in the impairment assessment of goodwill and property, plant and equipment – refer to notes 11, 13 and 35
- → Residual values and useful economic lives of property, plant and equipment – refer to note 35
- → Fair value of assets acquired and liabilities assumed in business combinations – refer to note 26

While these considerations did not have a material impact on the estimates, this may change in future periods as management evolves its understanding of climate change-related impacts on the Group.

Theme 2 - *Evaluating what to disclose*

02.

02. Theme 2 - *Evaluating what to disclose*

Overview

When standards do not prescribe the precise information to be disclosed, management must make judgments, most notably materiality judgments about what and how much to report. However, in the absence of consensus about how those judgments should be made, questions arise about how:

- → Judgments should be credible and legitimate.
- → To navigate different materiality perspectives (single and/or double).
- → To ensure that management's judgment aligns with the information needs of users of sustainability disclosures.
- → The characteristics that judgments must exhibit to avoid claims that the outcomes are vague, exaggerated, incomplete, misleading, or even greenwashing.

Commentary

Unless otherwise prescribed by the ESRS or ISSB Standards, the content of disclosures is determined by management using their judgment to identify information for disclosure.

Both ESRS and ISSB Standards require that companies **disclose significant judgments** management has made in the absence of a specifically applicable disclosure requirement. Any disclosures made should reflect the qualitative characteristics of decision-useful information (the fundamental characteristics are relevance and faithful representation, and the enhancing characteristics are comparability, verifiability, timeliness and understandability (IFRS S1 Appendix D).

ISSB requirements relating to judgment

An entity shall disclose information to enable users of general-purpose financial reports to understand the judgments, apart from those involving estimates of amounts, that the entity has made in the process of preparing its sustainability-related financial disclosures and that have the most significant effect on the information included in those disclosures (IFRS S1. 74).

The types of judgment anticipated by the ISSB Standards (IFRS S1. 75) include:

- → Judgments in identifying sustainability-related risks and opportunities that could reasonably be expected to affect the entity's prospects.
- → Determining which sources of guidance to apply in the absence of specific standards on sustainability subjects (such as biodiversity and human rights),
- → Identifying material information to include in the sustainability-related financial disclosure and,
- → Assessing whether an event or change in circumstances is significant and requires reassessment of the scope of all affected sustainability-related risks and opportunities throughout the entity's value chain.

ESRS requirements relating to judgment

The ESRS sustainability statement shall include relevant and faithful information about all IROs across environmental, social, and governance matters determined to be material from the impact materiality perspective, the financial materiality perspective, or both. The materiality assessment is the process by which the undertaking determines material information on sustainability IROs. This is achieved by the determination of material matters and material information to be reported. The performance of a materiality assessment based on objective criteria is pivotal to sustainability reporting. The undertaking will use judgment when applying the criteria, and the related explanations are expected to provide transparency from the undertaking to the users of the sustainability statement (ESRS IG 1. 1).

The types of judgment anticipated by ESRS IG 1 Materiality Assessment include:

- → The process or sequence of steps to follow when performing the materiality assessment is left to the judgment of the undertaking (ESRS IG 1. 5).
- → In setting thresholds for the consideration of materiality …" the assessment requires the exercise of judgment. The undertaking needs to set thresholds based on the ESRS 1 criteria, as well as its own specific facts and circumstances. The need for judgment will be higher when the information and evidence about the materiality of a given IRO is inconclusive" (ESRS IG 1. 27).
- → In the disclosure of … "the materiality assessment process and its outcome. This includes the following information: methodologies and assumptions applied, the focus and extent of the process, as well as inputs. ESRS 2 IRO-1 and IRO-2 also require transparency on the judgment exercised, i.e., quantitative or qualitative thresholds and other criteria used" (ESRS IG 1. 29).
- → In determining the depth of analysis used to assess impact severity … "the undertaking shall exercise judgment, informed by the available evidence, on the appropriate level of the assessment of the severity criteria" (ESRS IG 1. 84).

Using judgment to evaluate materiality

ESRS and ISSB Standards define and treat materiality differently, although some definitions are aligned. It is beyond the scope of this study to explore those differences in detail as they are the subject of other commentaries (for instance, EFRAG and the IFRS Foundation "ESRS–ISSB Standards Interoperability Guidance"[32]) and the focus of this section is on uncertainty in making materiality judgments. However, the differences are summarized in Figure 16 below, and a summary of the requirements is provided in the Materiality summary and navigator below.

Please note that the summary and navigator below is not intended to provide a comprehensive insight into all materiality related judgment requirements, but to help companies navigate easily to what they might need to do in order to reduce uncertainty.

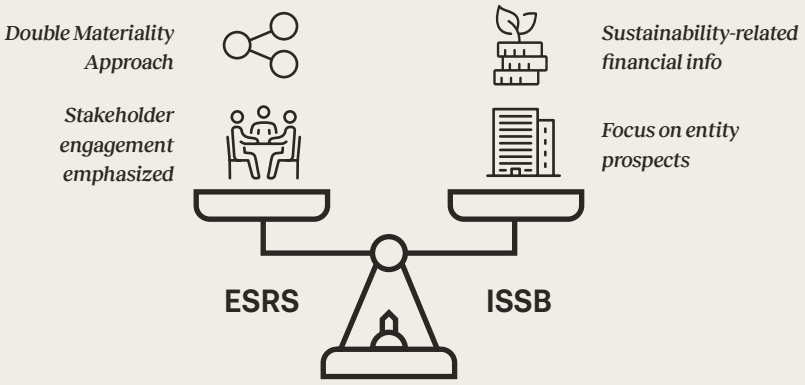
ISSB materiality - summary and navigator

- → **Materiality applies to** sustainability-related risks and opportunities.
- → Stakeholder engagement is not mentioned.
- → **Materiality is based on** the information needs of primary users of general-purpose financial reporting.
- → **Materiality is determined according to** whether sustainability-related risks and opportunities could affect the entity's prospects (IFRS S1. 17).
- → **Materiality definition** – IFRS S1. 18 and Appendix A.
- → **Materiality relates to** sustainability-related financial information. Materiality is an entity-specific characteristic of **information.**[33]
- → **Guidance on materiality** in the Standard – IFRS S1. B13 – B28.

ESRS materiality - summary and navigator

- → **Materiality applies to** sustainability-related impacts, risks, and opportunities connected with the undertaking through its direct and indirect business relationships in the upstream and/or downstream value chain (ESRS 1. 63) and across time horizons (ESRS 1. 49).
- → **Stakeholder engagement** is central to the materiality assessment.
- → Materiality is based on:
  - the significance of information, and;
  - the decision-making needs of users of general-purpose financial reporting and other users whose principal interest is impacts.
- → **Materiality is determined according to** the double materiality approach – impact materiality and financial materiality – and applies to sustainability matters. A matter is material if it meets either one or both perspectives (ESRS 1. 28).
  - Impact materiality definition – ESRS 1. 43.
  - Financial materiality definition – ESRS 1. 49.
- → **Materiality relates to** sustainability matters as listed in ESRS 1 AR 16.
- → **Information about the materiality process** must be provided where standards, such as any potential topical ESRS, say that the process must be disclosed even if there is no materiality IRO for that topic.

Figure 16: Comparing ESRS and ISSB materiality approaches



Materiality and Enterprise Risk Management (ERM)

Companies frequently run materiality assessments (which may include DMA) and ERM assessments as separate processes and at different times in the reporting process.

Close integration between materiality assessment and ERM processes is a key method by which the scale, scope, and potential financial risk effects of sustainability topics can be recognized and assessed by the company. However, it should be noted that ERM processes are currently most suited to support an assessment of one dimension of double materiality assessment – financial materiality.

DMA has a vital role in identifying topics of actual, potential and anticipated strategic challenges, strategic change and choices.

Risk process recognition of sustainability topics could usefully categorize topics as follows (where there is sufficient education, engagement and buy-in across the business):

- → 'Risk now' topics – based on a company's current balance sheet and operational objectives, which are capable of being managed within the risk register.
- → 'Risk strategy' – those risks that have the capability to affect the delivery of strategic intentions.
- → 'Resilience-related risks' – those that have the capability to shape the company's business model, or which (conversely) require the company to engage in significant strategic change for the business model to be capable of withstanding disruption.

Greater alignment between processes for identifying and 'quantifying' the implications of sustainability risks and existing ERM processes is required.

Therefore, disclosure of uncertainty is likely to focus more upon recognition and exploration of the parameters of risk and the implications of trends rather than on opportunities, other than in a general strategic sense, e.g. "we believe that the following trends and changes in regulation could lead to a growth in market for x product or business unit etc.".

Ideas and resources

The following list summarizes the steps that can be taken to reduce uncertainty when making materiality judgments and evaluating what and how much sustainability-related information to disclose. Although the materiality evaluation process has been identified as an area of uncertainty, ESRS and ISSB Standards and related materials contain helpful guidance summarized here for ease of reference.

Resources for materiality judgments

The main resources referred to here are:

- → EFRAG Implementation Guidance 1 – Materiality Assessment (EFRAG IG 1).
- → EFRAG ESRS Implementation Q&A Platform.
- → IFRS Sustainability Educational Material – "Sustainability-related risks and opportunities and the disclosure of material information," which draws on IFRS Practice Statement 2 "Making Materiality Judgments".

Sources of impacts, risks, opportunities and guidance that inform materiality judgments

- → ESRS – ESRS 1 AR 16 lists sustainability matters to be included in the materiality assessment. The list is expected to evolve over time (ESRS 1. 130) and is only to be used to the extent that it supports the materiality assessment, not as a substitute for the company's own process (IG 1. 174 – 175).
- → Entity specific matters identified using frameworks including SASB and GRI (see ESRS 1. 131).
- → Due diligence processes and their outcomes. There is no requirement under ESRS to undertake a due diligence process, but the outcome of the process informs the materiality assessment (ESRS 1. 58).

Materiality assessment processes

- → EFRAG Implementation Guidance IG 1 illustrates a three-phase process for determining material IROs and related material sustainability matters.
- → The ISSB's educational material[34] provides a four-step process at Figure 3.1 (page 39) for identifying and disclosing material information in conformance with the ISSB standards.
- → Whatever process is used and whatever perspective (double or financial materiality) is applied, companies should:
  - Understand the context that informs the assessment (IG 1 Phase 1 of Materiality process paragraphs 69 – 70) (see Figure 22 - CLP Holdings where megatrends are mapped to entity level materiality matters).
  - Understand the scope of materiality assessment required by the standards– both ESRS and ISSB Standards state that IROs must be considered across the entity's upstream and downstream value chain note must be undertaken across the value chain IG 2. 28 and 97).
  - Disaggregate the assessment process appropriately - positive and negative impacts cannot be aggregated or their net effect reported (ESRS 1. 56) – they must be assessed separately. Similarly, risks and opportunities must be assessed using a separate process from the assessment of impacts.

Materiality and user needs

When making materiality judgments for the purposes of ISSB Standards, management must assess whether omitting, misstating or obscuring information could reasonably be expected to influence the decisions primary users make about providing resources to the entity. Those expectations depend on the users' assessment of the amount, timing and uncertainty of future cash inflows to the entity and on their assessment of management's stewardship of the company's economic resources.

The IFRS Sustainability's educational material makes it clear that information might be required even if management does not judge it to be material. This could apply when investors regard a particular sustainability risk to be prevalent in the sector in which the company operates. The IFRS Sustainability educational material indicates that whatever judgments management make about materiality, climate-related disclosures are likely to be necessary if:

1. The company is in a capital and greenhouse gas emissions intensive industry; and
2. The company has a transition plan, details of which are disclosed in the general-purpose financial report.

This is because information is needed to reassure readers that the financial effects of the transition plan have been considered even where management has concluded there is no material effect on the financial statements. For example, primary users might expect that some of the company's assets might be impaired because of plans to change manufacturing methods and invest in more energy-efficient technology (See Example 1 in the IFRS educational material).

Approach for Groups

ESRS require that when Groups of companies are assessing and determining materiality, all subsidiaries must be covered in such a way that allows for unbiased identification of material IROs (ESRS 1. 102). This may involve a top-down approach where the assessment is performance at group level, a bottom-up approach where the assessment is performed at subsidiary level and consolidated at group level and a hybrid of the two.

Thresholds

ESRS 1. 42 states that the double materiality assessment is to be applied using "appropriate quantitative and/or qualitative thresholds". ISSB Standards do not set thresholds for materiality (IFRS S1. B19). ESRS does not specify thresholds, nor does ESRS prescribe any methodology or criteria for setting thresholds. Approaches to setting thresholds may include using:

- → Materiality assessment criteria (see section below 'Criteria for the materiality determination including scoring and thresholds'), such as severity to devise scores or weightings to measure the threshold at which a matter becomes material.
- → Information in the public domain, such as scientific consensus or investor or stakeholder views to identify a matter as being above the threshold for materiality and disclosure.
- → A matrix to plot the possible magnitude, likelihood or severity of outcomes as being indicative of exceeding a threshold for materiality.

Involving stakeholders

The formal involvement of stakeholders for the purposes of materiality assessment is not required under the ISSB Standards.

For reporting in accordance with the ESRS, ESRS 1. 22 – 23 describe stakeholders as those either affected by the undertaking's activity or those who are users of the undertaking's sustainability statements. Paragraph 23 emphasizes the importance of stakeholder engagement to both an undertaking's due diligence and materiality assessment processes.

IG 1 Chapter 3.5 describes the role and approach to stakeholders required by ESRS in the development of Double Materiality Assessment.

Identifying dependencies as sources of financial effects

Identifying an entity's dependence upon natural and social resources in order to assess and disclose sustainability related risks and opportunities is required by both ESRS and ISSB.

In ISSB S1. B2, dependencies are described as follows "...an entity both depends on resources and relationships throughout its value chain to generate cash flows and affects those resources and relationships through its activities and outputs-contributing to the preservation, regeneration and development of those resources and relationships or to their degradation and depletion. These dependencies and impacts might give rise to sustainability-related risks and opportunities that could reasonably be expected to affect an entity's cash flows, its access to finance and cost of capital over the short, medium and long-term".

In ESRS AR 14, entities are required to identify dependencies on natural and social resources that "...that affect or could reasonably be expected to affect the undertaking's financial position, financial performance, cash flows, access to finance or cost of capital over the short-, medium- or long-term is the starting point for financial materiality assessment".

"In this context the undertaking shall consider:

- the existence of dependencies on natural and social resources as sources of financial effects (see paragraph 50); (b) their classification as sources of:
  - risks (contributing to negative deviation in future expected cash inflows or increase in deviation in future expected cash outflows and/or negative deviation from an expected change in capitals not recognized in the financial statements); or
  - opportunities (contributing to positive deviation in future expected cash inflows or decrease in deviation in future cash outflows and/or positive deviation from expected change in capitals not recognized in financial statements)".

Criteria for materiality including scoring and thresholds

- Objective data and evidence (EFRAG Q&A Question ID 185).
- Quantitative **and** qualitative criteria should be used (IG 1. 179 and 182). ESRS do not require the material risks and opportunities to be measured but ranges could be expressed such as high, medium and low (IG 1. 134). In some cases, the criteria are specified. For ESRS purposes actual negative impacts are assessed for materiality based on their severity (as defined in ESRS 1. 45 and AR 10 comprising three factors of scale, scope and irremediable character) and the impact that occurred in the current or prior reporting period. Actual positive impacts are assessed for materiality based on their scale and scope (ESRS 1. 46(a).
- Sustainability-related risks and opportunities are assessed based on their likelihood of occurrence and the potential magnitude of their financial effects on the entity's prospects over the short, medium and long-term (ESRS 1. 51 and AR 15).
- Mitigating factors can **inform** the assessment for ESRS purposes, mitigating actions inform and are relevant when determining materiality but generally impacts should be considered for materiality purposes before any mitigation actions are taken into account (IG 1. 228). Remediation, prevention or mitigation actions should be disclosed separately (note though that ESRS E 1 Climate Change paragraph 20 uses the phrase "gross risk").
- Determination is required by ESRS to establish appropriate thresholds for assessment materiality "In ESRS 1 and ESRS 2, emphasis is being placed on setting appropriate qualitative or quantitative thresholds to assess materiality of IROs and related disclosures. In particular, ESRS 2 paragraphs 53 and 59 require disclosing how these thresholds have been set or applied" (IG 1. 81).
- Determining financial effects for sustainability disclosure vs financial reporting – IG 1. 166 – 167 state that differences between the understanding of financial effects for financial statements and sustainability disclosure respectively may arise due to the time horizons of which the effects of risks are determined and the fact that the scope of the materiality assessment for sustainability disclosure purposes extends across the value chain. For example, cash flows might be affected in the long-term by reputational damage, but the associated brand value might not be reflected in the financial statements.

Uncertainty relating to future events

Judgments about the future are likely to be particularly uncertain. Companies seek to approach such disclosure by providing clarity on judgments. ESRS and ISSB Standards provide guidance on what to consider when assessing the materiality of possible future events as summarized in Figure 17 below.

Figure 17: ESRS and ISSB guidance on assessing the materiality of possible future events

Considerations about materiality of future events' uncertain outcomes	*ESRS 1 paragraphs 91 & 92*[35]	*IFRS S1 paragraph B22 - B24*[36]
Possible outcomes	✓ i.e.: the potential financial effects of the events	✓ i.e.: the potential effects of the events on the amount, timing and uncertainty of future cash flows over time
The severity and likelihood of impacts	✓ i.e.: impacts on people or the environment from the possible events	✗
The range of possible outcomes and the likelihood of possible outcomes within that range	✓ ESRS 1 refers to the "full" range	✓
Consider all relevant (per ESRS) or pertinent (per IFRS S1) facts and circumstances individually and in aggregate	✓ Including information about low-probability and high-impact outcomes which when aggregated could become material	✓ Including information about low-probability and high-impact outcomes [that] might be material either individually or in combination with information about other low-probability and high-impact outcomes
Time horizons	✗	✓ If cash flows are affected but only many years in the future, information is less likely to be material unless it could influence users' decisions regardless of the magnitude or timing of the future event

Revisiting the materiality assessment

The materiality assessment process is dynamic – it should be updated and revisited on an ongoing basis, in particular when a reporting entity's circumstances have substantially changed.

ESRS IG 1 (in summary) requires revision when an undertaking:

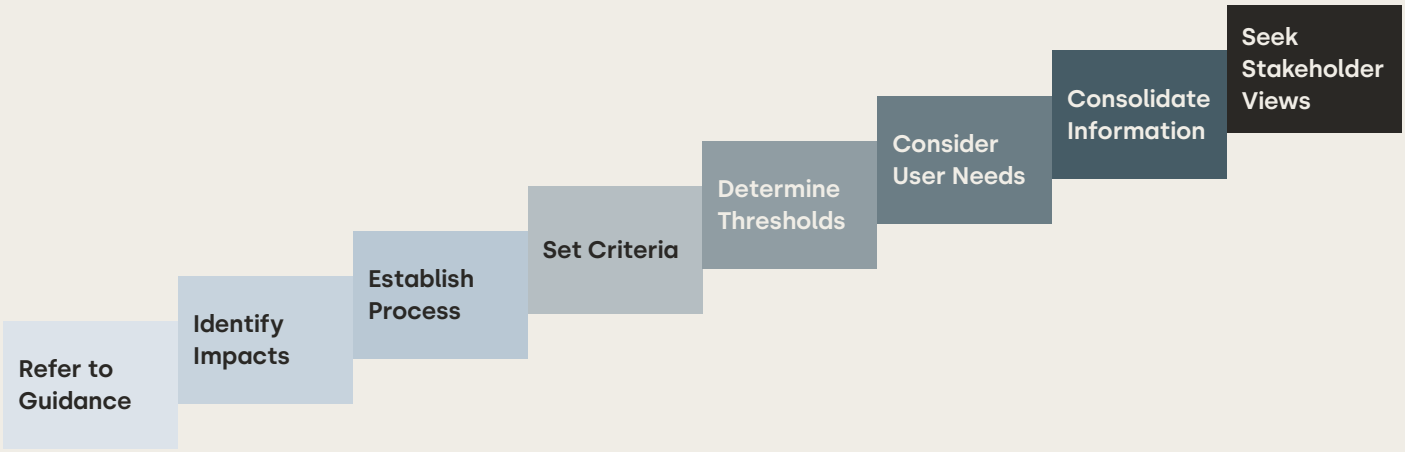
- → Undergoes a major M&A transaction leading to new activities, sectors or changes in operations.
- → Undergoes a significant change of suppliers of supply chain practices.
- → Experiences a shift in social conventions, expectations, scientific evidence or users' expectations (IG 1. 160).

IFRS S1 paragraph B28 requires entities to reassess materiality judgments at each reporting date to take account of changed circumstances and assumptions. This may give rise to previously material information no longer being considered material, or new types of information not previously disclosed becoming material.

Evaluations beyond materiality

As noted above, evaluation and judgment are required beyond assessing and determining materiality. Professional judgment is also essential when evaluating when and how companies should use recognized scenarios (see Theme 3 - Making assumptions), applying sensitivity assessment (including determining the specific inputs to be used), and understanding how sustainability disclosure requirements relate to accounting policies. Additionally, companies must manage the differences between IASB and ISSB requirements, particularly when these involve the disclosure of sustainability information which utilizes different boundaries and time horizons. This includes identifying which risks and opportunities apply, selecting appropriate sources of guidance to use, determining when and why to reassess assumptions and estimates, choosing which perspective(s)[37] to use for developing disclosures, and evaluating whether conditions applicable to easements in the ESRS and ISSB Standards are satisfied (see also Theme 4 – Measurements and estimates).

Figure 18: Steps to evaluate materiality



Examples

Figure 19: Enel: criteria and considerations Enel uses to assess impact and financial materiality[38]

Potentially material IROs relating to sustainability issues were subjected to assessment by internal and external stakeholders relevant to the Group, involving a total of 16 countries, to determine material impacts – the so-called impact materiality – and material risks and opportunities – the so-called financial materiality. The methodology applied is outlined below.

A) Impact materiality

Impact materiality analysis consists of assessing the impacts generated by the Company on the economy, the environment and people, both negative (taking into account any human rights violations), and positive (evaluating the contribution to sustainable development). An ESG topic is therefore material, from the point of view of impact materiality, if it concerns material impacts (actual or potential, positive or negative) of the Company on people or the environment in the short, medium or long term.

Enel has been conducting the analysis of **impact materiality** since 2019 and over the years, taking into consideration the main reference standards available, such as those defined by GRI and EFRAG, it has strengthened the methodology adopted. In particular, potentially material generated impacts were assessed on the basis of the following characteristics:

→ negative (potential and/or actual):

– scale: how severe the impact is or could be; – scope: how widespread the impact is or could be;

– irremediable character: how difficult it is or could be to counteract or repair the resulting damage;

– the likelihood in case of potential impact*;

→ positive (potential and/or actual):

– scale: how the impact can or could have positive effects;

– scope: how widespread the impact is or could be;

– the likelihood in case of potential impact.

On the basis of the characteristics described above, a workflow of questions was developed in the proprietary e-mia system to guide internal stakeholders involved in the process in the assessment of their own impacts. These evaluations make it possible to define a final score for each impact (expressed as a percentage from 1 to 100). On the scores thus obtained, the appropriate quanti-qualitative thresholds are applied to define the material impacts (see section "Material topics").

B) Financial materiality

Financial materiality analysis consists in identifying and assessing risks and opportunities related to ESG topics arising from the external environment, which affect or could affect, positively (opportunity)/ negatively (risk), the Company's financial position, results of operations and cash flows, access to finance or cost of capital in the short, medium or long term.

Such information is particularly relevant for investors (so-called "primary users") because, if omitted, misrepresented or obscured, it could reasonably influence their investment choices and decisions.

Enel already conducted the financial materiality assessment in 2022 and in 2023, taking into consideration the changes introduced by the main European standard of reference available issued by EFRAG, it has strengthened the methodology adopted. Furthermore, financial materiality was also developed considering the relevance of ESG topics according to the SASB Standard in relation to Enel's primary area of reference: "Electric Utilities & Power Generators Sector".

In particular, potentially material risks and opportunities were assessed on the basis of the following characteristics:

→ potential magnitude of financial effects;

→ likelihood of occurrence.

On the basis of the characteristics described above, a workflow of questions was developed in the proprietary e-mia system to guide internal stakeholders, involved in the process, in the assessment of risks/opportunities within their remit. These evaluations make it possible to define a final score for each risk/opportunity (expressed as a percentage from 1 to 100). On the scores thus obtained, the appropriate quanti-qualitative thresholds are applied to define the material risks/opportunities (see section "Material topics").

* For potential impacts, the likelihood is considered together with the severity of the impacts. However, in the case of potential negative impacts on human rights, as specified in ESRS 1, paragraph 45, severity prevails over likelihood in identifying material topics.

Figures 20.1 and 20.2 detail Philips' approach to revising and evolving its 2023 DMA by leveraging AI, conducting assessments and workshops, and validating topics through a survey, ultimately producing a set of assessed topics using ESRS categorization.

Figure 20.1: Philips: commentary on Double Materiality Assessment[39]

We have conducted a Double Materiality Assessment (DMA) to determine the scope of sustainability reporting requirements applicable to us, pursuant to the EU Corporate Sustainability Reporting Directive (CSRD) and the related European Sustainability Reporting Standards (ESRS). This is the third DMA we conducted. We have built years of experience conducting impact materiality assessments in line with the GRI requirements and consider it a multi-stakeholder process. Please refer to Working with stakeholders and advocacy on page 54.

The DMA addresses both financial materiality (the impact of society on Philips) as well as impact materiality (the impact of Philips on society). We believe that the ESG topics we identified, have the greatest impact on our business and the greatest level of concern to stakeholders along our value chain, for instance patient safety and quality.

Taking our 2023 DMA as a starting point, we used an evidence-based approach to this year's DMA, powered by a third-party AI-based application. This application has been updated in 2024 to address the DMA requirements under the CSRD, and now includes data from our supply chain partners and industry peers, as well as customers. We included, for example, data from 21 key suppliers, 37 customers of our Businesses, 32 peer companies and 72 countries. The application allows automated sifting and analysis of millions of data points from publicly available sources, including corporate reports, mandatory regulations and voluntary initiatives, as well as news. Combining all input, we first created a long list of sustainability topics based on the outcome of this assessment and analyzed the number of occurrences in the AI tool. We narrowed down this list based on workshops with internal subject matter experts. From the original list, 32 of the most relevant topics were retained for the short-list of sustainability topics and mapped against the company's value chain. These topics were clustered to avoid overlaps. As part of the process, we defined and assessed Impacts, Risks and Opportunities (IROs, as referred to by the ESRS) with respect to the identified topics connected to our strategy and business model. Subject matter experts assessed the materiality of negative impacts based on scale, scope and any irremediable character. The materiality of positive impacts was assessed based on scale and scope. As such, positive and negative impacts have been assessed, where most impacts were also assessed to be 'actual' rather than 'potential'. Materiality thresholds used in the DMA have primarily a qualitative nature and are quantitative where possible. For risks and opportunities, we assessed the dependencies on natural, human and social resources. The materiality of risks and opportunities is assessed based on a combination of the likelihood of occurrence and the potential magnitude of the financial effects. Subsequently, we created a validation survey, which was sent to more than 300 internal and external stakeholders. We received 117 responses from a representative stakeholder group.

Figure 20.2: Philips: illustration of Double Materiality Assessment[40]

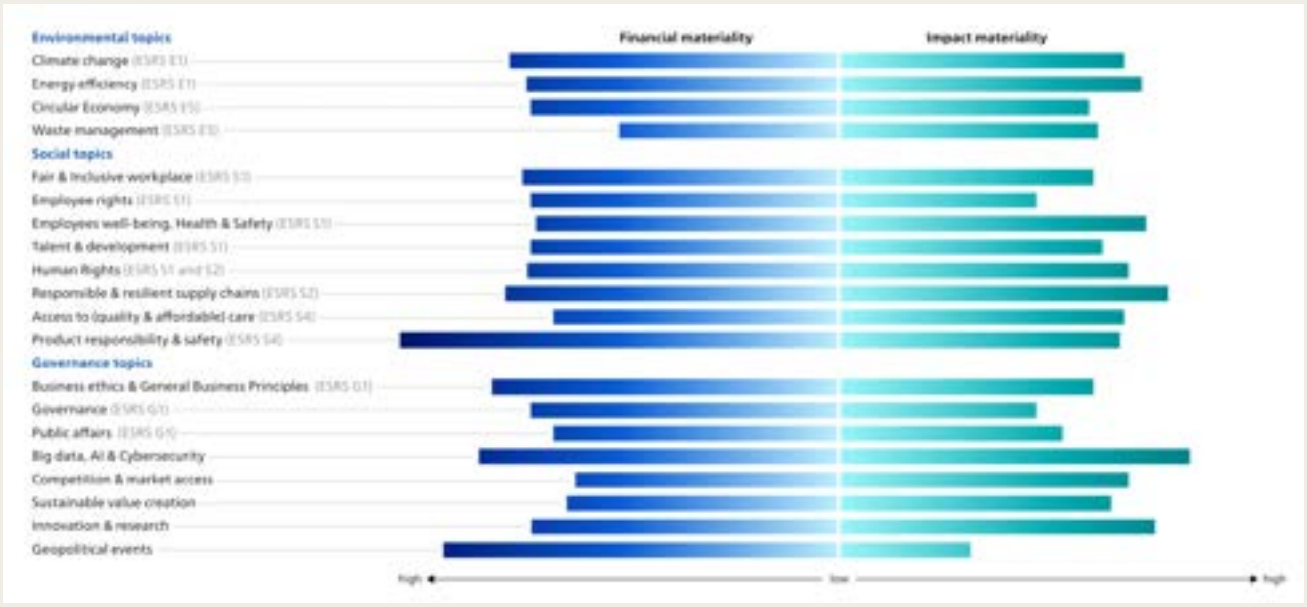
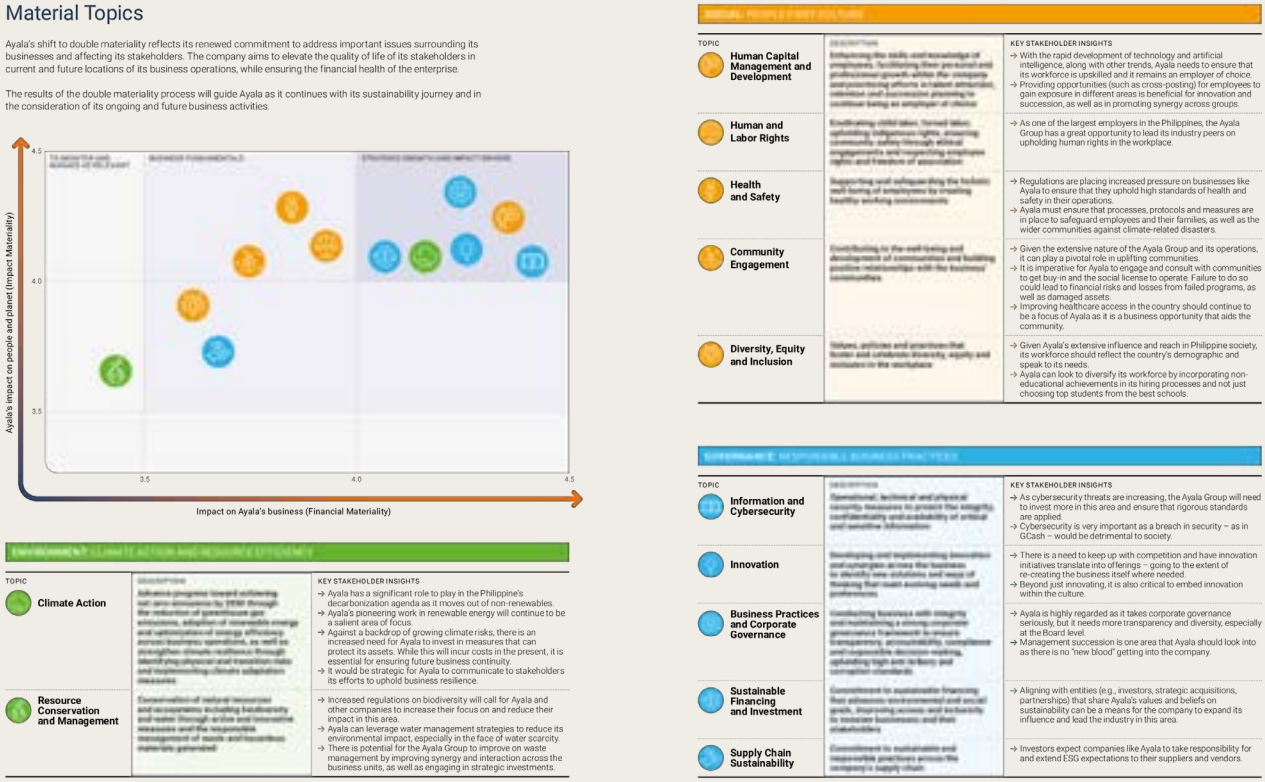


Figure 21: Ayala: material topics and stakeholder views[41]



Material Topics

Ayala's shift to double materiality reflects its renewed commitment to address important issues surrounding its businesses and affecting its stakeholders. The company aims to elevate the quality of life of its stakeholders in current and future locations of its business operations, while ensuring the financial health of the enterprise.

The results of the double materiality process will guide Ayala as it continues with its sustainability journey and in the consideration of its ongoing and future business activities.

TOPIC	KEY STAKEHOLDER INSIGHTS
Human Capital Management and Development	→ With the rapid development of technology and artificial intelligence, along with other trends, Ayala needs to ensure that its workforce is upskilled and it remains an employer of choice. → Providing opportunities (such as cross-posting) for employees to gain exposure in different areas is beneficial for innovation and succession, as well as in promoting synergy across groups.
Human and Labor Rights	→ As one of the largest employers in the Philippines, the Ayala Group has a great opportunity to lead its industry peers on upholding human rights in the workplace.
Health and Safety	→ Regulations are placing increased pressure on businesses like Ayala to ensure that they uphold high standards of health and safety in their operations. → Ayala must ensure that processes, protocols and measures are in place to safeguard employees and their families, as well as the wider communities against climate-related disasters.
Community Engagement	→ Given the extensive nature of the Ayala Group and its operations, it can play a pivotal role in uplifting communities. → It is imperative for Ayala to engage and consult with communities to get buy-in and the social license to operate. Failure to do so could lead to financial risks and losses from failed programs, as well as damaged assets. → Improving healthcare access in the country should continue to be a focus of Ayala as it is a business opportunity that aids the community.
Diversity, Equity and Inclusion	→ Given Ayala's extensive influence and reach in Philippine society, its workforce should reflect the country's demographic and speak to its needs. → Ayala can look to diversify its workforce by incorporating non-educational achievements in its hiring processes and not just choosing top students from the best schools.

TOPIC	KEY STAKEHOLDER INSIGHTS
Information and Cybersecurity	→ As cybersecurity threats are increasing, the Ayala Group will need to invest more in this area and ensure that rigorous standards are applied. → Cybersecurity is very important as a breach in security – as in GCash – would be detrimental to society.
Innovation	→ There is a need to keep up with competition and have innovation initiatives translate into offerings – going to the extent of re-creating the business itself where needed. → Beyond just innovating, it is also critical to embed innovation within the culture.
Business Practices and Corporate Governance	→ Ayala is highly regarded as it takes corporate governance seriously, but it needs more transparency and diversity, especially at the Board level. → Management succession is one area that Ayala should look into as there is no "new blood" getting into the company.
Sustainable Financing and Investment	→ Aligning with entities (e.g., investors, strategic acquisitions, partnerships) that share Ayala's values and beliefs on sustainability can be a means for the company to expand its influence and lead the industry in this area.
Supply Chain Sustainability	→ Investors expect companies like Ayala to take responsibility for and extend ESG expectations to their suppliers and vendors.

TOPIC	KEY STAKEHOLDER INSIGHTS
Climate Action	→ Ayala has a significant role to play in the Philippine's decarbonization agenda as it moves out of non-renewables. → Ayala's pioneering work in renewable energy will continue to be a salient area of focus. → Against a backdrop of growing climate risks, there is an increased need for Ayala to invest in measures that can protect its assets. While this will incur costs in the present, it is essential for ensuring future business continuity. → It would be strategic for Ayala to communicate to stakeholders its efforts to uphold business resilience.
Resource Conservation and Management	→ Increased regulations on biodiversity will call for Ayala and other companies to increase their focus on and reduce their impact in this area. → Ayala can leverage water management strategies to reduce its environmental impact, especially in the face of water scarcity. → There is potential for the Ayala Group to improve on waste management by improving synergy and interaction across the business units, as well as engaging in strategic investments.

Figure 22: CLP: material topics in the context of global mega-trends[42]

Identifying priorities in how we manage our business

As part of the comprehensive assessment, an analysis was conducted to determine the nine megatrends considered most relevant to CLP, based on the executive interviews and other information such as university research, consultant reports, industry surveys, media reports and government resources. The megatrends identified in the previous three-year cycle were updated to reflect our changing business and the evolving operating environment, although most changes involved refining and rephrasing aspects of the previous megatrends. For example, while geopolitics and cybersecurity were featured previously as megatrends, they have become more acute amid rising societal concerns. Nature loss, meanwhile, was added as a new megatrend after analysis confirmed it was a subject of increasing focus for governments and investors.

Megatrends form the basis for us to identify and assess sustainability-related IROs. In addition, we referred to a range of internal and external resources, including CLP's strategy, risk assessment and relevant international reporting standards. This process initially identified 85 IROs which were then assessed for materiality using our own enterprise risk framework with reference to the latest International Sustainability Standards Board and Global Reporting Initiative (GRI) standards.

After being evaluated for their magnitude/severity and likelihood, 17 IROs were assessed as being high or extreme and therefore material to CLP. These sustainability-related IROs were organised under six material topics and 20 sub-topics.

The assessment process was conducted by a working group of internal and external materiality experts with participation from CLP's Group Sustainability, Group Risk Management, Investor Relations and Corporate Affairs teams. Assessment outcomes were refined and validated by the management-level Sustainability Executive Committee and endorsed by the CLP Holdings' Board-level Sustainability Committee.

CLP aims to manage and respond to the sustainability-related financial risks and opportunities which may reasonably be expected to affect our cash flows, access to finance or cost of capital in the short, medium and long term. With reference to IFRS S1, we disclose material information about these risks and opportunities to investors in this *Managing What Matters to Our Business* chapter of the Annual Report. Information is considered material if omitting, misstating or obscuring it could reasonably be expected to influence investment decisions.

Theme 3 - *Making assumptions*

03.

03. Theme 3 - *Making assumptions*

Overview

- → When and how assumptions should be used in sustainability disclosure.
- → The characteristics of credible assumptions.
- → What should be disclosed about assumptions.
- → How to deal with assumptions about the medium and long term.

Commentary

The ESRS and ISSB Standards allow for the use of assumptions to inform judgments and estimates, including estimated measurements (see Theme 4).

The requirements in IFRS S1 are based on "Presentation of Financial Statements". As discussed in Uncertainty Theme 1, the connections between the approach used to disclosing assumptions for financial statements purposes and sustainability disclosure should be considered to enhance consistency across the general-purpose financial report. Both the ESRS and ISSB Standards require that the data and assumptions used in preparing sustainability-related financial information be as consistent as possible with those used when preparing the related financial statements (IFRS S1. 23 and ESRS 1. 90).

The Basis for Conclusions (B4C) that accompanies IFRS S1 acknowledges that there could be legitimate reasons for differences in data and assumptions between sustainability disclosures and financial statements. Although examples are not provided, such differences may arise due to time horizons and greater uncertainty associated with sustainability-related IROs. In all cases, the standards require that any significant differences be explained (IFRS S1. 42 and B4C90).

These extracts below from IAS 1 require companies to disclose assumptions made about the future when there is a significant risk that these could result in a material adjustment to the carrying amounts of assets and liabilities in the **next financial year**. Assumptions about how sustainability-related IROs might affect a company's financial position, performance, and cash flows are likely to be based on much **longer time horizons**.

Figure 23: Extract from IAS 1

IAS1. 31 (IFRS 18, paragraph 20) states that an entity must consider whether to provide additional disclosures when compliance with IFRS Accounting Standards is insufficient to enable users to understand the effect of transactions, events and conditions on the entity's financial position and performance.
IAS 1. 125 and 129 (IAS 8. 31A and 31E) require an entity to disclose information about the assumptions it makes about the future and other major sources of estimation uncertainty at the end of the reporting period that have a significant risk of resulting in a material adjustment to the carrying amounts of assets and liabilities in the next financial year. The paragraph also requires an entity to disclose details of the nature and the carrying amount at the end of the reporting period of the assets and liabilities. IAS 1 requires disclosure of information about assumptions **even when not required** by specific accounting standards.

Using estimates - summary and navigator

ISSB

The use of reasonable assumptions and estimates is an essential part of preparing sustainability-related financial disclosures and does not undermine the usefulness of the information, provided the estimates are accurately described and explained (IFRS S1. 79).

Companies must disclose:

- → The assumptions and judgments applied when preparing and presenting sustainability information.
- → In relation to metrics, the method used to calculate the metric and the inputs to the calculation, including the limitations of the method used and the significant assumptions made (IFRS S1. 50(a)).
- → In relation to measurement uncertainty, information about the assumptions, approximations and judgments the company has made in measuring the amount (IFRS S1. 78(a)), the nature of the assumption (IFRS S1. 81(a)), the sensitivity of the assumptions and estimates underlying the calculation and the reasons for the sensitivity (IFRS S1. 81(b)) and an explanation of changes made to past assumptions if the uncertainty remains unresolved (IFRS S1. 81(d)).

As noted above, the data and assumptions used in preparing sustainability-related financial information should be as consistent as possible with the corresponding data and assumptions used in preparing the related financial statements.

ESRS

The use of reasonable assumptions and estimates, including scenario or sensitivity analysis, is an essential part of preparing sustainability-related information under the ESRS and does not undermine the usefulness of that information, provided that the assumptions and estimates are accurately described and explained (ESRS 1. 89).

ESRS 1. QC 9 requires that:

- → Estimates shall be presented with a clear emphasis on their possible limitations and associated uncertainty. The amount of precision needed and attainable and the factors that make information accurate depend on the nature of the information and the nature of the matters it addresses. For example, accuracy requires that:
  a. factual information is free from material error;
  b. descriptions are precise;
  c. estimates approximations and forecasts are clearly identified as such;
  d. no material errors have been made in selecting and applying an appropriate process for developing an estimate approximation or forecast and the inputs to that process are reasonable and supportable;
  e. assertions are reasonable and based on information of sufficient quality and quantity; and
  f. information about judgments about the future faithfully reflects both those judgments and the information on which they are based.

Ideas and resources

The following types of information may inform assumptions:

- → Industry standard information.
- → Supplier standard information.
- → Scenarios, either a company's own scenarios or independently produced or publicly available scenarios (such as those listed in WBCSD's Climate Scenarios Catalogue).[43] However, it is important to note that choice of scenarios is important[44] as they can vary significantly depending upon the modelling approaches used and they input assumptions. Therefore, companies should clearly indicate the scenarios that have been utilized to undertake analysis and assessment.
- → Identify how and when these aspects of a potential future scenario will likely materialize.
- → Sectoral mapping of these characteristics to identify:
  - **Probable** implications of trends.
  - **Possible** implications of trends.
  - **Speculative** implications of trends.
- → Sub scenario approaches (e.g. sensitivity analysis), i.e. where companies do not define pictures or specific scenarios but instead identify factors which they believe are capable of affecting performance or shaping the future of their sectors/businesses. Here, companies identify strategic parameters and topics, e.g.:
- → Trend identification (social, regulatory, customer, and fundamentals):
  - Where there is a known trend, set of trends or other catalyst for change.
  - Where there is a speculated trend, set of trends or other catalyst for change, which may take the form of scientific findings, social trends or regulatory sentiment.
- → Potential trend implications - identify how and when these aspects of a potential future scenario will likely crystallize or materialize.

Note – the role of assurance with regard to assumptions is covered in Theme 4 – Measurements and estimates.

Examples

In Figure 24, BHP explains the anticipated financial effects of scenario-based assumptions on the net present value of the portfolio and on the company's resilience.

Figure 24: BHP: anticipated effect of assumptions under scenarios[45]

We continue to seek to maximise our exposure to products that enable and support decarbonisation and electrification, urbanisation and a growing population, and to minimise the risk that capital may be stranded in a rapidly decarbonising world. To support this outcome, we consider a range of inputs, including our 1.5°C scenario, when testing the resilience of our portfolio and making investment decisions.

Our CTAP 2024 analyses our portfolio's resilience in our new 1.5°C scenario and describes key input assumptions, analytical methods, outputs and sensitivities we used in or derived from this scenario. We use our planning range (our long-term forecast of demand, supply and price across our commodities) for operational planning. It is comprised of three unique, independent planning cases: a 'most likely' base case, and an upside case and downside case that provide the range's boundaries. These three cases reflect proprietary forecasts for the global economy and associated sub-sectors (i.e. energy, transport, agriculture, steel) and the resulting market outlook for our core commodities. The assessments of future states are not explicitly climate scenarios designed to test the resilience of our portfolio to different global climate action trajectories. However, in all three future state estimates, while the global gross domestic product assumptions and pace and drivers of decarbonisation policy and technology diffusion vary, most developed economies reach net zero around CY2050, with other developing economies reaching net zero in CY2060 and CY2070. The modelled output of our planning range results in global CO2 emission pathways implying a projected global temperature increase of around 2°C by CY2100.

Our planning range's demand, supply and price forecasts for key commodities are used to inform data inputs into our operational modelling and drive operational planning. Our planning range is also used for strategy formation and investment decisions.

We use our 1.5°C scenario to derive commodity price sensitivities to assess potential impacts on portfolio value compared with our base case valuations using our planning range. Our modelling indicates our portfolio remains resilient under our 1.5°C scenario. The value of our copper, potash and nickel assets increases relative to the base case of our planning range, and offsets the effect to our portfolio from some downside risk to steelmaking coal. The net present value of our portfolio under our 1.5°C scenario is approximately the same as under the current base case of our planning range, indicating we would be resilient in an accelerated transition to a 1.5°C outcome. Western Australia Nickel's temporary suspension has not altered our scenario analysis, which includes nickel in our portfolio.

Figure 25 describes Olam's use of Natural and Social Capital Valuation, the assumptions involved, and includes a disclaimer stating that the accounting methods used are not related to the results of financial reporting.

Figure 25: Olam Group: natural and social capital valuation approach notes and assumptions[46]

Natural and Social Capital Valuation

Approach notes and assumptions

GHG emissions: Olam has applied a Social Cost of Carbon (SCC) of US$90 per tCO2e[1] to value the costs to society of climate change impacts due to GHG emissions, measured by a global GDP reduction.

Water use: The shadow price of water, which accounts for the value of 'services' provided by water to human health, ecosystems, agriculture and domestic supply, is calculated to be US$0.70/$m^3$ and US$2.43/$m^3$ for Northeast and Central Plains Thailand respectively.

Air, water and soil pollution from fertiliser and pesticide use: Olam has applied the environmental prices[3] to account for emissions of nitrogen (N) and phosphorus (P) emissions to water (from fertiliser use) and emissions of pesticide chemicals to air, water and soil (from pesticide use). As these environmental prices are applicable to and derived from studies conducted in European countries, there is a limitation in applying these environmental prices to our context in Thailand, since the damage costs of environmental pollution can vary widely according to local circumstances. Olam will continue to update its methodology as more appropriate valuation data become available.

Air pollution from burning crop residues: Olam has applied the total cost per tonne of rice husk or straw burned of US$1,6614 (2015 figure, adjusted for inflation).[4] There is a limitation in the use of Cambodian values in the context of Thailand as societal costs from air pollution can vary according to local circumstances. Olam will continue to update its methodology as more appropriate valuation data become available.

Social impact of reduced fertiliser use for farmers: The impact of reduced fertiliser use on farmers' livelihoods following the training programme has been assessed based on the average fertiliser cost in each country, adjusted by purchasing power parity.

Disclaimer: Olam's Natural and Social Capital accounting analyses are not related to financial results or financial reporting. The analyses and insights are specific to the selected operations and are based on the use of environmental economic estimates of non-monetary ecosystems, goods and services; they should not be used outside the context of our analyses. All underlying methodologies are based on well-established databases and frameworks. However, as they depend on third-party expert studies, all values are indicative estimations and are provided as ballpark estimates to inform debate in relation to the management and mitigation of Natural and Social Capital impacts. Results from the Natural and Social Capital valuation analyses may be readjusted according to further methodological refinements.

1. We have used the mid-point of SCC recommended by Massachusetts Institute of Technology (Pindyck, R S. 2019, The social cost of carbon revisited).
2. We have used the shadow water pricing methodology from the Corporate Bonds Water Credit Risk Tool developed by GIZ/ NCD/VfU (2015).
3. Environmental prices from CE Delft Environmental Prices Handbook EU28 Version (2015), corrected for inflation and purchase power parity.
4. https://teebweb.org/wp-content/uploads/2017/07/Trucost-Methodology-Report_TEEB-Rice-Study.pdf

Figure 26 shows the involvement of Mondi's Audit Committee in reviewing the effect of climate change on assumptions and financial statements disclosures.

Figure 26: Mondi: role of audit committee in financial statement disclosures[47]

Understanding of the Group's risks and implications related to climate change is continuously being enhanced. While the Group's assessments still reflect that these may not be severe in the short-term, it is believed that climate change risks are likely to have a medium- and long-term impact on the business.

The financial statement disclosures consider the impact of climate change, notably in the estimates used to calculate the fair value of our forestry assets (see note 1 of the consolidated financial statements). The Group continues to assess accounting policies, judgments and estimates to consider the impact of climate change.

The committee has:

- → participated in overseeing the Group's approach to sustainability;
- → received regular reports from management about climate change and related legislative developments that may impact the Group's disclosure;
- → reviewed the Integrated report (including the TCFD section) and the consolidated financial statements for consistency with respect to climate change risks;
- → reviewed the assumptions applied in the valuation of the forestry assets;
- → considered accounting policies, judgments and estimates on the basis of expected climate change impacts; and
- → satisfied itself that the assumptions, and the changes to those assumptions when compared with the year ended 31 December 2023, were appropriate.

Theme 4 - *Measurements and estimates*

04.

04. Theme 4 - *Measurements and estimates*

Overview

- → What to measure and what characteristics these measurements should have to be useful and credible for public disclosure.
- → How to make estimations when data is not available or is unreliable, especially regarding value chain.
- → How to estimate anticipated financial effects of sustainability-related risks and opportunities can be estimated when the effects are so uncertain, inseparable from other effects or methodologies are absent.
- → Ways to express estimates.

Note: How inputs, outputs and outcomes relevant to sustainability-related disclosure can be measured are beyond the scope of this study, which is focused on disclosure rather than preparation of information.

Commentary

Requirements on metrics - summary

ESRS and ISSB Standards specify a range of metrics that must be disclosed or that may be disclosed subject to management's judgment. The range of metrics is not summarized here, rather, this report summarizes the information that should be disclosed about metrics and the characteristics that metrics should have in order to minimize uncertainty about their purpose and usefulness. These include:

- → Choosing performance metrics that:
  - – Provide insight into how effective the company's practices are for improving outcomes for people and the environment or reducing negative outcomes;
  - – Are reliable and that do not depend on assumptions and unknowns to the extent that the metric is made to arbitrary and threatens faithful representation; and
  - – Are accompanied by sufficient contextual information to enable users of information to interpret them (ESRS 1. AR3).
- → Including metrics associated with particular business models, activities or other common features that characterize participation in an industry (IFRS S1. 48).
- → Explaining the following to minimize uncertainty about metrics:
  - – how the metric is defined,
  - – how it has been derived (e.g. from a sustainability framework or guidelines or sources permitted by the standards),[48]
  - – the purpose of the metric (e.g. to measure progress against targets),
  - – the type of metric (e.g. absolute or relative, quantitative or qualitative),
  - – the method used to calculate it including any limitations in the method and the significant assumptions made.
  - – whether the metric is validated by a third party (IFRS S1. 50 & 51).

Requirements for estimates - navigator

The ESRS and ISSB Standards allow the use of estimates where direct measurement is not possible. This section focuses on estimates used when there is measurement uncertainty. It summarizes what the standards say about the use of estimates, the characteristics they should have to conform with the standards and what to disclose about estimates.

ISSB – The use of reasonable assumptions and **estimates** is an essential part of preparing sustainability-related financial disclosures and does not undermine the usefulness of the information if the estimates are accurately described and explained. Even a high level of measurement uncertainty would not necessarily prevent such an estimate from providing useful information (IFRS S1. 79).

ESRS – When quantitative metrics and monetary amounts, including upstream and downstream value chain information cannot be measured directly and can only be estimated, measurement uncertainty may arise (ESRS 1. 87). The use of reasonable assumptions and **estimates,** including scenario or sensitivity analysis, is an essential part of preparing sustainability-related information and does not undermine the usefulness of that information, provided that the assumptions and estimates are accurately described and explained (ESRS 1. 89).

In summary, the standards acknowledge that estimation might be needed when:

- → There is measurement uncertainty (IFRS S1. 77-82).
- → There is lack of data availability.
- → The metric is difficult to measure, but estimation techniques are available.

- → Information cannot be collected from the upstream and downstream value chain after making reasonable efforts to do so (ESRS 1. 68).
- → "There are circumstances in which the undertaking cannot collect the information about its upstream and downstream value chain…after making reasonable efforts to do so. In these circumstances, the undertaking shall estimate the information to be reported about its upstream and downstream value chain, by using all reasonable and supportable information, such as sector-average data and other proxies" (ESRS 1. 69).
- → Disclosing forward looking information, including anticipated financial effects of sustainability-related risks and opportunities – this is always estimated as there is no way of directly measuring the future.

Characteristics of estimates

- → Estimates should be made according to an appropriate estimation technique (see estimation techniques below).
- → Inputs should be reasonable and based on information of sufficient quality and quantity (ESRS 1. QC9(e) and IFRS S1. D15).
- → The estimate must satisfy the qualitative characteristics of decision-useful information. For example, estimates about the future should accurately reflect the information on which they are based (IFRS S1. D15(f) and ESRS 1. QC 9(f)).
- → Estimates can rely on primary data, secondary data, or a combination of both. Value chain information may come entirely from secondary sources.
  - Primary data is directly measured, including through the use of measurement systems, including data from employee records, invoices from suppliers and energy providers and from the company's own operations, suppliers and business relationships. It should be used as far as possible for meeting disclosure requirements.
  - Secondary data is used when direct measurement is not possible or available. It includes data from publicly available reports, sector proxies, authorities, databases etc. EFRAG IG 2: Value Chain Implementation Guidance provides a list at paragraphs 173 – 174 and gives examples of secondary data in ESRS 1. AR17.
- → The incorporation of estimates made using sector-average data or other proxies shall not result in information that does not meet the qualitative characteristics of information (ESRS 1. 72). **Proxies** can be used where necessary[49] (but must still be in line with qualitative characteristics).
- → Estimates must be neutral so as not to overstate positive information and understate negative information (IFRS S1. D14 and ESRS 1. QC 8).
- → Estimates need to be accurate, but this does not mean perfectly precise in all respects (IFRS S1. D15). Sustainability-related financial information must be provided in such a way that enhances verifiability (IFRS S1. D23).
- → Estimates should be revised as additional information becomes known (IFRS S1. 84b).

Disclosing information about estimates

If estimates are used to prepare sustainability-related financial information, the ISSB requirements are as follows:

- → Estimates, approximations and forecasts must be:
  - clearly identified as such (IFRS S1. D15c);
  - selected and applied in a process that is free from material error (IFRS S1. D15d); and
  - accompanied by information about inputs and methods of calculation used to produce them (IFRS S1. D23b).
- → In the case of uncertainty about measurement, disclose (IFRS S1. 81):
  - the nature of the assumption or other source of uncertainty;
  - the sensitivity of the disclosed amount to the methods, assumptions and estimates underlying its calculation, including the reasons for the sensitivity;
  - the expected resolution of the uncertainty and the range of reasonably possible outcomes for the disclosed amount; and
  - an explanation of changes made to past assumptions concerning the disclosed amount if the uncertainty remains unresolved.
- → If quantification is possible, information can be reported as a single amount or as a range (IFRS S1. 36).
- → As above, cross-referencing the financial statements can be used to ease the reporting burden, show connectivity, and reduce the volume of reports (IFRS S1. BC105).

ESRS easement applicable to data availability challenges in the value chain

ESRS 1 paragraph 133 – for the first three years of its sustainability reporting under the ESRS, when disclosing metrics, the undertaking is not required to include upstream and downstream value chain information, except for datapoints derived from other EU legislation as listed in ESRS 2 Appendix B.

Estimation techniques

ESRS and ISSB Standards do not prescribe the estimation techniques that can be used in cases when there is measurement uncertainty. Possible techniques include:

- → **Shadow pricing or internal pricing** for estimating the financial effects of decisions and outcomes. However, it currently lacks broad consensus and, without clarity and certainty in policy and regulatory approaches, involves a high degree of guesswork. More fundamentally, it cannot be accounted for in the same manner as conventional costs and pricing because it is a **virtual,** rather than actual, cost. Some companies do use shadow pricing to support internal decision-making, but they are understandably cautious about maintaining a clear distinction between information that informs and drives internal decision-making and information used in public-facing disclosures. For more information and insight into the purpose and use of shadow and internal carbon pricing see the CDP report "Putting a Price on Carbon: The state of internal carbon pricing by corporates globally".[50]
- → **The use of Multiple Capital Accounting Protocols and Profit and Loss Statements**[51] for analyzing and disclosing impacts, dependencies and performance beyond financial capital. However, as with shadow carbon pricing, such approaches are often regarded by companies as supplementary information rather than information that should be related to financial results or financial reporting. Olam's approach to this, including the use of a shadow price for water, is illustrated in Figure 33, accompanied by a disclaimer which notes that: "Olam's Natural and Social Capital accounting analyses are not related to financial results or financial reporting. The analyses and insights are specific to the selected operations and are based on the use of environmental economic estimates of non-monetary ecosystems, goods and services; they should not be used outside the context of our analyses".

Estimating current and anticipated financial effects (based on ISSB Standards except as otherwise stated)

The ESRS and ISSB requirements on current and anticipated financial effects are summarized in Appendix A. This section summarizes:

- → The distinction between current and anticipated effects.
- → The type of information to consider when assessing financial effects over different time horizons.
- → The proportionality mechanisms and easements available to facilitate application of the current and anticipated effects requirements.
- → What to disclose when responding to the financial effects requirements and how.
- → Examples and practical actions.

Distinguishing current and anticipated financial effects

Current financial effects are those that affect the company's financial position, performance, and cash flows within the **current reporting period** (IFRS S1. 35(a) and IFRS S2. 16(a)). Relevant disclosures are likely to feature in financial statements subject to the boundaries discussed in this report's Uncertainty Theme 1 - Integrating and connecting requirements, and could be supplemented with explanatory information in sustainability disclosures. Anticipated financial effects are expected to materialize beyond the current or next reporting period and over longer time horizons. As such, they are subject to greater uncertainty.

Anticipated financial effects - start with what you know

Estimating the anticipated financial effects of sustainability-related risks and opportunities gives rise to significant uncertainty. However, estimation is to be based on matters known to the company as at the reporting date including:

- → Investment and disposal plans, sources of funding, and how they actually or potentially affect the financial position.
- → The company's strategy to manage sustainability-related risks and opportunities, and how that strategy actually or potentially affects the financial performance and cash flows.

Proportionality and other mechanisms to facilitate application of requirements on current financial effects

Proportionality mechanisms are "designed to strike a balance between the need for decision-useful information and the costs and complexity of providing that information".[52]

ISSB Standards allow for qualitative information to be disclosed instead of, or in addition to quantitative information when:

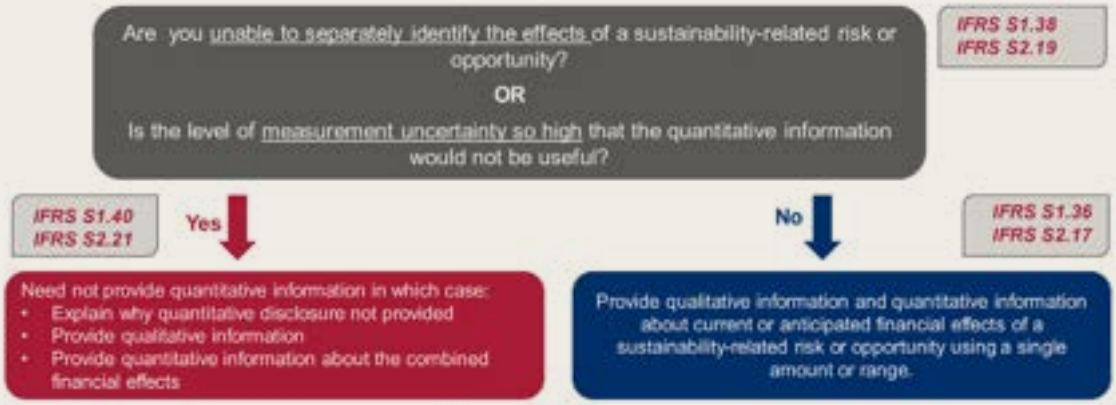
- → Financial effects **cannot** be linked to individual sustainability-related risks and opportunities, that is, when the effects are not separately identifiable; or
- → When the level of measurement uncertainty is so high that the resulting quantitative information would not be useful (IFRS S1. 38, 77-82 and IFRS S2. 19 and IFRS S1. BC108).

When these conditions are met and quantitative information does not have to be provided, disclosures must:

- → explain why;
- → provide qualitative information about the financial effects including the line items, totals and subtotals most affected; and
- → explain the **total combined** effects of the SRROs and other factors including quantitative effects (IFRS S1. 40).

The effect of these easements is summarized in Figure 27 below.

Figure 27: Easements, current and financial effects[53]



Proportionality mechanisms to facilitate application of anticipated financial effects requirements in ISSB and ESRS standards

ISSB - When preparing disclosures about anticipated financial effects, companies can use:

- → all reasonable and supportable information available at the reporting date without undue cost or effort (IFRS S1. 37(a) and IFRS S2. 18(a)). This means using information that is readily available at the reporting date and that the company has an appropriate basis for using.
- → an approach that is commensurate with the internal and external skills, capabilities and resources that are available (IFRS S1. 37(b) and IFRS S2. 18(b)).

ESRS 2 Appendix C lists phased-in Disclosure Requirements, including ESRS E1-9, and allows a company to omit information on anticipated financial effects from material physical and transition risks and potential climate-related opportunities in the first year of preparing its sustainability statement. "The undertaking may comply with ESRS 1-9 by reporting only qualitative disclosures for the first three years of preparation of its sustainability statement, if it is impracticable to prepare quantitative disclosures".

The role of assurance - estimates and forward-looking information

Assurers play a significant role in reviewing and challenging the assumptions companies make when developing estimates, particularly with regard to forward-looking information.

The recently published "Assurance Standard ISSA 5000, "General Requirements for Sustainability Assurance",[54] provides guidance for assurers on how the provision of estimates in sustainability information should be treated in the delivery of disclosure assurance.

ISSA 5000 notes, in the section "Estimates and Forward-Looking Information (Ref: Paras 146L and 146R)", that:

- → "A450. Estimation uncertainty may arise due to incomplete knowledge about the measurement of an area, activity or event, or the measurement or evaluation of an estimate may depend on the forecast of an outcome of one or more events or conditions.
- → A451. Forward-looking information may include forecasts, projections, or future plans of the entity. Forward-looking information may be prepared using scenarios based on best-estimate assumptions or hypothetical assumptions, which are affected by management's judgment. A future event, occurrence or action relating to the

sustainability matters may be subject to greater uncertainty, and therefore ordinarily able to be evaluated with less precision than historical events, occurrences or actions. Disclosures become more speculative as the length of the period covered increases and the uncertainty may increase the further into the future the period to which the forward-looking information relates.

→ A454. Regardless of the source or degree of uncertainty, complexity or subjectivity, or the extent of management's judgment, it is necessary for management to appropriately apply the applicable criteria (Relevance, Completeness, Reliability, Neutrality, Understandability) when developing estimates and forward-looking information and the related disclosures, including selecting and using appropriate methods, assumptions and data".

Ideas and resources

→ Identify the line item in the financial statements that might be affected by a sustainability-related risk or opportunity, even when the effect cannot be quantified. The IFRS Webcast on current and anticipated financial effects (Part 2; page 10)[55] gives an example of a company that has experienced a fall in revenue from selling diesel cars. The fall in revenue is attributed to a range of factors, including changes in consumer demand. In this situation, the company can provide qualitative information including about the line items, totals and subtotals affected, which indicate the combined financial effects of the drop in diesel vehicles sales – unless the information would not be useful.

→ Identify financial statements measures (e.g.: EBITDA, revenues, debt ratio, Capex) that are indicative of the financial effects of sustainability-related IROs – see Figures 28.1 - Enel: main metrics and financial goals, as well as operational metrics along the entire value chain and 28.2 - Enel: financial metrics and goals' association with climate change commitments and performance.

→ Quantify capital investment to support the sustainability strategy and the percentage of earnings generated from assets and activities with sustainability objectives – see Figure 29. 1 - CLP: investment strategy for the decarbonization of its portfolio and Figure 29. 2 - CLP: illustration of decarbonization strategy, and Figure 31 - Holcim: Green CapEx.

→ If not ready to provide detailed information about financial effects, set out the plan. See Figure 30 - ArcelorMittal: quantifying the impacts of material physical and transition climate-related risk to business. ArcelorMittal describes its plan for measuring and quantifying the financial effects of chronic physical climate risks, including the key metrics against which financial impacts will be assessed.

→ Estimate financial effects expressed as a range of uncertainty, including the way in which scenarios amplify (or otherwise affect) the effects and the time horizons over which the anticipated effects are likely to manifest - see Figure 32 - Mondi: estimated financial impacts of climate change-related risks and opportunities across short medium and long timeframes against climate scenarios.

→ Use shadow pricing, the social costs of carbon, and similar metrics to express the financial effect of business activities and actions on society and the environment – see Figure 33: Olam Group – Natural Capital Profit and Loss assessment.

→ Express the effects of estimation uncertainty – see Figure 34: Equinor – assumptions and estimates relating to climate change.

→ Document your company's interpretation of the requirements regarding financial effects and express this as the 'basis for preparation of information about financial effects of sustainability-related IROs'.

→ Clearly characterize the nature of information (e.g., as an estimate, unassured, subject to change, or explanatory of information in the financial statements) and clearly label 'exceptional events' or 'specific impairments'.

Examples

Figure 28.1: Enel – main metrics and financial goals, as well as operational metrics along the entire value chain[56]

Financial metrics	UM	2023	2022	2023-2022	%
Ordinary EBITDA for low-carbon products, services and technologies[1]	billions of euros	17.9	13.9	4.0	29.4
Capex for low-carbon products, services and technologies	billions of euros	12.8	13.3	-0.5	-3.8
	% of total Capex	94.6	92.1	2.5	-
Revenues from coal plants	billions of euros	2.9	6.5	-3.6	-
	% of total revenues	3.0	4.6	-1.6	-
Revenues from thermal generation	billions of euros	14.0	24.1	-10.1	-72.1
	% of total revenues	14.7	17.2	-2.5	-
Revenues from nuclear plants	billions of euros	1.5	1.6	-0.1	-6.7
	% of total revenues	1.5	1.1	0.4	-
Debt ratio with sustainability criteria	%	64	63	1.0	-
Reference price of CO_2	€/tonl	71	86	-15.0	-17.4
Ratio of total absolute emissions (Scope 1, 2 and 3) to total revenue (location based)	tCO_{2eq}/€mil	987	910	77	7.8
Ratio of total absolute emissions (Scope 1, 2 and 3) to total revenue (market based)	tCO_{2eq}/€mil	1,000	919	81	8.1

(1) Ordinary EBITDA for low-carbon products, services and technologies represents the ordinary gross operating margin of the low-carbon products, services and technologies included in the following business lines: Enel Green Power, Enel Grids, Enel X and End-user Markets (excluding gas).

Figure 28.2: Enel – financial metrics and goals' association with climate change commitments and performance[57]

In 2023, Enel's ordinary EBITDA associated with low-carbon technologies, services and solutions was 17,982 million euros, an increase of 29.4% compared to 2022. Capex dedicated to low-carbon technologies, services and solutions is in line with 2022 values, reaching 12.8 billion euros, accounting for 94.6% of total Capex.

The percentage incidence of revenues from coal-fired plants is down, mainly attributable to lower quantities generated from thermoelectric sources, partly as a result of higher renewable production, especially from hydroelectric sources. Specifically, in 2023, revenues related to coal-fired plants correspond to 3.0% of the Group's total revenues.

Enel's strategy of promoting a sustainable financial model has contributed to reaching 64% of the debt related to the sustainability goals.

With regard to the effects of climate change issues, the Group considers them an implicit element in the application of the methodologies and models used to make estimates in the valuation and/or measurement of certain accounting items. Furthermore, the Group has also taken into account the impacts of climate change in the significant judgments made by management. In this regard, the main items included in the Integrated Annual Report for the year ended December 31, 2023 affected by the use of Management estimates and judgments concern the impairment of non-financial assets, bonds related to the energy transition, including those for decommissioning and the site restoration of certain power generation plants.

Figure 29.1: CLP – investment strategy for the decarbonization of its portfolio[58]

- → HK$4.6 billion of our capital investments on an accrual basis was spent on building our decarbonisation portfolio
- → We accelerated our support for the development of reliable, convenient electric vehicle (EV) charging infrastructure and services to meet rising demand in the private and commercial transport sectors
- → Nearly 70% of operating earnings before fair value movements and unallocated expenses were generated from non-carbon generation assets, transmission, distribution and retail operations
- → Backed by strong investment grade credit ratings, adequate liquidity remains to meet the operational needs and support growth

Figure 29.2: CLP – illustration of decarbonization strategy[59]

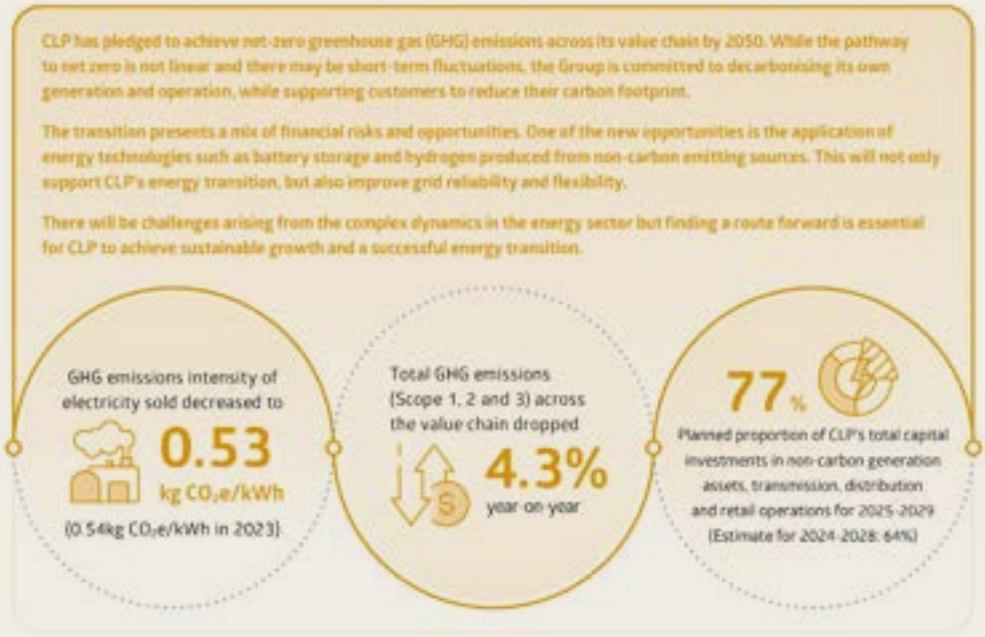


Figure 30: ArcelorMittal – quantifying the impacts of material physical and transition climate-related risk to business[60]

In addition to expanding the screening of our assets and using best-available climate models against a more comprehensive list of climate hazards, in 2023 we also carried out an assessment to understand the degree to which sites are already experiencing physical impacts from climate change. This was done through questionnaires to better understand the nature of the increased risk, perceived changes in frequency, the operational impact (asset and workers) and any mitigation measures that are being put in place.

Using suitable materiality and hazard thresholds, we have identified sites at material gross risk, and are conducting site-level assessments to have more accurate data to determine the net risk, considering local adaptation solutions in place.

The result of this work has enabled us to develop a Physical Risk Map dashboard for the group. We are now working to better understand potential financial impacts on key metrics (revenue, capex, etc.) due to extreme weather events and/or chronic climate changes from:

- → Business disruption, caused by the cessation of revenue-generating activity
- → Asset damage or infrastructure loss
- → Production loss, resulting in reducing the generation of revenue.

The combination of these three categories of loss will account for the financial impact of a specific climate hazard to our business. The process of developing this advanced approach to assess climate physical risks is providing valuable insight into prioritising actions and embedding climate physical risks into our broader risk management process.

For transition risks, initially we have used five key assets representing our business segments to understand our resilience against specific changes in regional steel demand, changes in raw material costs, timely introduction of favourable climate policies and availability of breakthrough technologies. The analysis is being done through the development of site-level financial models and the results will be extrapolated at segment and group-level to better understand the financial impacts of transition risks in a low-carbon emission scenario.

The next step is to expand the assessments to other key sites in 2024 and fine-tune assumptions behind the financial modelling. The transition risk assessment is a valuable contributor to our strategic thinking for the company, in assessing not just where the geographical risks lie, but also where the real opportunities for growth are globally.

Figure 31: Holcim – Green CapEx[61]

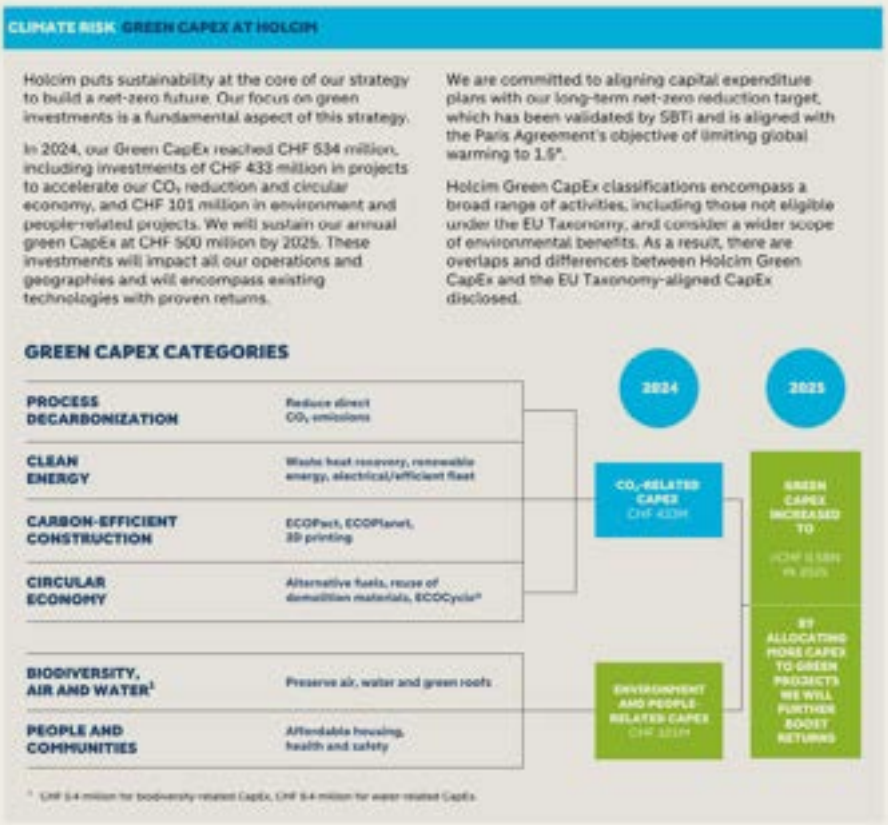
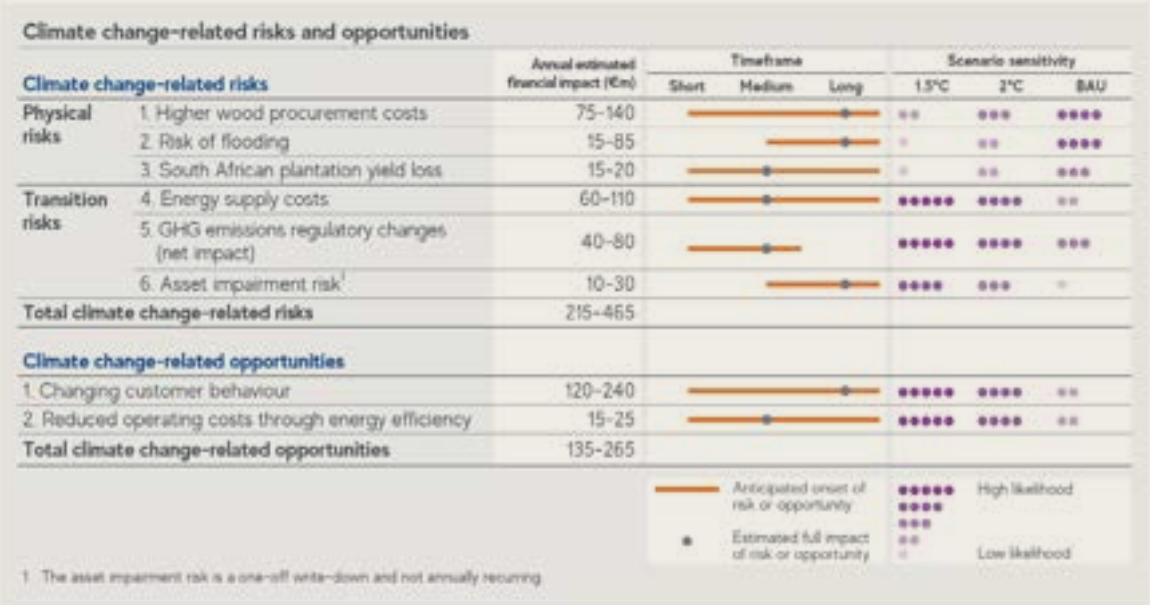


Figure 32: Mondi – estimated financial impacts of climate change-related risks and opportunities across short medium and long timeframes against climate scenarios[62]



Climate change-related risks and opportunities

Climate change-related risks		Annual estimated financial impact (€m)	Timeframe: Short	Medium	Long	Scenario sensitivity: 1.5°C	2°C	BAU
Physical risks	1. Higher wood procurement costs	75–140				●●	●●●	●●●●
	2. Risk of flooding	15–85				●	●●	●●●●
	3. South African plantation yield loss	15–20				●	●●	●●●
Transition risks	4. Energy supply costs	60–110				●●●●●	●●●●	●●
	5. GHG emissions regulatory changes (net impact)	40–80				●●●●●	●●●●	●●●
	6. Asset impairment risk[1]	10–30				●●●●	●●●	●
Total climate change-related risks		215–465						
Climate change-related opportunities								
1. Changing customer behaviour		120–240				●●●●●	●●●●	●●
2. Reduced operating costs through energy efficiency		15–25				●●●●●	●●●●	●●
Total climate change-related opportunities		135–265						

Anticipated onset of risk or opportunity

Estimated full impact of risk or opportunity

●●●●● ●●●● ●●● High likelihood

●● ● Low likelihood

1. The asset impairment risk is a one-off write-down and not annually recurring.

Figure 33: Olam Group – Natural Capital Profit and Loss assessment[63]

Table 2: Natural Capital Profit and Loss Statement for selected coffee farmer groups showing GHG NCC and Water Use NCC

Impact Valuation (added/deducted) for the financial years ended 31 December 2022 and 2021	Value to society and environment 2022 (US$)	Value to society and environment 2021 (US$)
Natural Capital Enhancement (+ impacts)	–	–
GHG sequestration (on-farm agro-forestry)	–*	–*
Natural Capital Deteriorations (- impacts)	**(4,421,947)**	**(7,774,279)**
Social Cost of Carbon	**(3,322,929)**	**(5,762,318)**
GHG emissions: Fertiliser production	(1,141,177)	(2,003,058)
GHG emissions: Use of fertiliser	(767,071)	(1,326,524)
GHG emissions: Management of crop residues	(768,970)	(1,292,221)
GHG emissions: Others	(645,711)	(1,140,515)
Shadow Price of Water	**(1,099,017)**	**(2,011,961)**
Water Use: Irrigation (blue water)	(977,563)	(1,829,665)
Water Use: Non-Irrigation purposes[1] (blue water)	(121,454)	(182,296)
Natural Capital Profit/(Loss)	**(4,421,947)**	**(7,774,279)**

* We have agro-forestry and programmes across all our coffee origins, and are currently working towards collecting the essential data points to be able to provide the carbon sequestration data and trends.

Figure 34: Equinor – assumptions and estimates relating to climate change transition[64]

Effects on estimation uncertainty

The effects of the initiatives to limit climate change and the potential impact of the energy transition are relevant to some of Equinor's economic assumptions and future cash flow estimations. The resulting effects and Equinor's exposure to them are sources of uncertainty. Estimating global energy demand and commodity prices towards 2050 is challenging due to various complex factors, including technology change, taxation and production limits, which may change over time. This could lead to significant changes in accounting estimates, such as useful life (depreciation period and timing of asset retirement obligations), value-in-use (impairment assessments), and deferred tax assets (see note 11 on page 214 for expected utilisation period of tax losses carried forward and recognised as deferred tax assets).

Commodity prices

Significant changes in oil and gas prices outside planning assumptions could impact our financial performance. Equinor's commodity price assumptions applied in value-in-use impairment testing are based on management's best estimate of future market trends. This price-set is currently not equal to the price-set mapped out to achieve net zero emissions by 2050 and limit global warming to 1.5 °C as outlined in IEA's WEO Net Zero Emissions scenario. Changes in how the world acts with regards to achieving the goals in the Paris agreement could have a negative impact on the valuation of Equinor's assets. A calculation of possible impairments of Equinor's upstream production assets and certain intangible assets using price assumptions from two IEA WEO scenarios is provided in the sensitivity table below. In these estimates we use management's price assumptions until 2030, and from 2030 onwards we apply linear interpolation between IEA's prices. In previous years, a linear bridging was applied between the current commodity prices and the first price point provided in the WEO scenarios. To be comparable to Equinor management's price assumptions, we adjust the crude oil prices in the WEO scenarios for transportation cost and all prices for real inflation in 2024. These illustrative impairment sensitivity calculations are based on a simplified model with limitations as described in note 14 on page 225.

Cost of CO_2

Climate-related considerations are included directly in the impairment calculations by estimating the CO_2 taxes in the cash flows, and indirectly through estimated commodity prices related to supply and demand. The CO_2 prices also have an effect on the estimated production profiles and economic cut-off of the projects.

We apply carbon price assumptions for all Equinor's assets, also for assets in countries outside the EU where CO_2 is not already subject to taxation or where Equinor has not established specific estimates. Our default assumption, in real 2024 terms, is a price of USD 92 per tonne starting in 2026 that increases to USD 118 per tonne by 2030 and stays flat thereafter.

The EU ETS price has increased significantly from 25 EUR/tonne in 2020 to an average cost of EU ETS allowances of 66 EUR/tonne in 2024 (86 EUR/tonne in 2023). Equinor's commodity price assumptions include an EU ETS price of near 70 EUR/tonne for the next two years. By 2040 the price is assumed to increase to around 136 EUR/tonne (130 EUR/tonne projected in 2024), and thereafter to around 165 EUR/tonne in 2050 (150 EUR/tonne projected in 2024) in real 2024 terms.

Thus, Equinor expects greenhouse gas emission costs to increase from current levels and to have a wider geographical range than today. During 2024, Equinor paid CO_2-related fees in Norway, the UK and Germany for its own operated assets and Nigeria and Canada for partner-operated assets.

The CO_2-tax assumptions used for impairment calculations of Norwegian upstream assets are based on Norway's Climate Action Plan for the period 2021-2030 (Meld. St 13 (2020-2021)), assuming a gradually increased CO_2 tax (the total of EU ETS + Norwegian CO_2 tax) in Norway to 2,000 NOK/tonne (real 2020) in 2030.

Figure 35: Stora Enso – assessment of physical and transition risks related to climate[65]

Stora Enso has utilised multiple climate-related scenario analyses to inform the identification and assessment of physical risks, and transition risks and opportunities over the short, medium, and long-term. Due to the nature of Stora Enso's operations, the time horizons differ from CSRD definitions. In strategic risks, Stora Enso defines short term as up to five years, medium term as five to ten years, and long term as ten years or above. This definition is in line with Stora Enso's enterprise risk management process.

- Climate-related physical risks: for the identification of hazards and the assessment of exposure and sensitivity Stora Enso utilised global Shared Socioeconomic Pathway (SSP) scenarios: SSP1-1.9 (Sustainability – Taking the Green Road), SSP2-4.5 (Regional Rivalry – a Rocky Road) and SSP5-8.5 (Fossil-fuelled Development – Taking the Highway) and assessed how its assets and business activities may be exposed and sensitive to these climate related hazards, but did not identify material physical climate change impact risks before 2040. Long-term (25–30 years) changes in precipitation patterns, periods of drought, frequent extreme weather events, and higher average temperatures that increase the risk of forest fires and insect outbreaks could cause damage to operations, forests, and tree plantations. More frequent extreme weather events also increase the risk of disruptions in the production, logistics, and supply of raw materials and energy. The assessment covered the Group's own operations that were considered more exposed to possible risks, as well as its joint operations.
- Climate-related transition risks: identified climate-related transition associated with new legislation and the need to adjust operations to a lower-carbon and resilient economy. In 2021, Stora Enso assessed a business impact scenario for 2030, based on the global transition required to limit the global average temperature increase to 1.5 degrees Celsius, in line with the Paris agreement of 1.5 degrees (RCP 1.9). The assessment concluded that the transition to a low-carbon, circular bioeconomy is well aligned with Stora Enso's strategy. The scenario work also indicated that potential new regulations and market mechanisms, driven motivations to limit climate change and its effects on society and the environment could impact Stora Enso's operating costs. These impacts could include limitations on wood harvesting volumes or forest management practices, as well as increases in greenhouse gas emission costs and energy prices. Sustainable product initiatives and requirements may also influence the Group's future market access, product demand growth, and product development requirements. Due to Stora Enso's location in Europe, the mandates and regulations on existing products and services are considered almost certain in the medium term, as the European Union is implementing EU Green Deal and related legislations. Recent legislation has focused specifically on emission reduction, deforestation, biodiversity and circular economy, all of which are central to Stora Enso's strategy.

Appendix – A comparison of IFRS S1 and ESRS 2

IFRS S1[66]	*ESRS 2*[67]
IFRS S1 para 34: An entity shall disclose information that enables users of general-purpose financial reports to understand: a. The effects of sustainability-related risks and opportunities on the entity's financial position, financial performance and cash flows for the reporting period (current financial effects), and; b. The anticipated effects of sustainability-related risks and opportunities on the entity's financial position, financial performance and cash flows over the short, medium and long-term, taking into consideration how sustainability-related risks and opportunities are included in the entity's financial planning (anticipated financial effects).	ESRS 2 para 48(d): The undertaking shall disclose the **current financial effects** of [its] material risks and opportunities on its financial position, financial performance and cash flows and the material risks and opportunities for which there is a significant risk of a material adjustment within the next annual reporting period to the carrying amounts of assets and liabilities reported in the related financial statements. ESRS 2 para 48(e): The undertaking shall disclose the **anticipated financial effects** of [its] material risks and opportunities on its financial position, financial performance and cash flows over the short-, medium-, and long-term, including the reasonably expected time horizons for those effects.
IFRS S1 para 35(a): Specifically, an entity shall disclose quantitative and qualitative information about how sustainability-related risks and opportunities have affected its financial position, financial performance and cash flows for the reporting period.	ESRS 2 para 48(d): The undertaking shall disclose the **current financial effects** of [its] material risks and opportunities on its financial position, financial performance and cash flows and the material risks and opportunities for which there is a significant risk of a material adjustment within the next annual reporting period to the carrying amounts of assets and liabilities reported in the related financial statements.
IFRS S1 para 36(b): Specifically, an entity shall disclose quantitative and qualitative information about the sustainability-related risks and opportunities identified in paragraph 35(a) for which there is a significant risk of a material adjustment within the next annual reporting period to the carrying amounts of assets and liabilities reported in the related financial statements.	
IFRS S1 para 35(c): Specifically, an entity shall disclose quantitative and qualitative information about how the entity expects its financial position to change over the short, medium and long-term, given its strategy to manage sustainability-related risks and opportunities taking into consideration: a. Its investment and disposal plans (for example, plans for capital expenditure, major acquisitions and divestments, joint ventures, business transformation, innovation, new business areas, and asset retirements), including plans the entity is not contractually committed to; and b. How the entity expects its financial performance and cash flows to change in the short, medium and long-term, given its strategy to manage sustainability-related risks and opportunities.	ESRS 2 para 48(e): The undertaking shall disclose the **anticipated financial effects** of [its] material risks and opportunities on its financial position, financial performance and cash flows over the short-, medium-, and long-term, including the reasonably expected time horizons for those effects. This shall include how the undertaking expects its financial position, financial performance and cash flows to change over the short, medium and long-term, given its strategy to manage risks and opportunities, taking into consideration: a. Its investment and disposal plans (for example, capital expenditure, major acquisitions and investments, joint ventures, business transformation, innovation, new business areas and asset retirements), including plans the undertaking is not contractually committed to; and b. Its planned sources of funding to implement its strategy.

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9 This study focuses on requirements set by the ISSB and ESRS to disclose the current and anticipated financial effects of sustainability-related risks and opportunities. It does not consider uncertainties relating to the application of existing IASB Standards to sustainability-related risks and opportunities as those uncertainties are within the remit of the IASB and likely to be resolved by the IASB over time. The IASB might also address, in due course, questions about whether commitments made by companies in their climate transition plans create constructive obligations and consequential recognition of provisions. Although not within the scope of this study, it is clear that questions and challenges arise in relation to financial accounting standards alone before companies even start to consider the implications of sustainability standards.

10 This list includes and adapts the points in paragraph 165 of EFRAG's Connectivity Project Initial Paper, "Why certain material sustainability-related information may not be reported or readily identifiable in the financial statements".

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