Hong Kong Institute of
Certified Public Accountants
香港會計師公會

HKFRS Sustainability Disclosure Standards Guidance Part 2

November 2025

Contents

About this Guidance[1]

The Hong Kong Institute of Certified Public Accountants ("HKICPA") marked a significant milestone in December 2024 with the publication of **HKFRS S1** ***General Requirements for Disclosure of Sustainability-related Financial Information*** and **HKFRS S2** ***Climate-related Disclosures*** (collectively "HKFRS SDS"). Fully aligned with the **IFRS Sustainability Disclosure Standards** ("ISSB Standards"), these standards reinforce Hong Kong's commitment to global sustainability reporting harmonisation, providing a unified framework for high-quality, decision-useful disclosures.

The Hong Kong SAR Government's **Roadmap on Sustainability Disclosure**[2] (December 2024) outlines a phased adoption strategy:

2025

Issuers listed on the Main Board of The Stock Exchange of Hong Kong Limited report against climate disclosure requirements under Appendix C2 Environmental, Social and Governance Reporting Code ("HKEX ESG Code") on a "comply or explain" basis[3].

2026

Mandatory reporting on Part D of HKEX ESG Code for large-cap issuers (Hang Seng Composite LargeCap Index constituents).

2028

Subject to market consultation, full HKFRS SDS adoption for large publicly accountable entities, including large listed issuers and non-listed financial institutions carrying a significant weight.

This roadmap aligns with Hong Kong's vision to transform regulatory obligations into strategic opportunities, fostering a transparent and resilient financial ecosystem.

Objective of this Guidance

This guidance (referred to as "HKFRS SDS Guidance") aims to support entities in applying HKFRS S1 and HKFRS S2 effectively and efficiently. This guidance focuses on practical implementation – the "how" of applying these standards for sustainability and non-sustainability professionals. In developing this guidance, common challenges, market practices and frequently asked questions have been considered, drawing on a range of publications and resources available at the time of writing. The topics addressed here were selected based on their practical relevance and the areas where preparers most often seek clarity.

This guidance serves as a supplementary resource to be used alongside official HKFRS SDS documents, and it is not as a substitute for understanding the full requirements. Judgement should be applied when considering an entity's own facts and circumstances.

About HKFRS S1 and HKFRS S2

- **HKFRS S1** sets out a framework for entities to disclose material sustainability-related financial information that provides investors and other primary users with a complete set of sustainability-related financial disclosures. The standard requires information to be provided on sustainability-related risks and opportunities that could reasonably be expected to affect an entity's prospects, including the entity's cash flows, its access to finance, or cost of capital over the short, medium, or long term. HKFRS S1 also specifies how these disclosures relate to an entity's financial statements, requiring that sustainability-related financial disclosures be included as part of the general purpose financial reports. This approach ensures that investors and other primary users receive decision-useful information that is relevant and connected to the entity's overall financial position and performance.

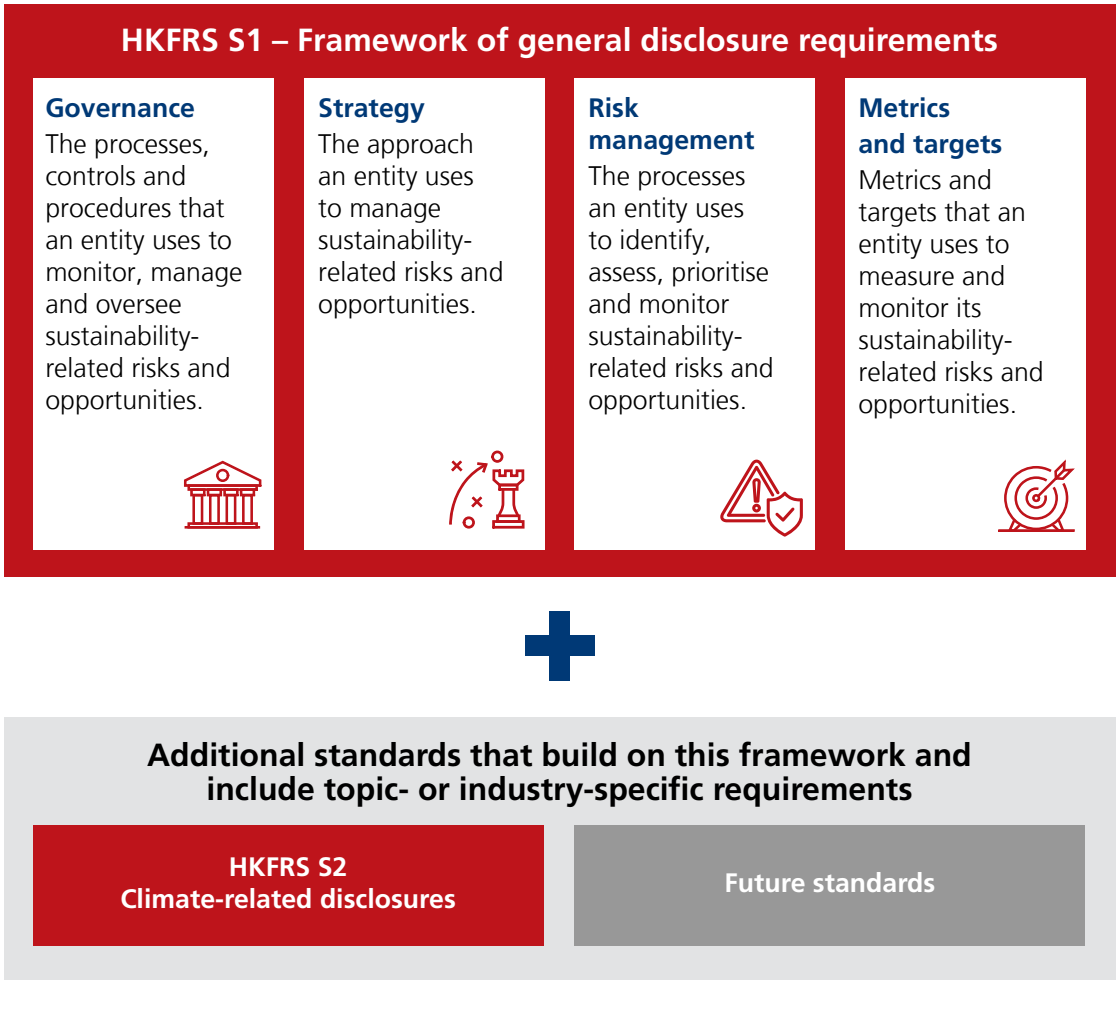
[1] KPMG in Hong Kong was engaged as the technical consultant to assist the HKICPA in preparing this guidance.

[2] Roadmap on Sustainability Disclosure in Hong Kong: Ambition · Assurance · Enablement (December 2024).

[3] The Hong Kong Exchanges and Clearing Limited ("HKEX") has issued Implementation Guidance ("HKEX IG") to support companies with Part D of HKEX ESG Code. The HKEX IG together with Part D of HKEX ESG Code are closely aligned with ISSB Standards.

- **HKFRS S2** sets out the required disclosure of information about climate-related matters. Building on the Task Force on Climate-related Financial Disclosures ("TCFD") recommendations and the industry-specific metrics from the Sustainability Accounting Standards Board ("SASB") Standards, HKFRS S2 specifies the disclosures on climate-related physical and transition risks and opportunities that could reasonably be expected to affect the entity's prospects. HKFRS S2 requires entities to perform climate-related scenario analysis to assess the resilience of their strategy and business model to climate-related changes. The standard also requires disclosures of strategies to address climate-related risks and opportunities, climate-related transition plan (where established) and metrics including Scope 1, Scope 2 and Scope 3 greenhouse gas ("GHG") emissions.

HKFRS SDS emphasise connectivity – ensuring sustainability-related financial disclosures align with each other, as they are designed to be applied together and alongside future topic- or industry-specific standards. HKFRS SDS include reporting across **four core content areas** as follows:



When the International Sustainability Standards Board ("ISSB") publishes any new standards in the future, the HKICPA will engage with relevant stakeholders to decide on the potential adoption of those new standards in Hong Kong as appropriate. According to its 2024-2026 work plan, the ISSB is researching risks and opportunities associated with sustainability topics beyond climate for entities to meet information needs of investors. Two topics that are being researched on are biodiversity, ecosystems and ecosystem services and human capital. Readers can refer to the ISSB's website for the latest updates on these topics.

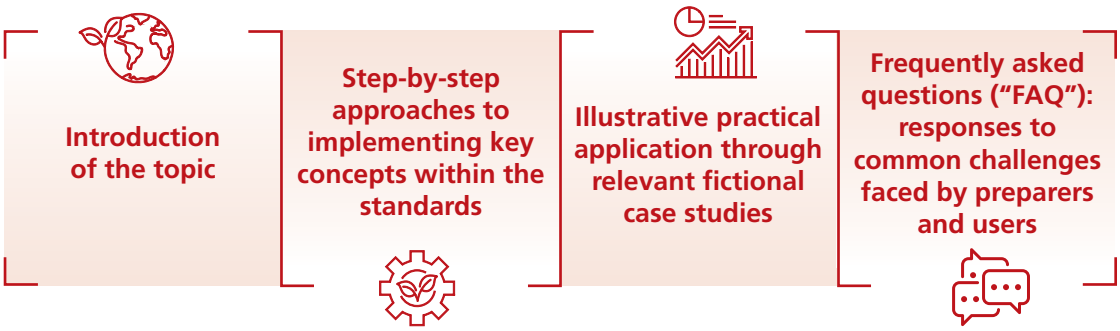
Structure of the guidance

The HKFRS SDS Guidance is organised into two parts, each covering a set of topics relevant to the implementation of the standards:

Part 1: Foundational topics[4]	
Chapter 1	Mechanisms Supporting the Application of HKFRS SDS
Chapter 2	Reporting Entity
Chapter 3	Value Chain
Chapter 4	Sustainability-related Risks and Opportunities and Materiality

Part 2: Focused topics	
Chapter 5	Climate-related Scenario Analysis
Chapter 6	Anticipated Financial Effects
Chapter 7	GHG Emissions
Chapter 8	Transition Plans
Chapter 9	Connected Information

Each chapter is presented in the following structure:



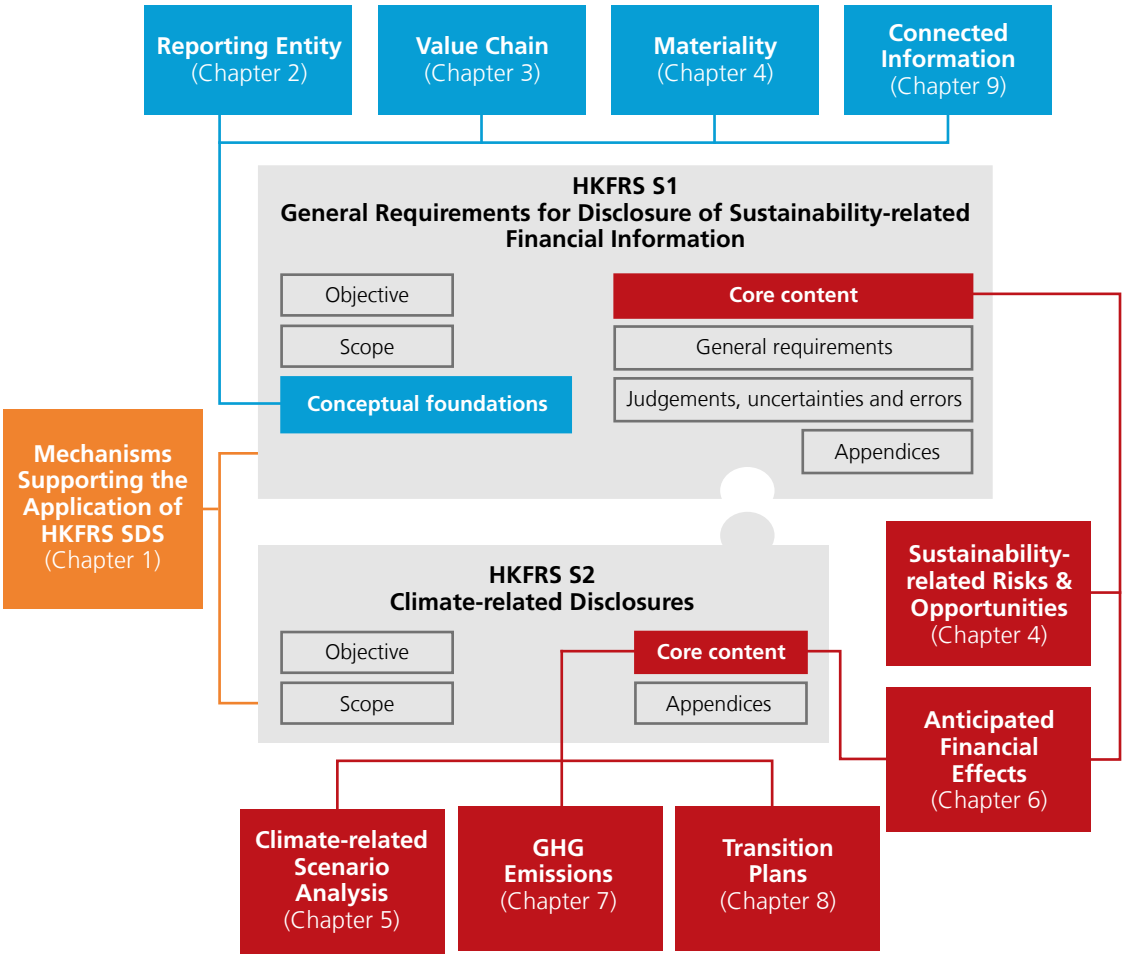
Overview of the guidance

The following diagram is designed to help readers navigate this guidance.

The diagram illustrates the key topics covered in this guidance, organised to reflect the interconnected nature of sustainability-related financial disclosures.

	Foundational topics	These topics from HKFRS S1 help entities determine the scope and boundaries for reporting and apply reasonable and supportable approach for implementation.
	Core content topics	Disclosures about governance, strategy, risk management and metrics and targets concerning sustainability-related risks and opportunities and climate-related risks and opportunities. These topics can be found in the respective Core Content sections of HKFRS S1 and HKFRS S2.
	Mechanisms for applying HKFRS SDS	These are mechanisms that are embedded throughout HKFRS S1 and HKFRS S2 to help ease the burden of disclosure from applying HKFRS SDS.

[4] Part 1 of the Guidance was published in August 2025.



Supporting resources and educational materials

This guidance assumes readers have a basic understanding of HKFRS SDS and sustainability concepts, building on this foundation with practical application guidance.

Readers should note that this guidance is a supplementary resource and should be used alongside the official HKFRS SDS documents, not a substitute for understanding the full requirements of the standards. This guidance does not aim to cover all aspects of HKFRS SDS, but rather to address selected topics within HKFRS S1 and HKFRS S2. The approaches and examples illustrated in this guidance are intended to demonstrate ways of applying the standards in various contexts; they are not the only acceptable approaches, nor do they represent mandatory or prescriptive interpretations. Judgement should always be applied, taking into account each entity's specific facts and circumstances.

Additionally, at the time of writing, only HKFRS S2 has been issued; readers should stay informed of future developments and updates to the standards.

To facilitate implementation, stakeholders are encouraged to make use of the following resources from ISSB and HKICPA:

ISSB Resources

- **Knowledge Hub:** A central repository of capacity-building resources, technical guidance, educational materials, e-learning modules and digital tools for preparers.
- **Supporting materials for IFRS Sustainability Disclosure Standards:** Supporting materials for IFRS S1 and S2, including educational materials, webcast and other resources to support application of the standards.

- **Transition Implementation Group on IFRS S1 and IFRS S2 ("TIG"):** The TIG discusses, in a public forum, implementation questions that arise when entities implement IFRS S1 and S2. The forum allows the TIG to solicit, analyse and discuss stakeholder questions arising from implementation of the standards. It also enables stakeholders to learn about ISSB Standards from others involved with implementation.
- **Digital Taxonomy:** Tools for digital reporting of sustainability-related financial disclosures.
- **SASB Standards:** The SASB Standards are a source of guidance that help entities identify and disclose information about sustainability-related risks and opportunities in the absence of specific IFRS Sustainability Disclosure Standards.
- **CDSB Framework Application Guidance:** While Climate Disclosure Standards Board ("CDSB") has been consolidated into the IFRS Foundation, CDSB's Framework and application guidance on Water and Biodiversity disclosures serve as a useful guidance for entities until the ISSB issues its IFRS SDS on such topics.

HKICPA Resources

- **Implementation Support Platform:** An online portal for submitting technical implementation questions regarding HKFRS/IFRS S1 and S2 for discussion by the HKICPA's Sustainability Disclosure Standards Committee representatives at its Implementation Platform meetings.
- **Sustainability Information Centre:** An online centre for the latest development, thought leadership and learning resources on sustainability for accounting and non-accounting professionals.
- **Resource Centre for Sustainability Standards :** A summary of professional standards, technical publications and reference materials relevant to sustainability reporting, assurance and ethics.

Additional supporting resources and educational materials published by other institutions are provided as a reference in Appendix 1.

Navigate throughout the guidance

Throughout the guidance, the following symbols are used to highlight different contents:

Symbols	Purpose
[HKFRS S1]	References to relevant paragraph(s) of HKFRS S1
[HKFRS S2]	References to relevant paragraph(s) of HKFRS S2
	Highlights
	Excerpts from guidance
	Practical examples
	Frequently asked questions

Comments

The HKICPA's Standard Setting Department welcomes comments and feedback on this publication to be sent by email to commentletters@hkicpa.org.hk to help improve future publications and ensure the guidance remains practical and relevant for users.

5 Climate-related Scenario Analysis

Objectives

To enable understanding of the climate-related scenario analysis process and provide step-by-step guidance on how to conduct climate-related scenario analysis and assess the resilience of an entity's strategy and its business model to climate-related changes

ISSB educational materials and other resources

- Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures
- TCFD Recommendations Technical Supplement: The Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities

5.1 Introduction

[HKFRS S2.22] Climate-related scenario analysis is a strategic tool used to assess the resilience of an entity's strategy and business model to climate-related changes, developments and uncertainties, taking into consideration the entity's identified climate-related risks and opportunities. HKFRS S2 requires an entity to:

- use scenario analysis[5] to assess its climate resilience using an approach that is commensurate with the entity's circumstances (see section 5.2); and
- disclose information about how the entity assesses its climate resilience, including the approach used for scenario analysis (see section 5.3).

[HKFRS S2.BC58] Specifically, the disclosure concerns the resilience of the entity's strategy and business model to the following factors:

- **Climate-related changes:** This might include events or changes directly resulting from climate change (such as extreme weather events);
- **Climate-related developments:** This might include evolving macroeconomic factors like regulatory responses or demographic shifts (such as regulatory limits on the use of certain fossil fuels); and
- **Climate-related uncertainties:** This could encompass the different confidence intervals associated with climate-related changes and developments (such as assumptions about the frequency and severity of extreme weather events or regulatory stringency).

5.1.1 Use of scenario analysis

[HKFRS S2.BC69] It is acknowledged that scenario analysis can also serve a variety of other purposes. For example, entities may use scenario analysis to help identify and assess climate-related risks and opportunities, evaluate the anticipated financial effects of those risks and opportunities, or plan for transitions to a lower-carbon economy. However, under HKFRS S2, the use of scenario analysis is required only for assessing the entity's climate resilience.

[HKFRS S2.BC56] The ISSB draws a clear distinction between the purpose of the disclosure requirements for information about climate resilience and information about current and anticipated financial effects:

- **Climate resilience:** Intended to inform primary users about the entity's ability to cope with and withstand the effects of climate-related risks and uncertainties in different scenarios.
- **Current and anticipated financial effects:** To provide information about the effects of climate-related risks and opportunities on the entity's financial performance, financial position and cash flows.

[5] Scenario analysis is a tool that can be applied to assess a wide range of risks and opportunities, including but not limited to climate-related factors. For the purpose of this guidance, the terms 'climate-related scenario analysis' and 'scenario analysis' are used interchangeably with the same meaning.

Scenario analysis is not the only approach that entities can use to determine the anticipated financial effects of climate-related risks and opportunities. For example, an entity that has already decided to relocate a production facility away from a flood-prone area — based on past events or internal risk assessments — may be able to disclose the anticipated costs of relocation and the expected reduction in physical risks, even if no scenario analysis was conducted in reaching this decision. For further discussion on determining anticipated financial effects, refer to Chapter 6 of this guidance.

5.1.2 Select a "commensurate" approach

[HKFRS S2.B2] When determining the approach to use for its climate-related scenario analysis, an entity should consider:

- its exposure to climate-related risks and opportunities; and
- the skills, capabilities and resources available to the entity for the climate-related scenario analysis.

[HKFRS S2.B4, B6] These considerations provide essential context for understanding the potential benefits of using a particular approach to climate-related scenario analysis, as well as the potential cost and level of effort required by a particular approach to climate-related scenario analysis.

[HKFRS S2.BC65] For example, an entity with fewer resources and relatively low risk exposure might develop a scenario narrative focused on a key product, business unit or operating location. However, a larger entity with high risk exposure and greater analytical experience might carry out sophisticated quantitative modelling using a range of scenarios to capture multiple risk transmission channels across its own operations and throughout its value chain.

[HKFRS S2.BC65]

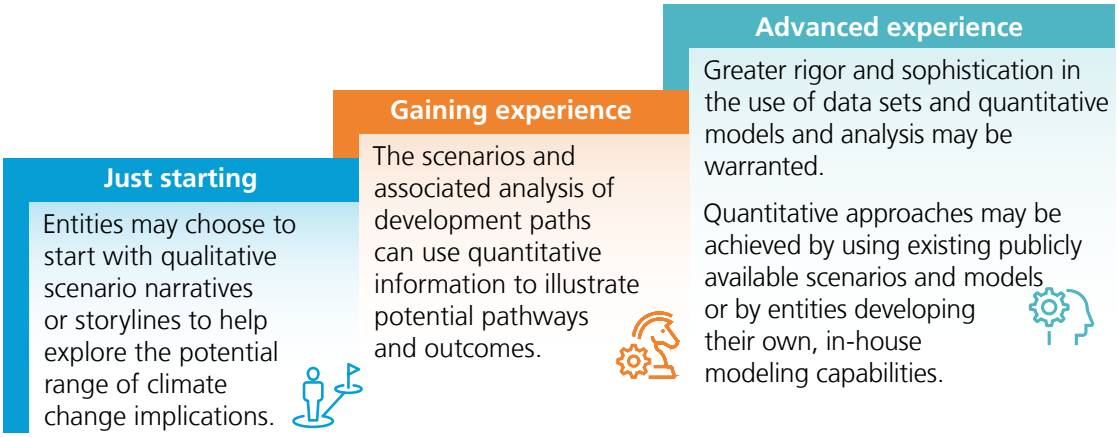
Continuous improvement in scenario analysis

If an entity does not currently have the skills and capabilities to carry out a more sophisticated form of climate-related scenario analysis but has a high degree of exposure to climate-related risk, the entity might initially use a simpler approach to climate-related scenario analysis. The ISSB emphasised that if an entity's climate-related risk exposure warrants a more sophisticated approach to scenario analysis, the entity cannot use a lack of skills or capabilities to justify using a less sophisticated approach if it has the resources available to obtain or develop those skills or capabilities.

The ISSB expects entities will develop their skills and capabilities and strengthen their disclosures over time through a process of learning and iteration. For example, as an entity's capabilities develop so will its assessment of what is considered 'undue' in terms of cost or effort.

Entities can consider progressing through the following stages of scenario analysis maturity.

Table 5.1 **Stages of progression in the use of climate-related scenario analysis[6]**



[HKFRS S2.B8-B9] An entity shall determine an approach that enables it to consider all **reasonable and supportable information** that is available to the entity at the reporting date without undue cost or effort. Reasonable and supportable information includes information about past events, current conditions and forecasts of future conditions. It also includes quantitative or qualitative information, and information that is obtained from an external source or owned or developed internally.

Table 5.2 **Examples of reasonable and supportable information for scenario analysis**

Type of information	Examples
Historical information	• Past extreme weather events that affected the entity's operations, such as asset damage and business disruptions from typhoon and flooding, or droughts affecting commodity prices • Historical pattern of policy development in relevant jurisdictions, including the pace and scope of previous environmental regulations • Past market response to climate-related events, such as consumer behaviour changes or shifts in investor sentiment following climate policy announcements
Current conditions	• Current technology costs and deployment rates relevant to the entity's transition plan • Current market pricing of carbon and other commodities or services • Existing regulatory frameworks and announced policy intentions by governments in relevant jurisdictions
Forecasts and forward-looking information	• Publicly available scenarios regarding climate-related factors such as emissions, policy development and technological development trajectories from credible sources such as the Intergovernmental Panel on Climate Change ("IPCC"), International Energy Agency ("IEA") and the Network for Greening the Financial System ("NGFS") • Climate projections from meteorological agencies and public policy institutes such as Hong Kong Observatory's Climate Projections for Hong Kong and Climate Analytics' Climate Impact Explorer

[6] Adapted from page 29 of the Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures published by the TCFD. While it is a helpful reference, readers should note that these stages of progression do not prescribe a required approach or create additional requirements beyond those specified in HKFRS S2. An entity shall consider the available skills, capabilities and resources when determining an appropriate approach to use for its climate-related scenario analysis.

Source of information	Examples
External	• Climate-related research and assessments published by international organisations such as the World Business Council for Sustainable Development • Sector-specific climate risk studies published by regional trade associations, development banks or government institutes such as Hong Kong Monetary Authority's 2023-2024 Banking Sector Climate Risk Stress Test *Note: Many external sources, such as those listed above for forecast and forward-looking information, may also be applicable here.*
Internal	• The entity's own operational data on energy consumption, emissions and resource usage • Asset-specific vulnerability assessments conducted by the entity • Internal analysis of customer behaviour and market position relative to climate considerations • The entity's investment plans on climate adaptation and mitigation projects

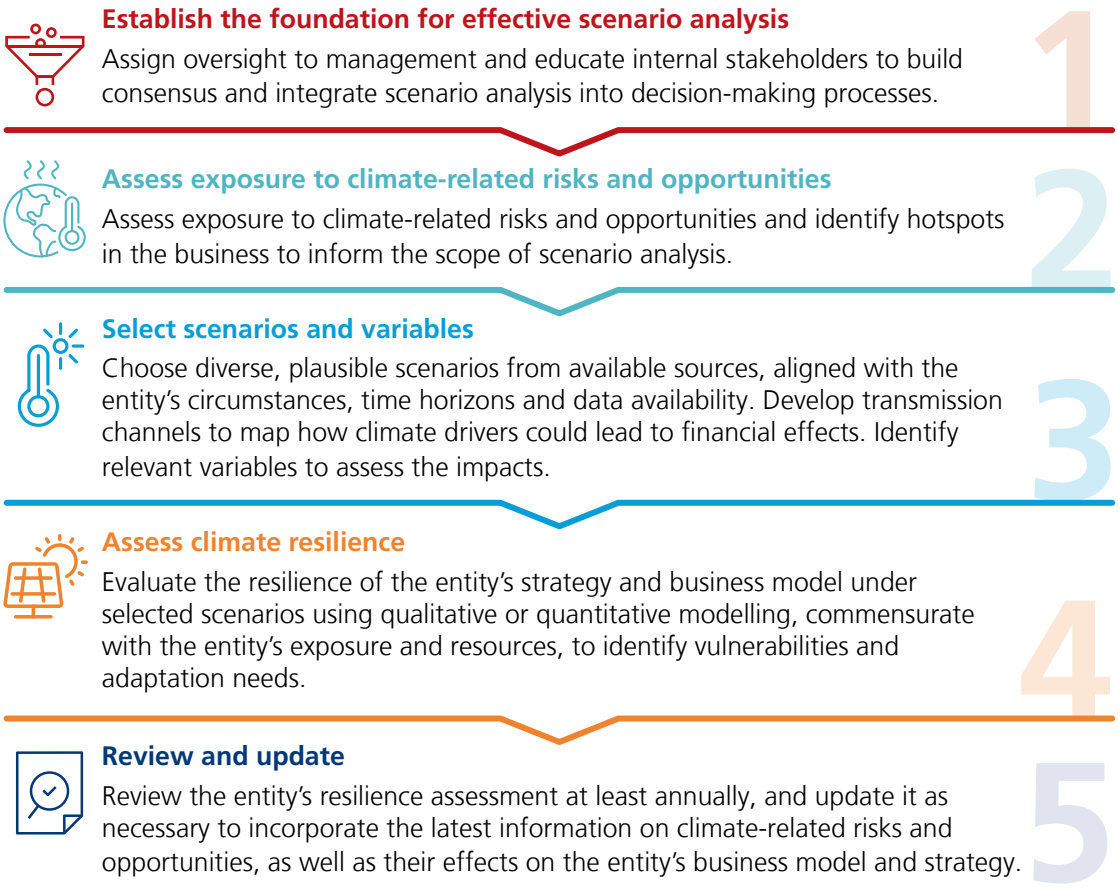
[HKFRS S2.B15] Quantitative information will often enable an entity to carry out a more robust assessment of its climate resilience. However, qualitative information (including scenario narratives), either alone or combined with quantitative data, can also provide a reasonable and supportable basis for the entity's resilience assessment.

When selecting scenarios, variables and other inputs to use in climate-related scenario analysis, entities should consider the cost and effort involved and determine whether these are excessive compared to the potential benefits of the information gained. Refer to Chapter 1 of the HKFRS SDS Guidance Part 1 for further guidance on applying the proportionality mechanisms in climate-related scenario analysis.

5.2 Steps to conduct climate-related scenario analysis

The following steps provide a possible approach towards performing a climate-related scenario analysis.

Figure 5.1 **Step-by-step approach for conducting climate-related scenario analysis**



Step 1

Establish the foundation for effective scenario analysis

Establishing a clear governance structure is essential for conducting effective climate-related scenario analysis. This involves educating decision-makers and internal stakeholders about the purpose and process of scenario analysis, as well as the associated climate-related risks and opportunities. For entities new to scenario analysis, building internal alignment on the objectives, scope and value of the exercise is critical to secure buy-in and cooperation from relevant departments.

Entities should designate clear roles for conducting scenario analysis. While it may be led by a sustainability function or department, effective scenario analysis requires collaboration across various departments, such as operations, finance, risk management and strategy, to ensure a comprehensive perspective. Engaging these departments helps them understand how climate-related changes relate to their roles, fostering ownership and practical insights.

Step 2

Assess exposure to climate-related risks and opportunities

By considering their degree of exposure to climate-related risks and opportunities, entities can determine an approach that is commensurate with their circumstances. This process involves:

- identifying climate-related risks and opportunities that could reasonably be expected to affect an entity's prospects, taking into account short, medium and long term time horizons; and
- mapping business "hotspots" – areas such as key products, asset types, locations or value chain segments most likely to be impacted, or that present significant opportunities.

Refer to Chapter 4 of the HKFRS SDS Guidance Part 1 for the approach for identifying sustainability-related risks and opportunities, which applies equally to climate-related risks and opportunities.

The following table outlines common climate-related risks, covering both physical and transition risks, to support the assessment of relevant climate-related risks and opportunities. These risks may be observed in various jurisdictions and business sectors.

Table 5.3 **Common climate-related risks**[7]

Physical risks	Transition risks
Acute • More frequent and damaging extreme weather events such as typhoons, storms, floods and other natural disasters, leading to physical damage to inventory, property and infrastructure as well as disruption of the supply chain • More frequent wildfire outbreaks in proximity to production or warehouse sites, leading to loss of inventory, property or assets from fire damage as well as temporary displacement of workforce	**Policy and legal** • Changes in governing laws and regulations arising from the transition to a low-carbon economy, e.g. carbon tax, building standards, mandatory climate reporting, etc.
Chronic • Disruption of operations, productivity and supply chain resulting from drought, water scarcity or ecosystem degradation, resulting from long-term changes in climate and weather patterns, e.g. rising sea levels and mean temperatures • Deterioration of the health and safety of workers arising from worsening weather conditions	**Technology** • Failure to adapt to the emergence of disruptive technologies that are more resource-efficient and less carbon-intensive
	Market • Reduced market share or loss of demand for products that do not align with the transition to low-carbon economy, resulting from changing consumer and lenders preferences for low-carbon alternatives • Downtime in operations due to disruptions of the supply chain, e.g. vendors failing to meet the climate-related regulations of their jurisdictions
	Reputation • Weakened social licence to operate due to increased stakeholder concerns over the entity's impact on the climate

Entities are recommended to read TCFD's Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures[8] for more information about climate-related risks, opportunities and their financial impacts.

Assessing exposure to climate-related risks and opportunities can help in deciding which operations, regions or business segments should be included in the scenario analysis. When determining the scope of scenario analysis, entities may consider the following factors.

[7] Adapted from page 33 of ISCA Climate Disclosure Guide Volume 2 – First steps in conducting climate-related scenario analysis issued by the Institute of Singapore Chartered Accountants.

[8] In July 2023 the Financial Stability Board ("FSB") announced that the work of the TCFD has been completed, with the ISSB Standards marking the culmination of the work of the TCFD. Having fulfilled its remit, TCFD disbanded in October 2023. Entities applying IFRS / HKFRS S1 *General Requirements for Disclosure of Sustainability-related Financial Information* and IFRS / HKFRS S2 *Climate-related Disclosures* will meet the TCFD recommendations as the recommendations are fully incorporated into the ISSB Standards / HKFRS SDS.

Table 5.4 **Key factors for consideration when determining the scope of scenario analysis[9]**

Factors for consideration	Examples
Business nature and operations (e.g. product line, asset expected to be highly impacted by climate-related risks and opportunities)	Entities may determine whether the analysis should focus on major operations or cover the whole group, e.g. entities may consider an initial analysis covering direct operations only, whilst more experienced entities may consider expanding the analysis to their entire value chain including their supply chain and customers.
Geography	Entities may determine the scope of analysis based on the major geographical locations they operate in.
Data availability	Entities with limited baseline and projection data, e.g. current and future Scope 3 GHG emissions, may first focus the analysis on parameters where data is available, or make simplified assumptions and estimations regarding the potential baseline or projections.

Entities may initially focus analysis on areas with available information or highest exposure, and as experience and resources grow, reassess scope based on ongoing assessment of exposure and capabilities.

Step 3

Select scenarios and variables

A scenario consists of two key elements[10]:

- **Scenario outcome:** Refers to the endpoint of a scenario, such as limiting global temperature rise to 1.5°C by 2050 in alignment with net zero pledges.
- **Scenario pathway:** Represents the political, technological and economic developments – along with associated risk drivers – that lead to a particular scenario outcome.

Select appropriate scenarios

Entities may use publicly available scenarios, adapt from publicly available scenarios, or develop their own scenarios. Publicly available scenarios are typically developed by international research or policy groups and include useful information about plausible emission pathways, environmental impacts and socio-economic conditions. Table 5.5 below sets out commonly used publicly available scenarios developed by the IPCC, IEA and NGFS.

[9] Adapted from page 41 of HKEX IG.
[10] Adapted from pages 25-26 of the TCFD Guidance on Scenario Analysis for Non-Financial Companies.

Table 5.5 **Overview of publicly available scenario sources[11]**

		IPCC *(Sixth Assessment Report ("AR6"))*	**IEA** *(Global Energy and Climate Model 2024)*	**NGFS** *(Phase V)*
Background		A set of five Shared Socioeconomic Pathways ("SSPs"), which are a series of scenarios synthesised by the IPCC, outlining different states of socio-economic prosperity and resilience by the year 2100 based on different possible trajectories of development. AR6 Scenario Explorer and Scenarios Database has been compiled to support the assessment of quantitative pathways in the IPCC AR6.	The Global Energy and Climate ("GEC") Model 2024 scenarios are built on different set of underlying assumptions about policy settings and technology adoption by considering the policies and measures adopted globally as of the end of August 2024. These scenarios reflect how future energy systems and climate outcomes might differ depending on the speed and extent of global decarbonisation efforts.	The NGFS Phase V scenarios accounts for targets and pledged policies published by the United Nations Framework Convention on Climate Change ("UNFCCC") until the end of March 2024. All scenarios share the same underlying assumption on key socio-economic drivers, which are taken from the Shared Socioeconomic Pathway SSP2.
Scenarios	> 3°C	• SSP5-8.5 • SSP3-7.0	• N/A	• Current Policies (Hot house world)
	> 1.5°C and < 3°C	• SSP2-4.5 • SSP1-2.6	• Stated Policies Scenario ("STEPS") • Announced Pledges Scenario ("APS")	• Fragmented World (Too little, too late) • Nationally Determined Contributions (Hot house world) • Below 2°C (Orderly) • Delayed Transition (Disorderly)
	≤ 1.5°C	• SSP1-1.9	• Net Zero Emissions by 2050 Scenario ("NZE")	• Net Zero 2050 (Orderly) • Low Demand (Orderly)

[11] The list of scenarios included are non-exhaustive, extracted as of October 2025.

	IPCC *(Sixth Assessment Report ("AR6"))*	**IEA** *(Global Energy and Climate Model 2024)*	**NGFS** *(Phase V)*
Timeframe	• Until 2100, granularity depending on data sources	• Until 2050, granularity depending on data sources	• 5-year intervals until 2050, some indicators depending on model are available up to 2100
Geographic coverage	The AR6 scenario database consists of models with global or regional coverage for 24 countries/ regions (e.g. China, Australia, European Union, India, Japan, Thailand, Vietnam, etc.). Within these regions, some data are further downscaled (including Hong Kong).	The model provides results for 27 regions of the globe, of which 13 are individual countries, e.g. China (including Hong Kong).	Output variables are available for the World aggregate and for 12 regions (e.g. China, Eastern Europe, North America, Oceania, Southeast Asia, South Asia, Western Europe, etc.). Within these regions, some data are further downscaled (including Hong Kong).

When selecting scenarios, entities should understand their purpose and design. Scenario selection suitability varies by sector, geography, risk and opportunity. When selecting between sources such as IPCC, IEA or NGFS, entities may consider the following factors.

Table 5.6 **Key factors for consideration when selecting sources of scenarios[12]**

Factors	Rationale
Industry sector	Different industry sectors have different characteristics, and certain sources better suit the characteristics and needs of a particular sector, e.g. entities in the energy sector may refer to IEA or other energy-specific sources that focus on transition risks. Sources such as the NGFS provide a broad range of metrics which may be applicable to many sectors.
Type of risks to be assessed	Different sources focus on different climate-related risks. Entities may select sources depending on the type of risks being assessed, e.g. entities analysing the effects of climate-related physical risks may select IPCC due to its credibility and focus on physical science impacts. Meanwhile, entities analysing the effects of climate-related transition risks relating to the different capital costs of electricity technologies may select IEA, which provides analysis and projections related to the energy systems.
Jurisdiction of operation	Entities may select sources with the most comprehensive coverage of global, regional or local climate models over the jurisdictions that the entity operates in. For example, compared to the IEA, NGFS and IPCC provide greater granularity in geographic coverage.
Time horizon	Entities may select sources which cover the timeframes that match their determined time horizons, e.g. the NGFS and IPCC typically provide projections for a longer time horizon, up to 2100.

[12] Adapted from page 43 of HKEX IG.

While publicly available scenarios from organisations such as the IPCC, IEA and NGFS provide a useful starting point for climate-related scenario analysis, some entities may find these scenarios do not adequately address their unique circumstances. Publicly available scenarios are typically developed for research and policy purposes and may lack the granularity needed for detailed entity-level assessments.

Entities may therefore consider developing their own climate-related scenarios to address entity-specific risks and opportunities. There are public tools available that allow customisation of the climate models and policy assumptions. For example, the World Resources Institute's Aqueduct tools for evaluating water-related risks and the Energy Policy Simulator for testing selected climate-related factors under different policy options. However, developing in-house scenarios generally requires a substantial organisational commitment of time, resources and expertise.

[HKFRS S2.B11]

HKFRS S2 does not stipulate a suggested source of scenarios. Nonetheless, when an entity selects the inputs to use in its scenario analysis, the entity shall consider all reasonable and supportable information — including scenarios, variables and other inputs — available to the entity at the reporting date without undue cost or effort. Publicly available scenarios from authoritative sources are considered to be available to the entity without undue cost or effort.

Determine the number and diversity of scenarios

A robust scenario analysis also involves selecting scenarios that capture a **reasonable range of possible future outcomes**. This is crucial because there is often a trade-off between risks related to physical impacts and those related to the transition to a low-carbon economy. Aggressive action to meet the latest international agreement on climate change such as the Paris Agreement[13] comes with higher transition risks, while taking little action reduces transition risks but increases physical risks.

[HKFRS S2.22(b)(i)]

While HKFRS S2 does not prescribe a minimum number of scenarios to use, the standard requires entities to disclose:

- whether the analysis included a diverse range of climate-related scenarios;
- whether these scenarios are associated with climate-related physical or transition risks;
- whether any scenario used is aligned with latest international agreement on climate change; and
- why the chosen scenarios are relevant for assessing the entity's resilience to climate-related changes, developments or uncertainties.

Entities are therefore recommended to select scenarios covering a range of physical and transition risks and opportunities, typically beginning with two scenarios, and may expand to include more scenarios as necessary to capture a wider range of plausible futures. For example, using both a 1.5°C warming scenario (in line with the Paris Agreement) and a 4°C warming scenario can help stress test the entity's strategy and business model against climate-related physical and transition risks.

[HKFRS S2.B12]

When deciding how many scenarios to use and considering their diversity, entities may consider both international commitments and their own sector or geographical exposure. For example:

- an entity with operations concentrated in jurisdictions where emissions are regulated may choose a scenario consistent with an orderly transition to a lower-carbon economy or consistent with relevant jurisdictional commitments under the latest international climate agreement; or
- an entity with heightened exposure to physical risks may use a localised scenario that takes into account current policies.

[13] The 'latest international agreement on climate change' is defined as the latest agreement between members of the UNFCCC. At the time IFRS / HKFRS S2 was issued, the latest such agreement was the Paris Agreement. The Paris Agreement is a legally binding international treaty on climate change. Its overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels."

Identify variables for scenario analysis

Variables in climate-related scenario analysis are key factors or measurable elements that represent aspects of climate and socio-economic conditions which influence or characterise a scenario.

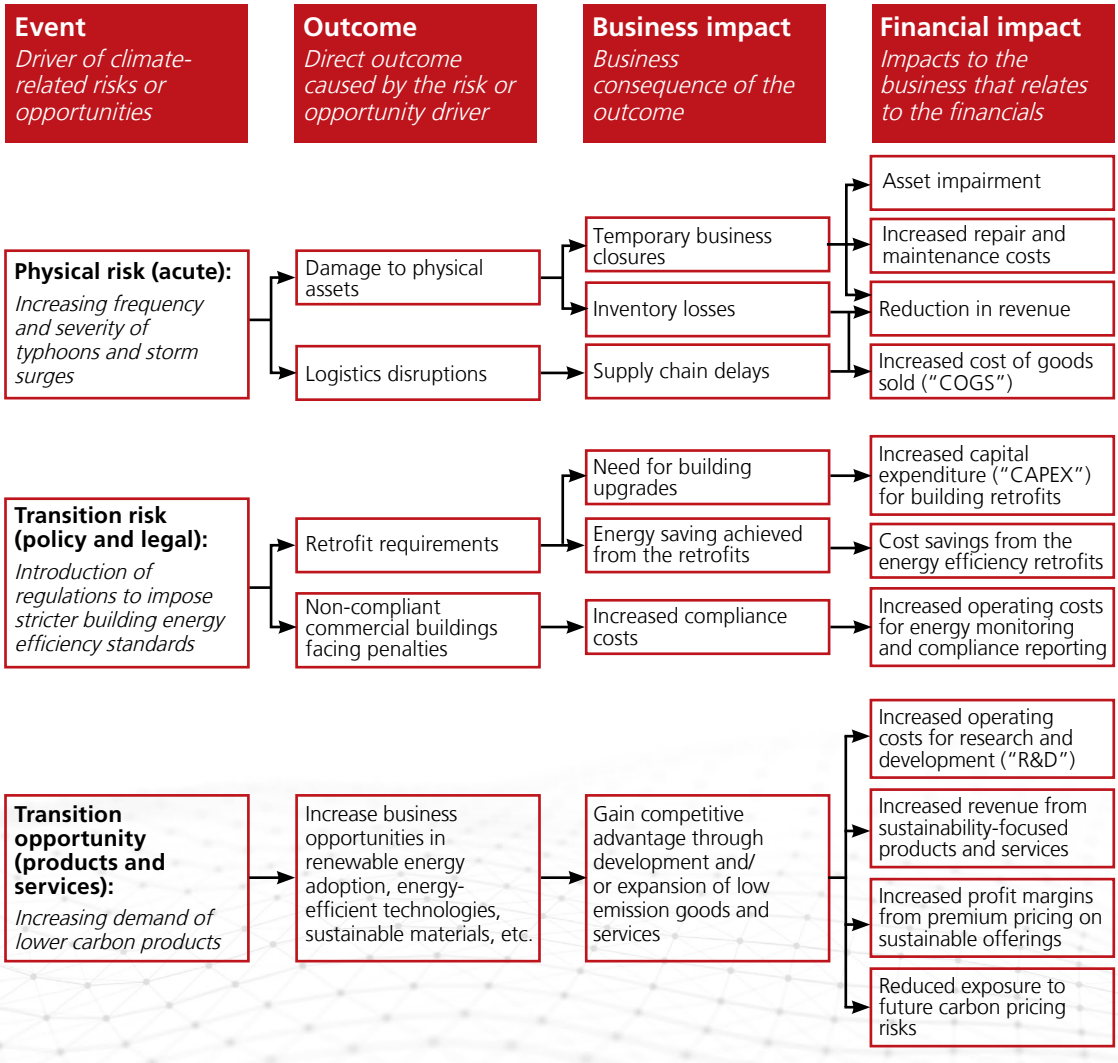
When identifying the variables for scenario analysis, it is crucial to understand how climate and associated impacts may change in the future under different assumptions. Scenario analysis can include both quantitative and qualitative variables:

- **Quantitative variables** are measurable and expressed numerically (e.g. chance of flooding occurrence, change in precipitation pattern, energy prices) to enable the use of models and simulations.
- **Qualitative variables** are descriptive and may include factors (e.g. government policy initiatives, consumer sentiment) that cannot always be expressed numerically but are still critical to understanding broader context and uncertainties.

As financial effects from climate-related risks and opportunities often result from multiple interacting variables along a causal chain – also known as a transmission channel – developing transmission channels can help entities trace how variables such as carbon price, energy demand or extreme weather frequency, translate into business and financial impacts such as increased costs, lost revenue or new opportunities.

Figure 5.2 below provides an example of transmission channels illustrating the different ways a climate-related risk or opportunity could manifest.

Figure 5.2 **Example transmission channels**



After developing the transmission channels, entities can:

- map out the primary input or independent variables representing the climate drivers (e.g. frequency of extreme weather events, regulatory changes, demand for low-carbon products);
- consider how the climate drivers affect exposures or vulnerabilities such as the amount of assets at risk, business days interrupted or market share in certain products; and
- determine the output or dependent variables for measuring business and financial impacts (e.g. revenue loss, repair and maintenance costs, profit margin changes).

Taking the transmission channels in Figure 5.2 as an example, the selected climate-related risks and opportunities may include the following variables.

Table 5.7 Examples of relevant variables

Type of risks and opportunities	Examples of relevant variables
Physical risk (acute): Increasing frequency and severity of typhoons and storm surges	**Input / independent variables representing changes in the climate system:** • Frequency of typhoons and storm surges • Storm surge height **Variables for measuring exposures or vulnerabilities:** • Number of assets affected by projected coastal flood levels • Number of business closure days • Percentage of inventory affected • Duration of supply chain delays **Output / dependent variables for measuring the financial impacts:** • Expected damage to assets (monetary loss) • Operating expenditure ("OPEX") for repair and maintenance • Percentage increase in COGS • Percentage reduction in revenue
Transition risk (policy and legal): Introduction of regulations to impose stricter building energy efficiency standards	**Input / independent variables representing changes in the socio-economic conditions:** • Timing of introduction of new building energy efficiency regulations • Retrofit requirements to meet the new energy efficiency regulations **Variables for measuring exposures or vulnerabilities:** • Number or percentage of commercial buildings affected • Energy saving achieved from the retrofits **Output / dependent variables for measuring the financial impacts:** • CAPEX for implementing the retrofits • Penalties for non-compliance • OPEX for energy monitoring and compliance reporting • Cost saving from the energy efficiency retrofits

Type of risks and opportunities	Examples of relevant variables
Transition opportunity (products and services): Increasing demand for lower carbon products	**Input / independent variables representing changes in the socio-economic conditions:** • Demand for low-carbon products • Growth in renewable energy adoption and energy-efficient technologies **Variables for measuring exposures or vulnerabilities:** • Market share in low-carbon products • Market share in carbon-intensive products **Output / dependent variables for measuring the financial impacts:** • Investment in R&D • Revenue from sustainability-focused products/services • Profit margins from premium pricing on sustainable offerings • Revenue or share of revenue from carbon-intensive products

Variables representing the climate drivers — or those for measuring exposures or vulnerabilities — are typically derived from scenario data or assumptions, using information from climate projections or scenarios (such as those published by the IPCC, IEA or NGFS) or from related research and assessments (such as policy directions and decarbonisation targets set out in Hong Kong's Climate Action Plan 2050).

For example, entities with operations in low-lying areas in Hong Kong might use the Hong Kong Observatory's projected annual number of extreme rainfall days to estimate the number of business interruption days under different warming scenarios. Similarly, entities may reference key policy targets or decarbonisation milestones — such as the 30-40% reduction in electricity consumption by 2035 (compared to 2015) for commercial buildings outlined in Hong Kong's Climate Action Plan 2050 — when determining the timing for introducing new building energy efficiency requirements.

In some cases, where public information is not available, management judgement or internal estimates may be required to define these variables. For example, an entity might estimate the likely duration of supply chain delays due to extreme weather events by analysing its own historical data on past typhoon disruptions, or it could make assumptions about future market share for low-carbon products based on internal research or surveys of customer preferences.

Use of reasonable and supportable information without undue cost or effort

There are often inherent uncertainties in forward-looking data and assumptions involved when exploring possible future climate scenarios. Entities are required to exercise judgement to determine whether the inputs, including variables and assumptions, are reasonable and supportable. HKFRS S2 requires entities to use an approach to scenario analysis that enables them to consider all reasonable and supportable information without undue cost or effort.

[HKFRS S2.B13]

When considering whether the selected inputs are reasonable and supportable, entities should also consider whether the inputs are relevant to the entity's circumstances (e.g. activities the entity undertakes, geographical location of those activities).

Entities should also recognise that scenario analysis is a dynamic process. As new data becomes available and as climate science, policy, and market conditions evolve, entities should be prepared to refine assumptions, incorporate new information, and adjust the scenario analysis approach over time.

Entities are recommended to keep the following considerations in mind for practicality:

- **Data availability:** If granular local data are unavailable, start with publicly available scenarios or international datasets. Where possible, supplement results using downscaled projections or sector studies and disclose any assumptions or limitations.
- **Technical capacity:** For entities with less experience, seek external expertise — such as consultants or sectoral partnerships — to supplement internal skills.
- **Relevance over time:** As the entity's climate risk exposure or available data change, regularly review and update the scenario inputs to keep the assessment robust, relevant and useful for decision-making.

Step 4

Assess climate resilience

Entities shall prioritise the analytical choices — whether to use qualitative or quantitative modelling — that will enable the entities to consider all reasonable and supportable information that is available at the reporting date without undue cost or effort. For example, if an entity is able — without undue cost or effort — to incorporate multiple carbon price pathways associated with a given outcome (e.g. a 1.5°C outcome), this analysis is likely to strengthen the entity's resilience assessment, assuming such an approach is warranted by the entity's risk exposure.

[HKFRS S2.B14]

Alongside selecting an analytical approach, an entity should also consider how the outcomes of the scenario analysis will support the disclosures required under HKFRS S2, such as providing information that enables primary users to understand the entity's climate resilience — including its scenario analysis approach. A robust scenario analysis should enable an entity to:

- understand the implications of climate-related risks and opportunities for its strategy and business model;
- identify areas of significant uncertainty or vulnerability; and
- evaluate its capacity to adjust or adapt to climate change over time.

These outcomes help ensure that scenario analysis provides useful information for both management and investors and supports informed decisions regarding climate resilience. Refer to section 5.3 for further guidance on disclosing information about climate-related scenario analysis.

Conduct qualitative scenario analysis

Qualitative scenarios involve developing narrative descriptions or "storylines" of how climate-related risks and opportunities might unfold under selected scenarios.

To conduct qualitative scenario analysis to assess its climate resilience, an entity can:

- use transmission channels to map cause-and-effect relationships from climate drivers to financial impacts;
- develop narratives to describe the potential pathways and outcomes under different climate scenarios; and
- evaluate resilience by comparing these narratives against the entity's current strategy, identifying if mitigation and adaptation measures are needed to maintain viability.

Example 5.1

Assessing climate resilience to physical risks using qualitative analysis

Jinlong Foods Co., Ltd. ("Jinlong") is a Chinese food manufacturer that produces packaged snacks and beverages. It sources agricultural ingredients from diversified regions and considers that there is limited exposure to climate-related risks and opportunities. Given this low exposure to climate-related risks and opportunities, as well as the skills, capabilities and resources available at that time, Jinlong opts for qualitative scenario analysis to assess its climate resilience.

Use transmission channels to map cause-and-effect relationships

Jinlong identifies changes in agricultural yield as a relevant physical risk, potentially affecting supply chains. The entity also recognises that there are uncertainties in the frequency and severity of extreme weather, as well as variability in crop yields across regions over time, which may not always be fully predictable.

Jinlong selects NGFS scenarios as they provide crop yield projections for some of the key ingredients the entity sources. Jinlong chooses the NGFS Current Policies (Hot house world) and Net Zero 2050 (Orderly) scenarios — a high and a low warming scenario, respectively — to assess crop yield projections and raw material cost volatility under different climate scenarios.

Jinlong develops the following transmission channel to understand how changes in agricultural yield will affect its financial performance:

Climate Drivers	Outcome	Business Impacts	Financial Impacts
Changes in agricultural yield	Reduced crop yield from suppliers	• Supply shortages • Need for alternative sourcing • Potential production halts	• Increased raw material costs • Lower profit margins from price increases

Develop narratives to describe potential pathways and outcomes

Based on the transmission channel, Jinlong creates the following narrative storylines for each scenario:

Scenarios	Narratives
Current Policies (Hot house world)	Agricultural yields decline gradually as warming continues unchecked, with increasingly frequent extreme weather disrupting harvests and chronic changes in climate, such as shifting precipitation patterns and rising temperatures, causing lasting water stress and ecosystem disruption in particular regions. Ingredient quality deteriorates while supply chain disruptions cause significant price increases that could strain operations without diversified sourcing.
Net Zero 2050 (Orderly)	Agricultural yields stabilise after initial impacts as sustainable farming practices become widespread. Ingredient quality remains largely consistent with historical norms, while a resilient supply chain moderates the risk of supply disruptions and price volatility.

Evaluate resilience

Jinlong's scenario analysis enables the entity to evaluate its climate resilience by considering the following key aspects:

Aspect	How scenario analysis was applied	Decisions and responses based on the scenario analysis results
Understanding the implications	Jinlong develops qualitative narratives to explore how changes in agricultural yield could affect supply continuity, increase raw material costs and lower profit margins under different climate scenarios.	The entity's procurement department reviews and confirms that current supplier diversification and sourcing strategies address foreseeable risks. The entity also identifies supplier engagement as a further opportunity for resilience.
Identifying significant uncertainties	Jinlong considers uncertainties such as the frequency and severity of extreme weather, year-to-year variability in crop yields and differences between regions under each scenario.	The entity decides to engage external experts to assist in identifying emerging climate data and trends, and update the scenario analysis when new information becomes available.
Evaluating capacity	Jinlong assesses its capacity to switch suppliers, maintain production and encourage sustainable practices among suppliers to address supply disruptions.	Through its diversified supplier network, the entity determines that it is able to quickly respond to disruptions or changing conditions in the short to medium term. The entity will continue to strengthen its supplier engagement programme and monitor agricultural conditions.

Conduct quantitative scenario analysis

As entities gain experience with scenario analysis, they can begin to incorporate quantitative data and develop models to deepen their understanding of climate-related risks and opportunities. Quantitative analysis builds on qualitative insights by modelling numerical impacts, using data sets, assumptions and calculations to estimate effects on metrics such as costs, revenues or asset values.

When developing models, entities should keep in mind a key purpose of scenario analysis — evaluating the resilience of their strategy and business model — by focusing on how these models quantify potential effects on core elements such as operational continuity, cost structures or revenue streams. This linkage ensures the analysis informs whether the strategy remains viable or requires adjustments to withstand climate stresses.

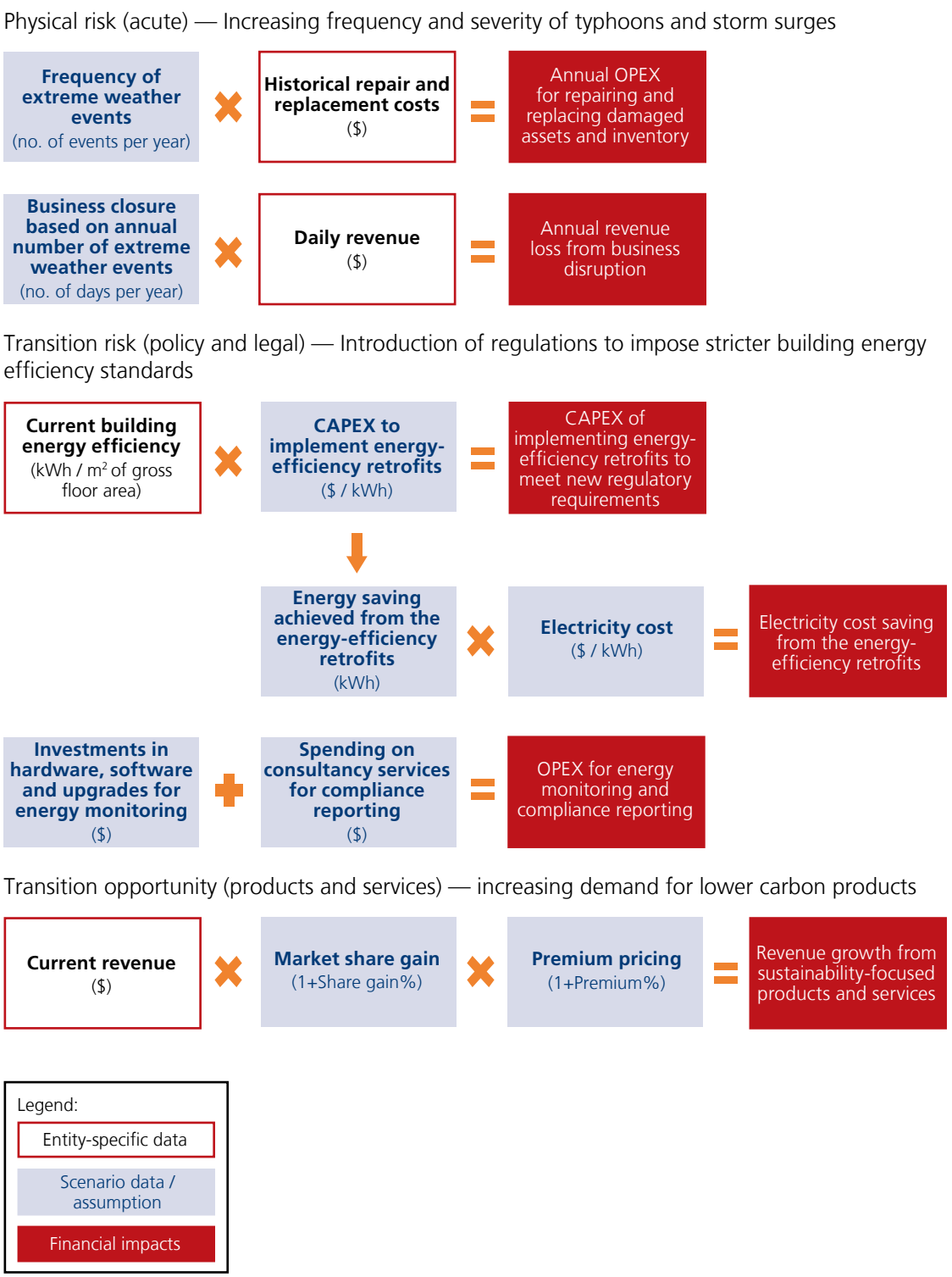
To conduct quantitative scenario analysis to assess its climate resilience, an entity should:

[HKFRS S2.B11]

- gather scenario inputs by considering the reasonable and supportable information available to the entity at the reporting date without undue cost or effort;
- develop a quantitative model linking climate-related variables (e.g. temperature changes) to financial impacts (e.g. increased operating costs); and
- model outcomes under scenarios and assess resilience by determining if the entity's strategy withstands stresses or requires changes (e.g. investments in resilience measures).

Entities can use calculation pathways to model the potential correlations between climate-related risks and opportunities and financial impacts. A calculation pathway can also help determine the types of data to be collected for the scenario analysis. Continuing the transmission channel examples in Figure 5.2, Figure 5.3 below illustrates how the variables identified in Table 5.7 can be used to model the numerical impacts associated with the climate-related risks and opportunities. When performing these calculations, entities may use entity-specific data as the basis to project future impacts, such as historical costs or current revenue figures. The variables used in the calculation may also be sourced from publicly available scenarios — such as projected weather patterns and energy costs provided by institutions like the IPCC, NGFS and IEA — or may involve assumptions made by the entity, for example, the number of days of business disruption due to extreme weather events.

Figure 5.3 **Example calculation pathways**



Example 5.2

Assessing climate resilience to transition risks through progression from qualitative narratives to quantitative modelling

Qualitative Scenario Analysis in Year 1

Comfort Ride Services Limited ("Comfort Ride") is a premium ground transport provider offering airport limousine transfers, executive chauffeur services and intercity rides across Hong Kong, Shenzhen and major Southeast Asian business hubs. Its operations rely on a diverse fleet of sedans, sport-utility vehicles ("SUVs") and multi-purpose vehicles ("MPVs").

Comfort Ride recognises growing transition risks as regional and international climate policies accelerate. In its first year of scenario analysis, despite its exposure to climate-related risks and opportunities, considering the skills, capabilities and resources available at that time, Comfort Ride decides to use qualitative scenario analysis to assess its climate resilience.

Use transmission channels to map cause-and-effect relationships

Taking into account announced commitments such as popularisation of electric vehicles ("EVs") and other new energy transport to achieve zero carbon emissions for the transport sector — especially those highlighted in Hong Kong's Climate Action Plan 2050 — Comfort Ride identifies policy risk (from EV mandates) and market risk (from evolving customer demands for green transportation) as relevant transition risks.

Comfort Ride adopts the following IEA scenarios to represent the impacts of different policy settings:

- **Stated Policies Scenario (STEPS):** Reflects the impact of current and planned government actions.
- **Net Zero Emissions by 2050 Scenario (NZE):** Reflects a rapid global transition to net zero emissions by 2050 through strong and co-ordinated policies and incentives.

Comfort Ride develops the following transmission channel to map the impacts of new transport decarbonisation policies and market shift towards green transportation:

Climate Drivers	Outcome	Business Impacts	Financial Impacts
Policies for EV adoption	Phase-out of fossil fuel-powered vehicles and shift to EVs	• Increased CAPEX for adopting EVs • Changes in fleet management	• Upfront investments • Changes in energy costs due to shift from fuel to electricity
Market shift to green transportation	Increased customer demand for EVs	• Pressure to upgrade fleet	• Risk of lost income if fail to meet customer demand • Need for investment to maintain competitiveness

Develop narratives to describe potential pathways and outcomes

Based on the transmission channel, Comfort Ride creates the following narrative storylines for each scenario:

Scenarios	Narratives
STEPS	EV transition occurs gradually over the next decade. Moderate incentives and a phased approach allow time for fleet upgrades. Customer demand for green transportation increases, but conventional vehicles remain part of the service mix in the near term.
NZE	Policies mandate a near-term shift to EVs, with stronger incentives to hasten replacement of fossil fuel vehicles. Customers increasingly prefer green airport transfers and low-carbon ridesharing, driving the need for urgent fleet transformation.

Evaluate resilience

Comfort Ride uses scenario analysis to evaluate its climate resilience by considering the following key aspects:

Aspect	How scenario analysis was applied	Decisions and responses based on the scenario analysis results
Understanding the implications	Comfort Ride develops scenario narratives to explore how different transition speeds affect fleet composition, capital needs and energy costs structures.	After the qualitative scenario analysis, the entity decides to roll out an EV pilot programme to collect more information on the entity's readiness of EV transition.
Identifying significant uncertainties	Comfort Ride considers uncertainty in the timing of policy adoption, changes in technology, energy pricing and evolving customer preferences.	The entity will increase engagement with policymakers, industry associations and key clients to monitor regulatory changes and evolving market trends.
Evaluating capacity	Comfort Ride assesses its ability to phase out legacy assets, fund major CAPEX needs and respond to shifting market expectations.	The entity decides to explore financing options such as green loans, and to test operational readiness for transition across geographic markets through the pilot programme.

Quantitative Scenario Analysis in Year 2

After building experience in scenario analysis and gaining operational insight from its pilot programme, Comfort Ride begins incorporating quantitative data to model key transition risk variables.

Gather scenario inputs

The entity's current fleet consists of 150 gasoline and hybrid vehicles. To quantify the financial effects from the transition to EVs under both scenarios, the entity applies different assumptions in the pace of vehicle replacement:

- **STEPS:** Phasing in 10 EVs per year over 15 years.
- **NZE:** Phasing in 15 EVs per year over 10 years.

Furthermore, based on operational experience and external sources from IEA's GEC Model and industry benchmarks, the entity has compiled the following information on the projected EV capital costs and energy costs over short, medium and long term:

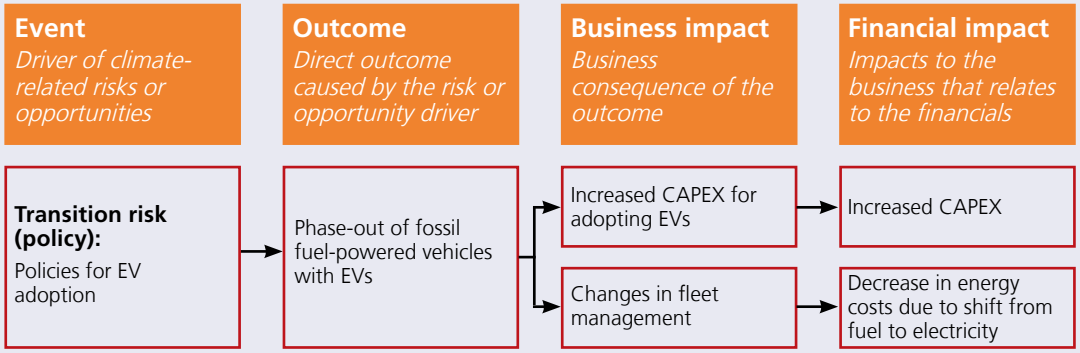
Scenarios	Variables	Current	Year 5	Year 10	Year 15
STEPS	EV capital cost per vehicle (HK$'000)	147	123	115	107
	Gasoline price (HK$/litre)	28.5	29.4	29.3	28.8
	Electricity cost (HK$/kWh)	1.20	0.75	0.68	0.61
NZE	EV capital cost per vehicle (HK$'000)	147	115	106	101
	Gasoline price (HK$/litre)	28.5	31.0	32.4	35.2
	Electricity cost (HK$/kWh)	1.20	0.80	0.82	0.56

Assumptions and limitations (based on reasonable and supportable information collected from internal and external sources):

- Due to the lack of scenario data for Southeast Asia, the entity uses fuel and electricity costs for China from the IEA model and applies these rates for Southeast Asia operations.
- Actual EV capital costs can vary between sedans, SUVs and MPVs, but for simplicity, projected capital costs for battery electric cars from the IEA model are used for all fleet types.
- The projected EV capital costs from the IEA model already incorporate average government subsidy impacts, therefore government subsidies are not separately modelled in this analysis.
- Cost variables for each year are estimated using linear interpolation between benchmark years to reflect gradual year-on-year changes in underlying cost projections.
- The energy efficiencies of gasoline vehicles, hybrid vehicles and EVs are based on historical operational data and pilot data.
- The pilot programme indicates that overall maintenance costs for EVs are generally lower compared to gasoline and hybrid vehicles; however, when factoring in battery replacement costs over time, the total lifetime maintenance expense may be comparable to that of gasoline and hybrid vehicles. Therefore, for simplicity and to avoid over- or underestimating the differential, maintenance costs are excluded from the quantitative modelling.
- Calculations use today's currency values; inflation is not modelled.

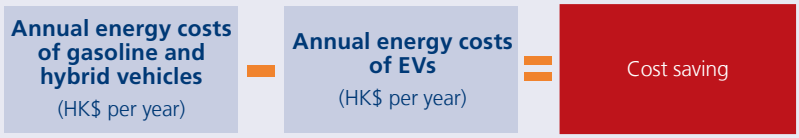
Develop a quantitative model

Based on the above information, Comfort Ride develops the following calculation pathway to model how the transition to EVs will affect its financial performance:

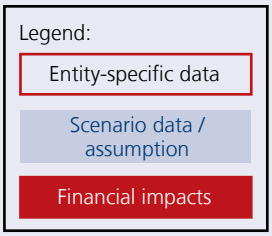


Cumulative CAPEX for EV purchases

Annual energy cost saving from switching to EVs



Note: All costs and savings are estimated in today's value and exclude inflation for simplicity.



Model outcomes and assess resilience

Based on the calculation pathway developed above, Comfort Ride calculates the financial impacts from transition to EVs:

Scenarios	Variables	Year 5	Year 10	Year 15
STEPS	Cumulative number of EVs added	50	100	150
	Cumulative CAPEX (HK$ million)	6.63	12.54	18.05
	Annual energy cost saving (HK$ million)	3.55	7.14	10.57
NZE	Cumulative number of EVs added	75	150	150
	Cumulative CAPEX (HK$ million)	9.59	17.81	17.81
	Annual energy cost saving (HK$ million)	5.63	11.74	13.11

The NZE scenario accelerates full fleet electrification within 10 years, requiring higher short-term capital investment, but this is offset by greater annual energy cost savings. Meanwhile, the STEPS scenario spreads costs over 15 years, resulting in a higher cumulative CAPEX. The energy cost savings are also realised more slowly.

Based on the results from the quantitative scenario analysis, Comfort Ride reassesses its climate resilience by considering the following aspects:

Aspect	How scenario analysis was applied	Decisions and responses based on the scenario analysis results
Understanding the implications	Comfort Ride models the phased capital outlays and energy cost savings across both transition pathways.	The scenario results show how funding, cash flow and fleet composition would be affected under each pathway. Based on these insights, the entity refines its fleet strategy and adjusts its EV rollout plan.
Identifying significant uncertainties	Comfort Ride recognises that the model does not factor in the differences in EV prices for different vehicle types and future maintenance costs, which may impact the final outcomes.	Based on the identified gaps, the entity will regularly review and update its scenario assumptions and analysis as more market data becomes available.
Evaluating capacity	Comfort Ride uses the quantitative results to evaluate its financing capacity and readiness for large-scale fleet transition.	The entity will strengthen efforts to secure financing, build internal expertise for large-scale fleet upgrades and maintain flexibility to adjust transition speed as market and policy conditions evolve.

Example 5.3

Assessing climate resilience to physical risks using quantitative analysis

SinoCloud Intelligence Co., Ltd ("SinoCloud") is a mainland Chinese technology company specialising in artificial intelligence ("AI")-driven cloud services and data centre operations, serving large enterprises and government clients across China and other Asian countries.

SinoCloud recognises that its data centres face high exposure to physical risks, such as rising temperatures that could overwhelm its cooling systems and disrupt services. Considering the entity's exposure to climate-related risks and resources available in the reporting period, SinoCloud decides to conduct quantitative scenario analysis on its key data centres located in Guangdong, China.

SinoCloud selects the following scenarios to model the impacts from temperature rises under different emission scenarios and considers that these scenarios are relevant for assessing increased cooling demands of the data centres:

- **SSP5-8.5 (very high GHG emissions):** Characterised by high GHG emissions and severe temperature rises.
- **SSP2-4.5 (intermediate GHG emissions):** Characterised by emissions continuing near current levels until 2050, resulting in more moderate warming.

Gather scenario inputs

SinoCloud collects the following information from internal and external sources available to the entity during the reporting year:

- SinoCloud's data centres use rooftop cooling systems that operate at a temperature threshold of 35°C. When ambient temperatures exceed this threshold, the risk of rooftop cooling system failure increases substantially, which in turn can lead to consequential effects on data centre operations, including hardware failure, outages and additional maintenance demands.

- Based on a recent literature review, cooling energy use typically rises by 3-5% for every 1°C increase in ambient temperature.
- Based on a review of historical OPEX, the average maintenance costs paid to the cooling system vendor are about RMB 200,000 per year, and the average electricity costs associated with the cooling systems are approximately RMB 5 million per year.

In addition, leveraging the IPCC AR6 database and historical trends in Guangdong's weather data, SinoCloud identifies the following information, including the projected increase in daily maximum air temperature under both scenarios and the corresponding number of days exceeding 35°C:

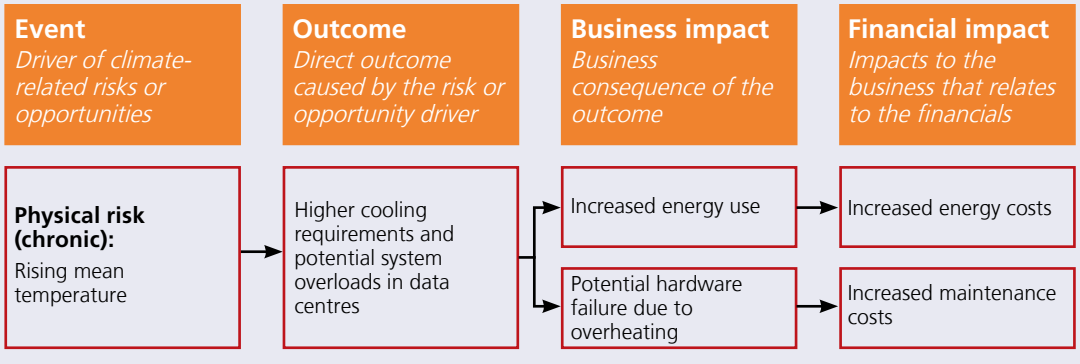
Scenarios	Variables	Current	2030	2040	2050
SSP5-8.5	**Projected increase in daily maximum air temperature against the current year**	–	+0.5°C	+1.4°C	+2.5°C
	Number of days exceeding 35°C (hot days)	33	33	72	90
SSP2-4.5	**Projected increase in daily maximum air temperature against the current year**	–	+0.3°C	+0.8°C	+1.3°C
	Number of days exceeding 35°C (hot days)	33	33	55	68

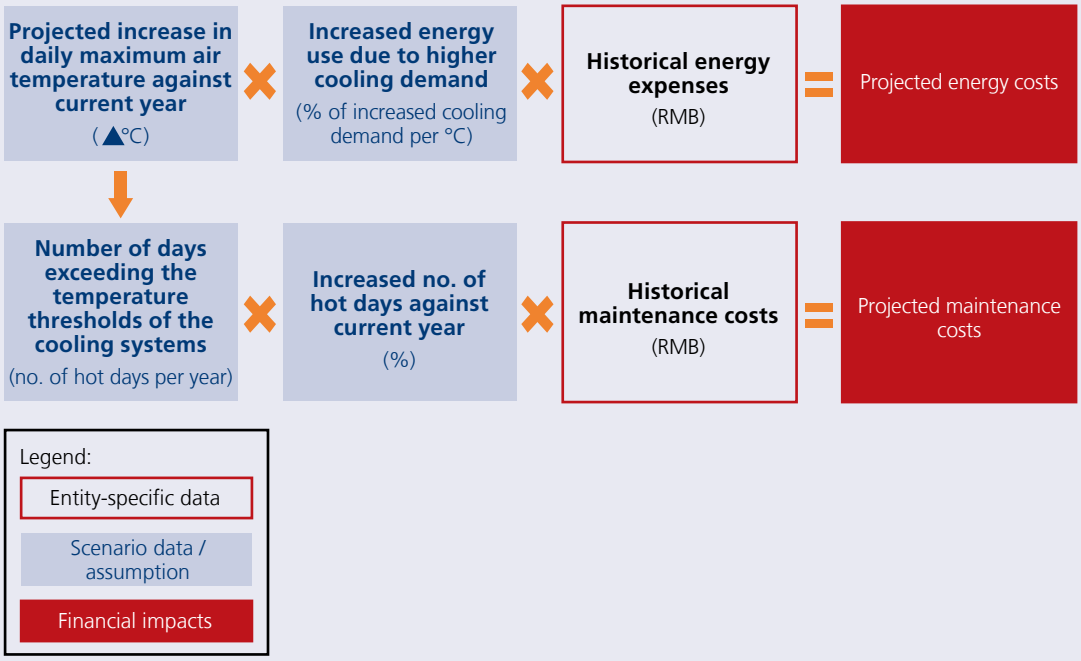
Assumptions and limitations (based on reasonable and supportable information collected from internal and external sources):

- Cooling energy use increases by 4% for every 1°C increase in ambient temperature based on a recent literature review.
- Increase in electricity costs is directly proportional to cooling energy use.
- Increase in maintenance costs is directly proportional to the number of hot days.
- An annual inflation rate of 1.5% is applied based on the recent consumer price index to reflect inflation and changes in the general costs of living.
- SinoCloud acknowledges that hardware failure could also disrupt data centre services, resulting in direct revenue loss from contractual penalties or client attrition. However, due to considerable uncertainty in forecasting the likelihood, duration and financial magnitude of such outages, these factors have not been included in the current model.

Develop a quantitative model

Based on the above information, SinoCloud develops the following transmission channel and calculation pathway to model how rising mean temperature will affect its financial performance:





Model outcomes and assess resilience

Based on the calculation pathway developed above, SinoCloud calculates the financial impacts from rising mean temperatures:

Scenarios	Variables	Baseline	2030	2040	2050
SSP5-8.5	**OPEX (RMB'000)**	5,200	6,000	7,680	9,673
	Increase in OPEX against baseline (%)	–	15%	47%	86%
SSP2-4.5	**OPEX (RMB'000)**	5,200	5,530	6,450	7,400
	Increase in OPEX against baseline (%)	–	6%	24%	42%

SinoCloud finds that OPEX rise gradually in the short term under both scenarios, but escalate more rapidly under SSP5-8.5 after 2040, with increased frequency of cooling system failures leading to higher maintenance and power consumption needs.

SinoCloud's scenario analysis enables the entity to evaluate its climate resilience by considering the following key aspects:

Aspect	How scenario analysis was applied	Decisions and responses based on the scenario analysis results
Understanding the implications	SinoCloud quantifies the increase in OPEX under intermediate (SSP2-4.5) and severe (SSP5-8.5) scenarios, comparing outcomes if no mitigation is undertaken.	The scenario results demonstrate that, without investment in resilience, OPEX would escalate sharply after 2040. The entity uses these insights to prioritise investments in advanced cooling and infrastructure upgrades, with earlier implementation for sites facing the highest impacts.

Aspect	How scenario analysis was applied	Decisions and responses based on the scenario analysis results
Identifying significant uncertainties	SinoCloud considers uncertainties in temperature projections, the likelihood and impact of cooling system failures and how these failures could cascade into broader operational disruptions and revenue loss.	To address these uncertainties, the entity will strengthen its climate and equipment monitoring and enhance incident reporting and contingency plans.
Evaluating capacity	SinoCloud examines financial flexibility of absorbing increased OPEX.	The entity will evaluate plans for investing in more robust and efficient rooftop cooling systems and review broader climate adaptation strategies to minimise the risk and associated financial impacts.

Step 5

Review and update

Although HKFRS S2 requires an entity to disclose information about its climate resilience at each reporting date, the entity might carry out its climate-related scenario analysis in line with its strategic planning cycle, including a multi-year strategic planning cycle (for example, every three to five years). Therefore, in some reporting periods the entity's disclosures in accordance with HKFRS S2.22(b) could remain unchanged from the previous reporting period if the entity does not conduct a scenario analysis annually. The entity shall — at a minimum —update its climate-related scenario analysis in line with its strategic planning cycle. However, an assessment of the entity's resilience is required to be carried out annually to reflect updated insight into the implications of climate uncertainty for the entity's business model and strategy. As such, an entity's disclosure in accordance with HKFRS S2.22(a) shall be updated at each reporting period. **[HKFRS S2.B18]**

This annual assessment may include:

- reassessing the entity's exposure to climate-related risks and opportunities;
- determining whether updates to climate scenarios, variables or other inputs are needed as new information or advances in climate science emerge; and
- revising or expanding the scope of analysis as business strategies, operations or exposures evolve.

Foster a future mindset

Adopting a future mindset — a proactive and adaptive perspective that acknowledges uncertainty and complexity in climate-related risks and opportunities — is key to a robust scenario analysis. Scenario analysis is a tool for exploring a wide spectrum of plausible futures and assessing an entity's business strategy against both risks and opportunities.

Entities are recommended to:

- engage a diverse group of internal and external stakeholders, equipped with a shared understanding of the issues and empowered to contribute their expertise;
- recognise the value of exploring both positive/upside and negative/downside scenarios, encouraging systematic thinking and creative problem-solving; and
- regularly revisit assumptions and challenge conventional perspectives to ensure that the analysis remains dynamic and relevant as circumstances evolve.

5.3 Disclosing information about climate-related scenario analysis

[HKFRS S2.22(a)]

HKFRS S2 requires disclosure of information about how an entity assesses its climate resilience, including the approach used for scenario analysis, to enable primary users to understand:

- the implications, if any, of the entity's climate resilience assessment for its strategy and business model, including how the entity may need to respond to the effects identified in the scenario analysis;
- what significant areas of uncertainty were considered when assessing climate resilience;
- the entity's capacity to adjust or adapt its strategy and business model to climate change over the short, medium and long term, including:
  - the availability of, and flexibility in, the entity's existing financial resources to respond to the effects identified in the climate-related scenario analysis, including to address climate-related risks and to take advantage of climate-related opportunities;
  - the entity's ability to redeploy, repurpose, upgrade or decommission existing assets; and
  - the effect of the entity's current and planned investments in climate-related mitigation, adaptation and opportunities for climate resilience.

[HKFRS S2.22(b)] In addition to the disclosure of resilience assessment, entities shall also disclose how and when the climate-related scenario analysis was carried out.

Table 5.8 Disclosure of information related to the approach used by the entity to carry out scenario analysis

	Disclosure requirements
Inputs used	Information about the inputs used, including: • which scenarios the entity used for the analysis and the sources of those scenarios (e.g. IPCC, IEA, NGFS); • whether the analysis included a diverse range of scenarios (e.g. if an entity considered both orderly and disorderly transition scenarios, the entity could disclose that fact); • whether scenarios are associated with transition or physical risks; • whether at least one scenario aligns with the latest international climate agreement (e.g. pathway to meeting the Paris Agreement's 1.5°C limit); • why the entity decided that its chosen climate-related scenarios are relevant to assessing its resilience to climate-related changes, developments or uncertainties; • the time horizons used in the analysis; and • what scope of operations the entity used in the analysis (e.g. the operating locations and business units used in the analysis).
Key assumptions made	Key assumptions made in the analysis, including assumptions about: • climate-related policies in jurisdictions in which the entity operates; • macroeconomic trends (e.g. gross domestic product growth, inflation and market dynamics); • national- or regional-level variables (e.g. local weather patterns, demographics, land use, infrastructure and availability of natural resources); • energy usage and mix (e.g. renewable energy penetration rates); and • development in technology (e.g. adoption rates, cost curves).
Timing	The reporting period in which the climate-related scenario analysis was carried out.

[HKFRS S2.BC66]

[HKFRS S1.B26]
[HKFRS S2.BC61]

Although the above table lists out the key assumptions required to be disclosed, this list is not exhaustive, and HKFRS S2 recognises that an entity may make other assumptions in carrying out its scenario analysis. The standard therefore requires an entity to disclose additional information when compliance with the specifically applicable requirements in an HKFRS Sustainability Disclosure Standard is insufficient to enable primary users to understand the effects of sustainability-related risks and opportunities on the entity's prospects. This includes any additional assumptions, if material, made in carrying out the climate-related scenario analysis.

[HKFRS S2.BC59]

It should be noted that the disclosures required by paragraph 22(b) of HKFRS S2 relate to the approach used by the entity to carry out scenario analysis, whereas those required by paragraph 22(a) of HKFRS S2 relate to the assessment of resilience based on the scenario analysis. In summary, entities are not required to disclose the results of their scenario analysis but are instead required to disclose their interpretation of those results.

[HKFRS S2.22(a)(ii)]
[HKFRS S2.BC60]

When disclosing information about scenario analysis, entities should also disclose significant areas of uncertainty considered in the entity's assessment of its climate resilience. For example, significant uncertainty may arise from potential climate-driven migration, affecting the stability of supply chains or the resilience of assets in certain regions and operations. The longer the time horizon considered in the scenario analysis, the greater the degree of judgement required to interpret its results.

The insights gained from scenario analysis can also culminate in a transition plan that outlines how the entity will navigate the shift to a low-carbon economy. Refer to Chapter 8 of this guidance for details on how to prepare and structure transition plan disclosures.

FAQ 5.1

Should the scope of scenario analysis cover the entire entity or business "hotspots" such as a critical business unit or specific geographical location?

[HKFRS S2.B2, B4, BC64]

When determining the approach to use for its scenario analysis (including the scope), an entity shall consider:

- its exposure to climate-related risks and opportunities; and
- the skills, capabilities and resources available to the entity to enable it to carry out the scenario analysis.

If an entity only has the skills, capabilities and resources to focus on certain parts of its business, it could assess what information would be most useful for management, investors and other primary users. This assessment could involve identifying where significant exposures exist — this may be at the level of the entire business, specific divisions, selected business operations, or particular geographical locations.

If climate-related risks are concentrated in specific business operations, products or geographical hotspots, an entity may focus its scenario analysis on those areas.

However, if the business as a whole faces significant climate-related risks, and the necessary skills, capabilities and resources are available, scenario analysis should ideally be performed for the whole entity, enabling decision-useful information and a robust assessment of climate resilience. If an entity does not currently have the skills and capabilities to carry out a more sophisticated form of scenario analysis but has a high degree of exposure to climate-related risk, a simpler approach to scenario analysis may be used initially.

FAQ 5.2

How can climate factors be isolated from other factors? In cases where complete isolation is not feasible, what should be disclosed?

Entities can develop transmission channels, as illustrated in Figure 5.2, to map how climate factors affect their operations and, in turn, lead to specific financial impacts. This approach helps clarify the link between climate-related risks and opportunities and their effects on an entity's prospects, making it easier to isolate climate factors from other business drivers.

In practice, however, isolating climate factors can be challenging — especially when climate and non-climate variables overlap or interact. For example, many car parks at shopping malls install EV charging facilities to attract visitors, which can be viewed as a climate-related opportunity for the property owner from this type of investment and capital deployment. However, the incremental revenue gained from EV drivers would be difficult to isolate and separately identify.

In these situations, entities can adapt their scenario analysis to reflect the realities of overlapping effects. For instance, if EV charging facilities are installed at a shopping mall and it is difficult to separate the incremental revenue driven by climate-related demand from other business influences:

When conducting qualitative scenario analysis

- use scenario narratives to describe how installing EV charging facilities is expected to affect visitor numbers, tenant mix and overall competitiveness; and
- evaluate resilience by comparing these narratives to the entity's current strategy and business model, identifying whether new commercial initiatives or enhancements are needed to capture the opportunity.

When conducting quantitative scenario analysis

- assess the combined effects of key drivers, including the increase in total visitors, tenant revenues or parking income observed since the installation of EV charging facilities; and
- model the combined effects under selected scenarios and evaluate whether the entity's current strategy and business model is positioned to realise the potential benefits, or if further actions may be warranted.

FAQ 5.3

Are entities required to do scenario analysis at each reporting period?

[HKFRS S2.B18]

At a minimum, entities should update their climate-related scenario analysis in line with their strategic planning cycle – for example, every three to five years for entities that have a multi-year strategic planning cycle. Therefore, in some reporting periods, entities' disclosures in accordance with HKFRS S2.22(b) could remain unchanged from the previous reporting period if they do not conduct scenario analysis annually.

Nonetheless, entities are required to assess their climate resilience annually to reflect updated insights into the implications of climate uncertainty for the entities' business model and strategy. For example, how the entity would respond to the effects identified in the climate-related scenario analysis. Therefore, entities' disclosures in accordance with HKFRS S2.22(a) should be updated at each reporting period.

6 Anticipated Financial Effects

Objectives

To provide guidance on determining and disclosing anticipated financial effects of sustainability-related risks and opportunities

ISSB educational materials and other resources

- Webcasts: Current and anticipated financial effects
- Disclosing information about anticipated financial effects applying ISSB Standards

6.1 Introduction

[HKFRS S1.34]
[HKFRS S2.15]

HKFRS SDS require an entity to disclose information about the current and anticipated financial effects of its sustainability-related risks and opportunities (including climate-related risks and opportunities):

- **Current financial effects:** the effects of the entity's sustainability-related risks and opportunities on its financial position, financial performance and cash flows for the reporting period; and
- **Anticipated financial effects:** 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.

These disclosures provide decision-useful information for primary users to assess how sustainability-related risks and opportunities are expected to impact an entity's prospects.

Current financial effects represent effects that have already materialised and are typically reflected in the financial statements through recognised transactions and events — such as incurred costs for energy-efficient equipment purchases and realised losses from extreme weather events. In addition, entities should also consider whether the carrying amounts of assets and liabilities are subject to significant risk of material adjustment within the next annual reporting period.

Meanwhile, there are unique challenges when determining the anticipated financial effects:

- **Forward-looking nature:** Requires an entity to consider how sustainability-related risks and opportunities might affect future cash flows, financial position and performance.
- **Uncertainty and estimation:** Involves higher levels of measurement uncertainty and requires judgement about future events and conditions.
- **Strategy and decision-making:** Provides information that complements financial statements by offering insights into potential future effects of the entity's climate actions or commitments that have not yet met recognition criteria under accounting standards. For example, information about the effect of the implementation of the entity's transition plan that is anticipated to be reflected in the financial statements in a future period.

The following table summarises the requirements about current and anticipated financial effects of sustainability-related risks and opportunities on the entity's prospects.

Table 6.1 **Current and anticipated financial effects of sustainability-related risks and opportunities**

Financial effects of sustainability-related risks and opportunities

	Current financial effects for the reporting period		Anticipated financial effects over the short, medium and long term
Reporting period to which the disclosure relates	**Current reporting period**	**Next annual reporting period**	**Future reporting periods**
Disclosure requirements	How the risks and opportunities have affected the entity's prospects for the reporting period [HKFRS S1.35(a)] [HKFRS S2.16(a)]	Information about the risks and opportunities for which there is a significant risk of material adjustment within the next annual reporting period to the carrying amounts of assets and liabilities reported in the related financial statements[14] [HKFRS S1.35(b)] [HKFRS S2.16(b)]	How the entity expects its financial position, financial performance and cash flows to change over the short, medium and long term, given its strategy to manage sustainability-related risks and opportunities [HKFRS S1.35(c),(d)] [HKFRS S2.16(c),(d)]
Example: Risk – Impacts from flooding	• Heavy rainfall and flooding resulted in direct property damage, leading to asset impairment totalling HK$8 million and emergency restoration costs of HK$2 million. • Operations at key sites were suspended for several days, causing delays in project delivery and additional HK$500,000 in temporary logistics costs.	• The property is located in a flood-prone area. The frequency and severity of flooding and the actual losses resulting from flooding may be different from estimation made at the end of the reporting period, which would affect the carrying amounts of the related property, plant and equipment ("PP&E").	• In the short term, planned capital investment of HK$15-25 million for enhanced flood defences over the next 2-4 years, including drainage systems improvement, and flood gates and detection systems installation. • The capital investment is expected to be financed through a combination of internal cash flows and debt. • Expected reduction in flood-related business disruptions and financial losses after these upgrades. • Residual risk will continue to be monitored and managed through ongoing adaptation strategies.
Example: Opportunity – Investment in green hydrogen technology for new product offering	• Invested HK$10 million in developing proprietary technologies around green hydrogen electrolysis equipment for sale and licensing of related intellectual property, with a pilot model launched commercially. • Generated HK$1.2 million revenue from equipment sales and licensing.	• The entity recognises the costs of developing and patenting the technology as intangible assets. The green hydrogen market is evolving and volatile and if there are significant changes with adverse effect in the market in the future, the recoverable amount of the intangible assets may decrease.	• In the medium to long term, expected cumulative revenue of HK$10-15 million over the next 6-8 years from expansion of technology licensing and equipment sales.

Considering the forward-looking nature and higher levels of measurement uncertainty in anticipated financial effects, this chapter focuses on providing guidance on how entities can determine and prepare disclosures of the anticipated financial effects of sustainability-related risks and opportunities.

[14] This requirement is similar to the requirements in HKFRS Accounting Standards. See paragraph 125 of HKAS 1 *Presentation of Financial Statements* (paragraph 31A of HKAS 8 *Basis of Preparation of Financial Statements* for reporting periods beginning on or after 1 January 2027).

6.2 Mechanisms supporting the disclosure of anticipated financial effects

[HKFRS S1.36, BC89] [HKFRS S2.17]

HKFRS SDS require entities to disclose both qualitative and quantitative information about anticipated financial effects. If an entity provides quantitative information about anticipated financial effects, the entity is permitted to disclose a single estimate or a range of possible outcomes. This acknowledges that ranges of possible outcomes could be more useful in some cases than single estimates.

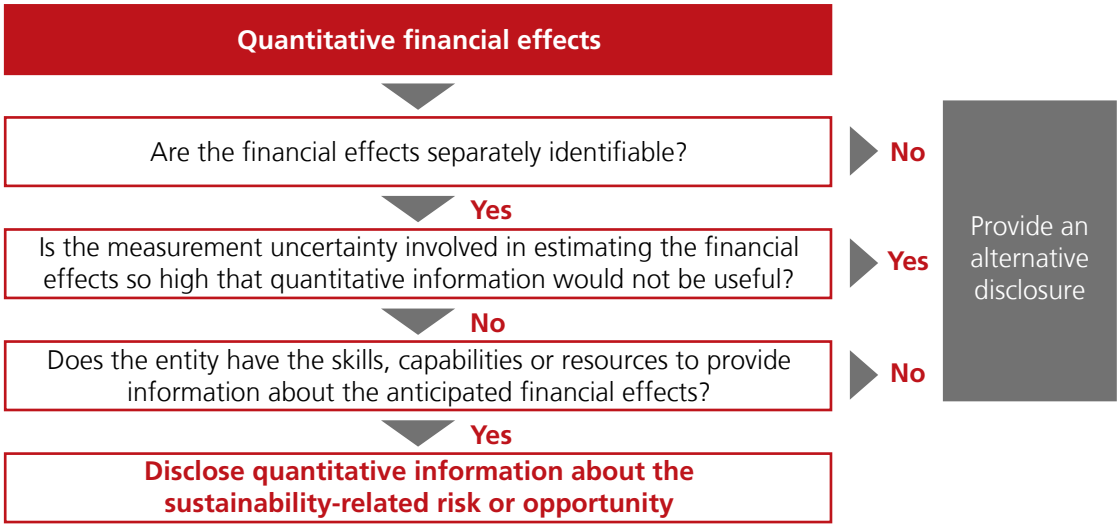
A combination of both quantitative and qualitative information is most useful for making investment decisions

Quantitative information helps investors understand the extent to which sustainability-related risks and opportunities might affect financial statements, while qualitative information provides useful context supplementing the quantitative information.

Under specific circumstances, entities are permitted not to provide quantitative information about the anticipated financial effects of sustainability-related risks and opportunities ("financial effects relief"). Refer to Chapter 1 of the HKFRS SDS Guidance Part 1 for further guidance on applying the financial effects relief.

[HKFRS S1.38-40] [HKFRS S2.19-21]

Entities may apply the following framework[15] to determine if quantitative information is required:



[HKFRS S1.40] [HKFRS S2.21]

If an entity provides an alternative disclosure, the disclosure is required to include the following:

- explanation of why the entity has not provided quantitative information;
- qualitative information about those financial effects, including identifying line items, totals and subtotals within the related financial statements that are likely to be affected, or have been affected, by that sustainability-related risk or opportunity; and
- quantitative information about the combined financial effects of that sustainability-related risk or opportunity with other sustainability-related risks or opportunities and other factors unless the entity determines that quantitative information about the combined financial effects would not be useful.

[15] Adapted from page 35 of KPMG – First Impressions – General and climate-related requirements.

[HKFRS S1.79]

When preparing sustainability-related financial disclosures, there may be situations where amounts cannot be measured directly and can only be estimated, leading to measurement uncertainty. In some cases, these estimates require assumptions about possible future events with uncertain outcomes. For example, an entity with a significant carbon footprint may estimate the potential impact on operating costs if a mandatory carbon pricing mechanism is introduced in the jurisdiction where it operates, even though such a policy has not yet been implemented but is considered relevant to the entity's circumstances. Nevertheless, HKFRS S1 emphasises the use of reasonable estimates is both expected and appropriate. When estimates are accurately described and explained, this information can still provide useful insights for primary users.

[HKFRS S1.37, B8-B10]
[HKFRS S2.18]

Applying the proportionality mechanisms

In preparing disclosures about the anticipated financial effects of a sustainability-related risk or opportunity, an entity shall:

- use all reasonable and supportable information that is available to the entity at the reporting date without undue cost or effort; and
- use an approach that is commensurate with the skills, capabilities and resources that are available to the entity for preparing the disclosures.

Refer to Chapter 1 of the HKFRS SDS Guidance Part 1 for further guidance on applying the proportionality mechanisms.

6.3 Steps to determine and disclose the anticipated financial effects

While HKFRS SDS do not require an entity to use specific approaches or methods to determine its anticipated financial effects, the following is a possible approach that entities may consider in determining the anticipated financial effects of sustainability-related risks and opportunities.

Figure 6.1 Step-by-step approach for determining and disclosing anticipated financial effects

Identify sustainability-related risks and opportunities

Identify the sustainability-related risks and opportunities that could reasonably be expected to affect the entity's prospects.

1

Understand responses to risks and opportunities

Understand how the entity plans to address the identified risks and opportunities — whether to accept, avoid, mitigate, pursue, or transfer them. Recognise that choosing "no response" may also lead to financial consequences such as revenue losses or increased costs.

2

Assess anticipated financial effects

Assess the anticipated financial effects of these risks and opportunities (including their response), such as increased costs, CAPEX, revenue changes or market uncertainties.

3

Compile and disclose information

Gather the available quantitative and qualitative information on the anticipated financial effects of the sustainability-related risks and opportunities. Consider the materiality of information to primary users when preparing disclosures[16]. When quantitative information is limited or unavailable, provide explanation and qualitative information about those financial effects. As the entity's skills, capabilities and resources improve, and as new information becomes available, enhance the disclosures over time.

4

[16] Refer to Chapter 4 of the HKFRS SDS Guidance Part 1 for details.

[HKFRS S1.23, B42]

Consistency in data and assumptions

HKFRS SDS emphasise the need for consistency between sustainability-related financial disclosures and financial statements wherever feasible. This means that entities shall, to the extent possible, use consistent data and underlying assumptions in both sets of information. Any significant differences should be disclosed.

Refer to Chapter 9 of this guidance for further discussion on the considerations of disclosures' connectivity.

[HKFRS S1.74-81]

Judgement is likely required when determining the anticipated financial effects of sustainability-related risks and opportunities, as these assessments often involve making assumptions about possible future events, and that measurement uncertainty might also be likely. Therefore, an entity shall disclose information to enable primary users to understand the judgements that it has made and measurement uncertainties involved in the process of preparing its sustainability-related financial disclosures.

Example 6.1

Determining and disclosing anticipated financial effects from physical risks through climate-related scenario analysis

Continuing Example 5.3, SinoCloud is preparing the disclosures of the anticipated financial effects from rising mean temperatures, as identified through the scenario analysis.

Step 1: Identify sustainability-related risks and opportunities

As discussed in Example 5.3, SinoCloud has identified that rising mean temperatures pose significant risks to its cooling systems and operations. These risks include increased operating expenses for energy and maintenance, as well as the potential for service disruptions during periods of extreme heat.

Step 2: Understand responses to risks and opportunities

Informed by the scenario analysis, SinoCloud develops a response strategy that features enhanced maintenance protocols and a planned investment of RMB 12 million in cooling system upgrades to be implemented over the next decade.

Step 3: Assess anticipated financial effects

SinoCloud decides to use the quantitative climate-related scenario analysis and its response plan to help assess the anticipated financial effects across the short, medium and long term:

- **Short-term (up to 2 years):** The entity expects an annual increase of RMB 2 million in energy and maintenance costs. In addition, the entity plans to invest RMB 5 million in cooling equipment upgrades next year.
- **Medium-term (2–5 years):** A gradual improvement in energy efficiency is expected to stabilise operating expenses, with a further RMB 7 million in CAPEX planned for upgrades at other key facilities.
- **Long-term (5-10 years):** SinoCloud anticipates improved cost control, continued operating expense stability, and minimal further CAPEX needs. Upgraded facilities are expected to enhance reliability and reduce operational risk.

In addition, SinoCloud finds that certain anticipated financial effects, such as potential revenue loss from possible service disruptions associated with temperature extremes, cannot yet be reliably quantified due to limited historic data and unpredictable future events.

Step 4: Compile and disclose information

SinoCloud provides both quantitative and qualitative disclosures regarding the anticipated financial effects of rising mean temperature, as follows:

How the entity expects its financial position to change over time

- **Investment plans:** The entity outlines its CAPEX programme, including RMB 5 million allocated to equipment upgrades in the first year and a further RMB 7 million to be invested in other facility upgrades over the following four years.
- **Planned sources of funding:** Funding for these planned investments will primarily be sourced from internal cash flows, with additional green financing considered if internal resources are insufficient to cover near-term capital needs.

How the entity expects its financial performance and cash flows to change over time

- In the short term, SinoCloud expects operating expenses for energy and maintenance to increase by RMB 2 million per year and anticipates RMB 5 million in immediate CAPEX for cooling upgrades.
- In the medium term, operating expenses are expected to stabilise and reduce as the planned RMB 7 million phased investment in upgrades is completed, leading to greater operational reliability.
- In the long term, SinoCloud anticipates improved cost control over the upgraded facilities, with minimal further CAPEX required.
- The entity also notes qualitatively that, while lost revenue from possible service disruptions could be material, these effects cannot be quantified at this time due to a lack of sufficient event history and market data. SinoCloud describes these risks so that primary users can assess their potential significance to future financial performance.

Example 6.2

Determining and disclosing anticipated financial effects from the introduction of a new policy

Oriental Home Products Ltd. ("Oriental Home Products") is a home appliance manufacturer. A new government policy sets minimum energy-efficiency criteria for specific home appliances, affecting part of its product portfolio. There is also potential for the policy to be expanded within the next 5-7 years, which may impact additional products.

Step 1: Identify sustainability-related risks and opportunities

Oriental Home Products determines that the new policy requires redesign of its energy-intensive appliances. The currently affected products account for approximately 30% of the entity's annual sales, and operational changes are expected to impact both revenue and COGS through increased transition costs and facility downtime for upgrades. If the policy is later expanded, an additional 20% of product portfolio could be subject to similar requirements, pending regulatory confirmation.

Step 2: Understand responses to risks and opportunities

The entity undertakes a phased upgrade programme, starting with production lines directly affected by the new policy and preparing for further upgrades should the policy expand. Some upgrades — such as equipment purchases and facility modifications — have been initiated this year, with additional investments scheduled over the next few years. The entity closely monitors ongoing regulatory developments on products under consultation to ensure prompt adjustment of investment plans as needed.

Step 3: Assess anticipated financial effects

Oriental Home Products assesses the anticipated financial effects across the short, medium and long term based on historical data and current investment plans:

- **Short-term (up to 2 years):** Transition-related downtime and facility upgrades are expected to result in a temporary revenue decrease of up to HK$10 million per year, while COGS will rise by HK$3 million due to operational inefficiencies during the transition. CAPEX for the first phase of upgrades is budgeted at HK$15 million.
- **Medium-term (2–5 years):** As operations become more efficient and staff gain experience with new production facilities, COGS is expected to decrease by about 6%, and revenue is projected to gradually return to pre-transition levels. Additional CAPEX for continued upgrades across affected production lines is estimated at HK$10 million.
- **Long-term (beyond 5 years):** Sales growth is projected to resume at a compound annual growth rate ("CAGR") of approximately 4% as demand for energy-efficient appliances increases. The gross margin is also expected to improve by 1-2%, reflecting the benefits of lower energy and material costs from streamlined operations.

If policy scope expands (next 5-7 years), an additional 20% of the portfolio could be affected. Initial estimates based on draft policy indicate up to HK$7 million additional CAPEX and a temporary HK$5 million decrease in revenue annually for an additional 1–2 years, with prospects for gradual improvement thereafter dependent on final regulatory scope.

Step 4: Compile and disclose information

When preparing the sustainability-related financial disclosures, the entity considers the principles of aggregation or disaggregation. The anticipated financial effects of current and potential future regulations are disaggregated, with both quantitative and qualitative information provided as follows:

How the entity expects its financial position to change over time

- **Investment plans:** The entity details its phased CAPEX commitments — HK$15 million in years 1–2, a further HK$10 million planned in years 2–5 for upgrades and project management, and a provisional HK$7 million should the policy expansion proceed.
- **Planned sources of funding:** Investments are primarily funded by internal cash flows and reserves, with existing credit lines, new loans, or green financing available if policy expansion necessitates larger or faster upgrades.

How the entity expects its financial performance and cash flows to change over time

- In the short term, Oriental Home Products reports a short-term revenue decline of up to HK$10 million per year, HK$3 million temporary increase in COGS and HK$15 million CAPEX in the first phase.
- In the medium term, the entity anticipates revenue recovery to baseline levels with COGS decrease by about 6% and HK$10 million additional CAPEX for upgrades.
- In the long term, sales growth resumes at approximately 4% CAGR and gross margin improves by 1-2% due to higher demand for energy-efficient products and operational efficiency gains after the transition period.
- For potential policy expansion, the entity estimates an additional HK$7 million CAPEX and a potential short-term revenue reduction of up to HK$5 million annually for 1–2 years, should the policy be expanded to impact additional product lines, with a further return to normalised margins expected following completion of all upgrades.

Example 6.3

Determining and disclosing anticipated financial effects when effects are not quantifiable

Precision Manufacturing Co., Ltd. ("Precision Manufacturing") is an industrial manufacturer specialising in high-precision components and advanced materials for various industries, serving a diverse range of customers globally. Due to environmental concerns, a draft regulation under consultation in one of its operating locations may ban the use of a specific alloy in certain products.

Step 1: Identify sustainability-related risks and opportunities

Precision Manufacturing recognises that the proposed regulation could significantly affect its prospects, as the restricted alloy is used across multiple product lines which together contribute approximately 10% of total revenue.

In addition to the draft regulation, the entity also identifies other market factors that could affect these product lines, including changes in customer demand and market competition from entrant of alternative products.

Step 2: Understand responses to risks and opportunities

In response to the regulatory development, Precision Manufacturing plans to initiate an R&D programme for viable alternatives, and to assess modification needs for existing equipment. It continues to monitor the evolving regulatory environment and is engaging technical advisors.

Step 3: Assess anticipated financial effects

Despite the initial plan, the entity determines that the level of measurement uncertainty — concerning possible alternatives, their costs, scope of equipment changes, expected implementation timing and other market factors — is too high, and any resulting quantitative information would not be useful for primary users.

Step 4: Compile and disclose information

Recognising this draft regulation could have significant impacts on its business, Precision Manufacturing determines that information about this sustainability-related risk and the anticipated financial effects on the entity's prospects could be material for primary users when making investment decisions.

The entity provides qualitative information about the anticipated financial effects, highlighting its current plans and provides explanation on why it has not provided quantitative information:

- **Explanation on why the entity has not provided quantitative information:** The entity discloses that the measurement uncertainties relating to the anticipated financial effects of this policy risk and other market factors are too high. Key limitations include the uncertainty around the final regulation, the availability and costs of alternative materials, the scope of required equipment modifications, the timing of implementation, and unpredictable market responses. As a result, the entity determines that providing quantitative information about the anticipated financial effects of this policy risk as well as combined financial effects with other factors would not be useful.

- **Qualitative information about those financial effects:**

  How the entity expects its financial position to change over time

  - **Investment plans:** The entity plans to commence research and feasibility studies when the policy timetable becomes clear. Expenditure during the research stage will be expensed as incurred. Subject to technical feasibility being established, subsequent development expenditure may be capitalised as intangible assets in future planning cycles as regulatory specifications emerge.
  - **Planned sources of funding:** Near-term R&D will be covered from existing R&D budgets and reserves. Future larger-scale investments will be determined once costs and scope are known.

  How the entity expects its financial performance and cash flows to change over time

  - There would be potential increases in R&D expenditure, possible modifications to production equipment and processes, as well as production interruptions or delays for the affected product lines, which are subject to the eventual timeline and requirements of the new regulation.
  - These factors, together with other market factors, could result in reduced revenue from the products currently dependent on the restricted alloy.

Entities are recommended to read "Disclosing information about anticipated financial effects applying ISSB Standards" for further guidance and disclosure examples of qualitative and quantitative information required about the anticipated financial effects of sustainability-related risks and opportunities.

FAQ 6.1

How should entities consider "additionality" when determining and disclosing the anticipated financial effects of climate-related opportunities, given that such opportunities are increasingly becoming embedded in normal operations and may transition into business-as-usual?

How should entities provide disclosures of the financial effects of these opportunities over time?

Additionality refers to whether an action leads to outcomes that would not have happened under a business-as-usual scenario. In the context of climate-related opportunities, additionality is demonstrated when a climate-related action — such as investing in low-carbon technology or improving a building's energy efficiency — results in effects like revenue gains or cost savings that would not be expected if the entity continued its standard operations.

When considering additionality, entities may compare the financial effects of a climate-related action to a baseline (the expected trajectory of the business absent that initiative) to distinguish the incremental financial effects directly attributable to the climate-related action.

Recognised green taxonomies — such as the Hong Kong Taxonomy for Sustainable Finance issued by the Hong Kong Monetary Authority, Green Finance Endorsed Project Catalogue issued by the People's Bank of China, the National Financial Regulatory Administration and the China Securities Regulatory Commission, or the EU Taxonomy — can be useful references for identifying activities generally regarded as environmentally sustainable. However, inclusion in a taxonomy does not indicate that the activity will lead to incremental financial effects. Entities are still required to assess whether the activity is considered a climate-related opportunity that could reasonably be expected to affect their prospects.

As climate-related opportunities increasingly become embedded in normal operations, entities should reassess relevant climate-related opportunities and disclose the financial effects of these opportunities in a way that reflects both their current and evolving status:

- For previously identified opportunities (for example, investments in low-carbon logistics fleets), entities should disclose the current financial effects, such as capital costs already incurred and actual fuel or energy cost savings realised.
- Entities should also disclose any anticipated financial effects, such as future planned investments, expected operational efficiencies, or emissions reductions anticipated in upcoming reporting periods.
- Over time, as these climate-related opportunities transition into business-as-usual, entities should consider whether information about these business-as-usual activities is still useful to primary users and update the disclosure accordingly.
- Entities should also reassess their exposure to new climate-related opportunities. If new opportunities are identified (for example, the emergence of newer low-carbon logistics fleets), entities should consider potential responses, determine the anticipated financial effects of these new opportunities (including their responses), and provide updated disclosures.

FAQ 6.2

How can climate-related scenario analysis help determine the anticipated financial effects of climate-related risks and opportunities?

Climate-related scenario analysis is a tool for assessing an entity's resilience to climate-related risks and opportunities. By modeling different plausible futures — such as varying climate trajectories, policy changes or technological advancements — scenario analysis helps entities evaluate how sustainability-related risks and opportunities could affect their strategy and business model. Refer to Chapter 5 of this guidance on how to conduct climate-related scenario analysis and assess climate resilience.

[HKFRS S2.BC69]

The use of climate-related scenario analysis is required only in the context of the entity's resilience assessment. However, this process can provide entities with the basis for estimating and disclosing anticipated financial effects — such as changes in costs, revenue, CAPEX or asset values — under different climate scenarios.

In summary, climate-related scenario analysis can help an entity to translate future climate uncertainties into useful quantitative and qualitative information about the anticipated financial effects of a climate-related risk or opportunity, thereby providing information to allow primary users to understand the effects of the climate-related risk or opportunity and how the entity has responded to, and plans to respond to, the risk or opportunity in its strategy and decision-making.

7 Greenhouse Gas Emissions

Objectives

To provide guidance on measuring and disclosing information about GHG emissions, focusing on Scope 3 GHG emissions

ISSB educational materials and other resources

- Greenhouse Gas Emissions Disclosure requirements applying IFRS S2 *Climate-related Disclosures*

7.1 Introduction

[HKFRS S2.29, BC75] To help primary users compare an entity's performance in relation to its **climate-related risks and opportunities** with that of other entities, HKFRS S2 requires an entity to disclose information in line with seven cross-industry metric categories[17], including **GHG emissions**.

[HKFRS S2.29 (a)(i)] An entity is required to disclose its absolute gross GHG emissions generated during the reporting period, expressed as metric tonnes of carbon dioxide equivalent ("CO_2e"), classified as:

(1) Scope 1 GHG emissions;

(2) Scope 2 GHG emissions; and

(3) Scope 3 GHG emissions.

[HKFRS S2.BC81, BC83]

Absolute gross GHG emissions

The word "absolute" means an entity discloses the total amount of GHG emissions instead of emissions intensity[18]; the word "gross" means the entity discloses its GHG emissions before taking into consideration any removal efforts (for example, from an entity's intended use of carbon credits).

[HKFRS S2.B20] In disclosing these GHG emissions, an entity is required to include all seven GHGs listed in the Kyoto Protocol — carbon dioxide ("CO_2"), methane ("CH_4"), nitrous oxide ("N_2O"), hydrofluorocarbons ("HFCs"), nitrogen trifluoride ("NF_3"), perfluorocarbons ("PFCs") and sulphur hexafluoride ("SF_6"). To evaluate these GHGs against a common basis, global warming potential ("GWP") values would be used to convert and aggregate various GHGs into a standardised metric (i.e. CO_2e).

[17] The seven cross-industry metric categories include GHG emissions, climate-related transition risks, climate-related physical risks, climate-related opportunities, capital deployment, internal carbon prices and remuneration.

[18] Disclosure of emissions intensity metrics would be required if these metrics are judged to be useful to primary users, in accordance with paragraph 15(b) of HKFRS S1, and/or if the entity's governance body or management uses such a metric to manage the entity's climate-related risks and opportunities, in accordance with paragraph 28(c) of HKFRS S2. [HKFRS S2.BC84]

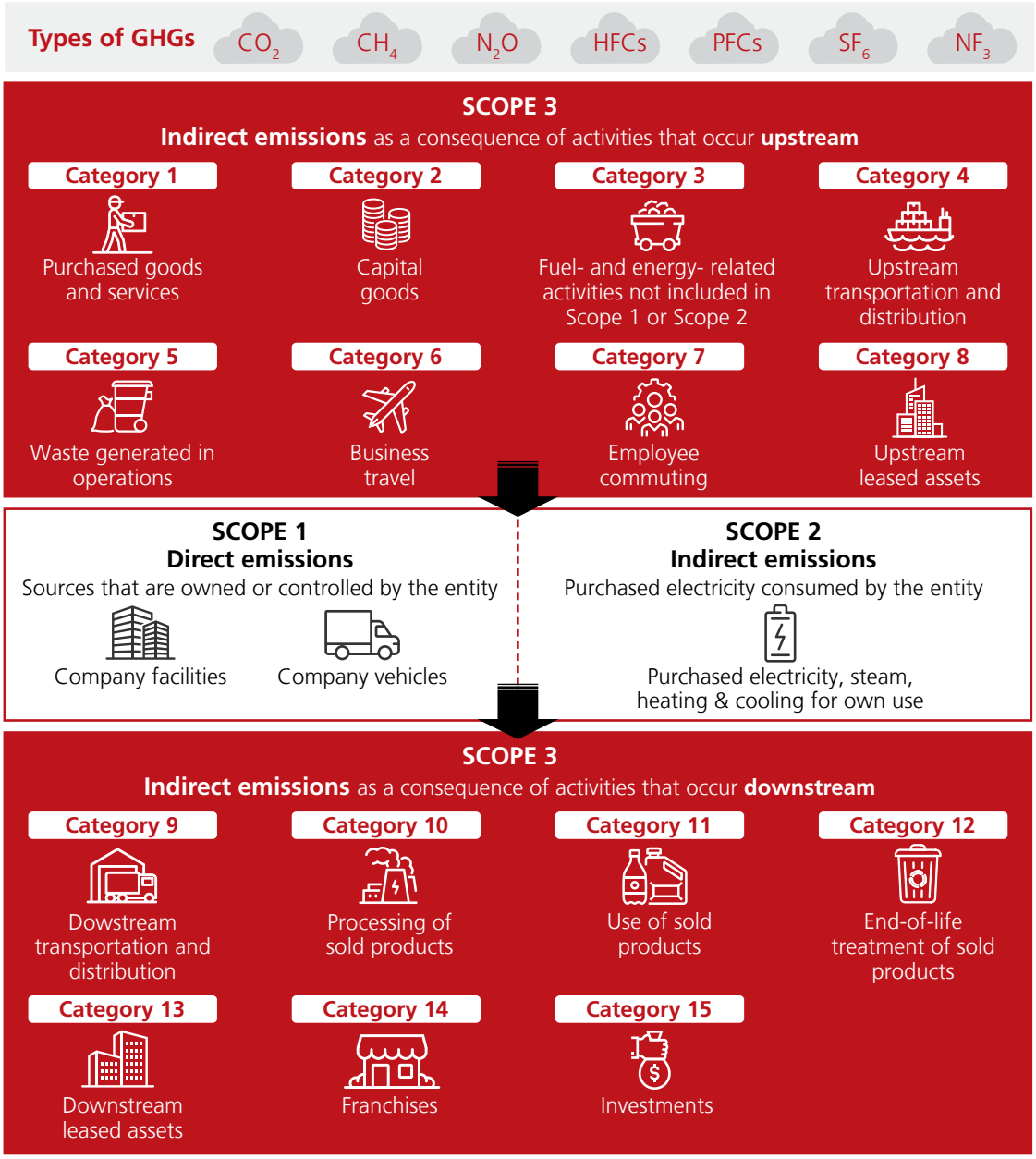
[HKFRS S1.B30]

Aggregation and disaggregation of constituent GHGs

Although entities are required to aggregate all seven constituent GHGs and express and disclose in CO_2e, HKFRS S1 also states that an entity shall not aggregate information if doing so would obscure information that is material. Therefore, an entity applying HKFRS SDS needs to apply judgement to determine whether it is necessary to disaggregate GHG emissions by constituent GHGs to ensure that material information is not obscured. The *Industry-based Guidance on Implementing HKFRS S2* might help an entity determine whether GHG emissions should be disaggregated by constituent gas (e.g. Oil & Gas – Exploration & Production entities may consider the applicability of disclosing percentage CH_4 for its gross global Scope 1 GHG emissions). The *Accompanying Guidance on HKFRS S2* ("HKFRS S2 Accompanying Guidance") also provides examples (see Examples 3A and 3B in the HKFRS S2 Accompanying Guidance) that illustrate some considerations in determining whether it is necessary to disaggregate GHG emissions disclosure.

Figure 7.1 below provides an overview of the scopes and emissions across an entity's value chain.

Figure 7.1 **Overview of scopes and emissions across an entity's value chain**[19]



[19] Adapted from page 31 of the GHG Protocol Corporate Value Chain Standard.

This chapter focuses on the practical implementation of measuring and disclosing information about Scope 3 GHG emissions, an area where preparers might find it particularly challenging to apply the requirements.

7.1.1 Greenhouse Gas Protocol

[HKFRS S2.29 (a)(ii)]

This chapter includes excerpts from the standards and guidance of the Greenhouse Gas Protocol ("GHG Protocol") which were developed by the World Resources Institute and the World Business Council for Sustainable Development. HKFRS S2 references two GHG Protocol standards:

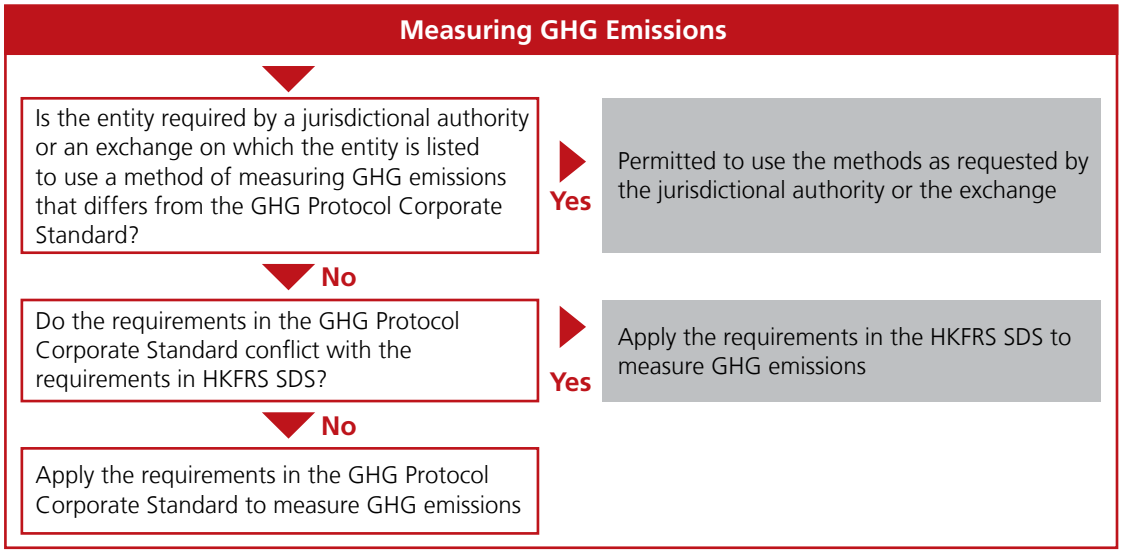
- Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) ("GHG Protocol Corporate Standard"); and
- Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011) ("GHG Protocol Corporate Value Chain Standard").

The GHG Protocol Corporate Standard is referenced in relation to requirements to measure and disclose GHG emissions; the GHG Protocol Corporate Value Chain Standard is referenced in relation to requirements to disclose, but not to measure, categories of Scope 3 GHG emissions.

An entity is required to measure its GHG emissions in accordance with the GHG Protocol Corporate Standard to the extent that the requirements in the GHG Protocol Corporate Standard do not conflict with the requirements in HKFRS SDS. However, if the entity is required by a jurisdictional authority or an exchange on which it is listed to use a different method for measuring its greenhouse gas emissions, the entity is permitted to use this method rather than using the GHG Protocol Corporate Standard for as long as the jurisdictional or exchange requirement applies to the entity.

Figure 7.2 below outlines the application of the above requirements.

Figure 7.2 Decision tree on measuring GHG emissions



[HKFRS S2.C4(a), C5]

Transition relief on using the GHG Protocol Corporate Standard for measurement

In the first annual reporting period applying HKFRS S2, an entity is allowed to use its existing method, if the entity used a method other than the GHG Protocol Corporate Standard in reporting period immediately preceding the date of initial application of HKFRS S2, to measure Scope 1, Scope 2 and Scope 3 GHG emissions. Refer to Chapter 1 of the HKFRS SDS Guidance Part 1 for more details on the transition relief.

Proposed Amendments to GHG Emissions Disclosures in IFRS S2

In April 2025, the ISSB published an Exposure Draft ("ED") proposing targeted amendments to IFRS S2 that would provide reliefs to ease the application of requirements related to the disclosure of GHG emissions. The proposed amendments relate to the application of GHG emissions disclosure requirements in IFRS S2, including:

- permission to limit the measurement and disclosure of Scope 3 Category 15: Investments GHG emissions to financed emissions, thus allowing an entity to exclude emissions associated with derivatives and with specific financial activities related to investment banking (facilitated emissions) and insurance and reinsurance underwriting (insurance-associated emissions);
- relief from the use of the Global Industry Classification Standard in applying specific requirements related to the disclosure of information about financed emissions;
- clarification on the scope of the jurisdictional relief available if an entity is required, in whole or in part, by a jurisdictional authority or an exchange on which it is listed to use a method other than the GHG Protocol Corporate Standard to measure GHG emissions; and
- permission to use GWP values other than the GWP values based on a 100-year time horizon from the latest IPCC assessment available at the reporting date, if an entity is required, in whole or in part, by a jurisdictional authority or an exchange on which the entity is listed to use different GWP values.

As HKFRS S2 is fully converged with IFRS S2, the HKICPA issued an Invitation to Comment in April 2025 to seek feedback on the ED.

The ISSB met on 25 September 2025 to discuss stakeholder feedback on the ED and make final decisions on the amendments. It plans to issue the amendments by the end of 2025. The ISSB tentatively decided to require an entity to apply the amendments for annual reporting period beginning on or after 1 January 2027, with early application permitted. Refer to the IFRS Foundation project webpage for most up-to-date information on the proposed amendments.

Updating the GHG Protocol Corporate Standard

GHG Protocol is currently in the process of updating its suite of corporate standards and guidance. These updates are intended to ensure GHG Protocol standards and guidance are effective in providing a rigorous and credible accounting foundation for businesses to measure, plan and track progress toward science-based and net-zero targets.

On 20 October 2025, GHG Protocol announced the release of a public consultation regarding updates to the GHG Protocol Scope 2 Guidance. A second public consultation on Scope 2 topics will follow in 2026, with final publication of the new Scope 2 Standard expected in 2027. Refer to GHG Protocol's public consultations landing page for more information. In addition, GHG Protocol anticipates releasing draft standards/guidance for Corporate Standard and Scope 3 in 2026 and publishing final standards/guidance by the end of 2027.[20]

[20] The timelines are based on the January 2025 update from GHG Protocol's Steering Committee Chair and Vice Chair detailing the key milestones in the standard development and revision process.

7.2 Setting organisational boundary for GHG emissions

[HKFRS S2.B27]

HKFRS S2 requires an entity to use either the equity share approach or the control approach when the entity discloses its GHG emissions measured in accordance with the GHG Protocol Corporate Standard. The GHG Protocol Corporate Standard refers to these approaches as "consolidation[21] approaches", whereas HKFRS S2 refers to these approaches as "measurement approaches". An entity uses its selected approach to determine its organisational boundary.

An entity sets its **organisational boundary** for the basis of GHG emissions measurement. This allows the entity to determine which entity's operations are to be included in the measurement of the entity's Scope 1 GHG emissions, and how GHG emissions of the entity are classified between scopes.

Excerpt from the GHG Protocol Corporate Standard

Definition of organisational boundaries

The boundaries that determine the operations owned or controlled by the reporting company, depending on the consolidation approach taken (equity or control approach).

The GHG Protocol Corporate Standard defines three organisational boundary consolidation approaches that an entity could choose from for measuring its GHG emissions, as shown in Table 7.1 below.

Table 7.1 Organisational boundary consolidation approach[22]

Approach	Definition
Equity share approach	An entity accounts for GHG emissions from operations according to its share of equity in the operation.
Financial control approach	An entity accounts for 100% of the GHG emissions from operations over which it has financial control (i.e. has the ability to direct the financial and operating policies of the operations with a view to gaining economic benefits from its activities).
Operational control approach	An entity accounts for 100% of the GHG emissions from operations over which it has operational control (i.e. has the full authority to introduce and implement the operating policies at the operation).

[21] The GHG Protocol Corporate Standard uses the term "consolidation" differently from HKFRS Accounting Standards: in the GHG Protocol Corporate Standard, "consolidation" is defined as "combination of GHG emissions data from separate operations that form part of one company or group of companies", whereas in HKFRS Accounting Standards, "consolidation" is used to describe the process of identifying the reporting entity.

[22] Adapted from page 17 of the GHG Protocol Corporate Standard.

7.2.1 Selecting an organisational boundary

[HKFRS S2.29(a)(iii)(1), (2)]
[HKFRS S2.27, B27]

An entity's choice of measurement approach can result in its GHG emissions being measured and classified differently. Therefore, HKFRS S2 requires an entity to disclose the approach, inputs and assumptions it uses and the reason for its choice of measurement approach, inputs and assumptions when the GHG Protocol Corporate Standard is applied. The entity is also required to disclose how its choice of approach relates to the disclosure objective to enable primary users to understand its performance in relation to its climate-related risks and opportunities, including progress towards any climate-related targets it has set, and any targets it is required to meet by law or regulation.

Excerpt from the GHG Protocol Corporate Standard

The GHG Protocol Corporate Standard makes no recommendation as to whether voluntary public GHG emissions reporting should be based on the equity share or any of the two control approaches, …

Companies need to decide on the approach best suited to their business activities and GHG accounting and reporting requirements.

The GHG Protocol Corporate Standard provides some examples of factors that may drive the choice of approach for an entity. For example, an entity may consider taking the equity share or financial control approach for closer alignment with its financial accounting. Entities are recommended to read Chapter 3 of the GHG Protocol Corporate Standard for further description of these factors.

[HKFRS S2.29(a)(iii)(3)]

After selecting an approach for measuring GHG emissions, an entity consistently applies the chosen approach for the purpose of measuring and disclosing GHG emissions. If an entity has made any changes to the measurement approach, inputs and assumptions during the reporting period, it is required to disclose the changes and the reasons for those changes.

The relationship between the concept of reporting entity and identification of the organisational boundary

The concept of reporting entity under HKFRS SDS and the identification of the organisational boundary for the measurement of GHG emissions introduced by the GHG Protocol Corporate Standard serve distinct purposes.

[HKFRS S1.20]

An entity's sustainability-related financial disclosures shall be for the same reporting entity as the related financial statements (i.e. the reporting entity determined by applying HKFRS Accounting Standards, for example, the parent and its subsidiaries as the reporting entity for consolidated financial statements prepared in accordance with HKFRS Accounting Standards). Refer to Chapter 2 of the HKFRS SDS Guidance Part 1 for further guidance on the concept of reporting entity.

On the other hand, the determination of the organisational boundary is used in measuring the GHG emissions of the reporting entity. Depending on the choice of approach (equity or control approach) used to combine GHG emissions data from separate operations, the composition of organisational boundary of the entity could be different from the composition of the reporting entity.

Entities are recommended to read Question 6 in "Greenhouse Gas Emissions Disclosure requirements applying IFRS S2 *Climate-related Disclosures*" for the further guidance and examples on these concepts.

[HKFRS S2.29(a)(iv)]

Disaggregate emissions between the consolidated accounting group and other investees

In addition to the requirements to disclose absolute gross Scope 1 and Scope 2 GHG emissions generated during the reporting period, HKFRS S2 requires an entity to disaggregate Scope 1 and Scope 2 GHG emissions between the consolidated accounting group and other investees excluded from the consolidated accounting group. This requirement helps reconcile the above-mentioned differences between the reporting entity and the organisational boundary.

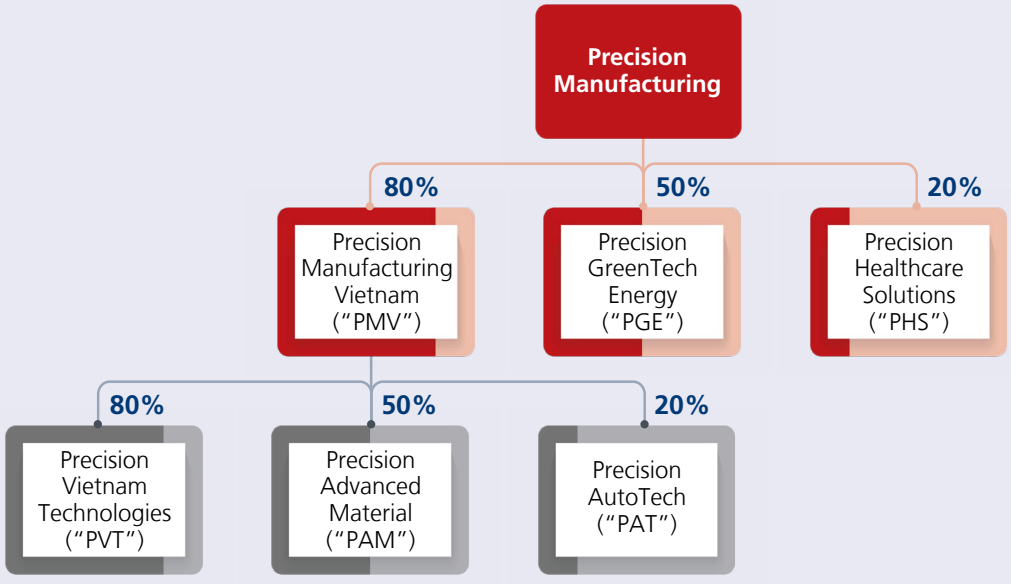
For example, for an entity that prepares its consolidated financial statements in accordance with HKFRS Accounting Standards, joint ventures, associates and unconsolidated subsidiaries are not considered as part of the consolidated accounting group. If the entity elects to use the operational control approach to measure its GHG emissions and includes the emissions from the unconsolidated investees in its Scope 1 and Scope 2 GHG emissions (as the entity has determined it has operational control over the investees), the entity shall disaggregate its Scope 1 and Scope 2 GHG emissions between the consolidated accounting group and the unconsolidated investees.

Entities are recommended to read Appendix A in "Greenhouse Gas Emissions Disclosure requirements applying IFRS S2 *Climate-related Disclosures*" and Example 1 in the HKFRS S2 Accompanying Guidance for illustrative examples in applying HKFRS S2.29(a)(iv).

Example 7.1

An industrial manufacturer's organisational boundary

Precision Manufacturing has investments in associates and joint ventures that are accounted for in the consolidated financial statements using the equity approach under HKFRS Accounting Standards. Below is the organisational chart of Precision Manufacturing.



The ownership interests of Precision Manufacturing in its subsidiaries and investments are as follows.

	PMV	PGE	PHS	PVT	PAM	PAT
Classification in Precision Manufacturing's financial statements	Subsidiary	Joint venture (with another partner)	Associate	Subsidiary	Joint venture (with another partner)	Associate
Ownership interest	80%	50%	20%	64% (= 80% x 80%)	40% (= 80% x 50%)	16% (= 80% x 20%)
Operational control?	Yes	Yes	No	Yes	Yes	No

Precision Manufacturing accounts for GHG emissions from each subsidiary/investment differently depending on the chosen organisational boundary consolidation approach.

Approach	PMV	PGE	PHS	PVT	PAM	PAT
Equity share approach	80%	50%	20%	64%	40%	16%
Financial control approach	100%	50%	0%	100%	50%	0%
Operational control approach	100%	100%	0%	100%	100%	0%

Precision Manufacturing is preparing its 20X6 sustainability report in accordance with HKFRS SDS. Management elects to use the financial control approach as it results in closer alignment between GHG accounting and financial accounting and is consistent with its peer groups. In this case, Precision Manufacturing includes Scope 1, Scope 2 and Scope 3 GHG emissions from PMV, PGE, PVT and PAM in its GHG emissions measurement. As Precision Manufacturing does not have financial control over PHS and PAT, these associates do not fall within the organisational boundary of Precision Manufacturing. However, relevant GHG emissions (e.g. financed emissions associated with its investments) from PHS and PAT would be included in Precision Manufacturing's Scope 3 GHG emissions measurement.

In addition to the requirements to disclose absolute gross Scope 1, Scope 2 and Scope 3 GHG emissions generated during the reporting period, Precision Manufacturing applies the disaggregation requirements in accordance with HKFRS S2.29 (a)(iv) and discloses its Scope 1 and Scope 2 GHG emissions disaggregated between:

- The consolidated accounting group, including Precision Manufacturing, PMV and PVT; and
- Other investees excluded from the consolidated accounting group, including PGE and PAM.

Precision Manufacturing consistently applies the chosen approach to define the organisational boundary for the purpose of measuring and disclosing GHG emissions.

7.3 Measurement methods

In general, GHG emissions could be quantified using two methods, either by direct measurement or by estimation. Of these two methods — and with all else being equal — an entity should prioritise direct measurement as in theory, direct measurement provides the most accurate evidence.

7.3.1 Direct measurement

[HKFRS S2.B21]

Direct measurement refers to the direct monitoring of GHG emissions (e.g. source-specific emission tests or continuous emissions monitoring). If an entity uses direct measurement to measure its GHG emissions, the entity is required to convert the previously mentioned seven constituent GHGs into a CO_2e value using GWP values based on a 100-year time horizon from the latest IPCC assessment available[23] at the reporting date. The formula to calculate emissions of a certain GHG from direct measurement is:

[23] At the time of publication of this guidance, the latest IPCC assessment available is the AR6, finalised in March 2023. Preparers may refer to Table 7.SM.7 of the AR6 for the GWP values at the time. Refer to section 7.1.1 for more details on the proposed amendments which provide relief to ease the application of this requirement.

GHG Emissions by Direct Measurement = Emission Data × GWP value

However, direct measurement is not always feasible, for example, it may be unavailable or prohibitively expensive. As a result, it is more common for emissions to be estimated.

7.3.2 Estimation

[HKFRS S2.BC94] Within each of the three scopes of GHG emissions, there are activities (e.g. electricity consumption, use of fossil fuels) that contribute to the release of GHGs. To make varied activities comparable, GHG emissions are estimated by applying an emission factor to the corresponding activity data. An emission factor is a coefficient that enables an entity to convert quantitative activity data into a measurement of the GHG emissions resulting from those activities.

For example, an entity may apply an emission factor of kilogram CO_2e emitted per litre of fuel consumed to convert an activity data of litre of fuel consumed into GHG emissions data representing the activity of fuel consumption.

[HKFRS S2.B22] The entity is also required to convert the GHGs into a CO_2e value using GWP value based on a 100-year horizon from the latest IPCC assessment available at the reporting period date, unless the emission factor used has already converted the constituent GHGs into CO_2e value.

The formula to estimate emissions of a certain GHG for a certain activity is:

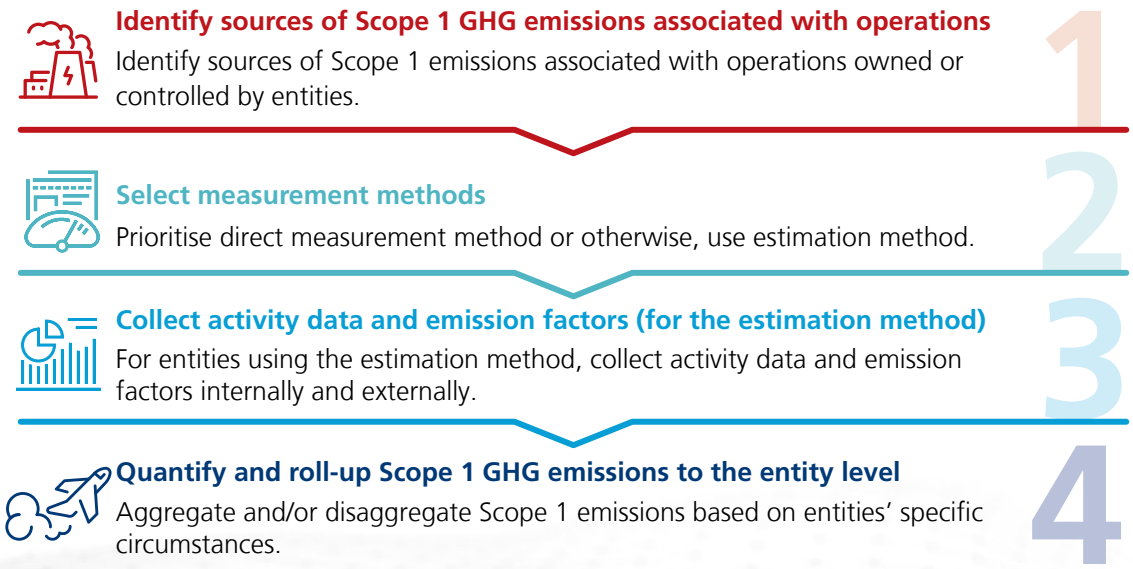
GHG Emissions by Estimation = Activity Data × Emission Factor × GWP value

7.4 Measuring GHG emissions

This section provides suggested steps for measuring Scope 1, Scope 2 and Scope 3 GHG emissions, including identifying sources of direct and indirect emissions associated with operations owned or controlled by entities[24]. The suggested steps are only provided as one example approach, entities may implement other approaches tailored to their specific circumstances.

7.4.1 Scope 1 GHG emissions

Figure 7.3 Step-by-step approach for measuring Scope 1 GHG emissions[25]



[24] According to the GHG Protocol Corporate Standard, after an entity has determined its organisational boundaries in terms of the operations that it owns or controls, it then sets its operational boundaries. This involves identifying emissions associated with its operations, categorising them as direct and indirect emissions, and choosing the scope of accounting and reporting for indirect emissions. It is important to note that unlike GHG Protocol Corporate Standard, HKFRS S2 does not allow the option of reporting Scope 3 GHG emissions and requires the disclosure of Scope 1, Scope 2 and Scope 3 GHG emissions.

[25] Adapted from page 41 of the GHG Protocol Corporate Standard.

Step 1

Identify sources of Scope 1 GHG emissions associated with operations

Scope 1 GHG emissions are the direct emissions that occur from sources that are owned or controlled by an entity. Table 7.2 below provides some typical sources of Scope 1 GHG emissions that may arise from.

Table 7.2 **Sources of Scope 1 GHG emissions[26]**

Sources of Scope 1 GHG emissions	Definition
Stationary combustion	Combustion of fuels in stationary equipment - e.g. furnaces, boilers, heaters
Mobile combustion	Combustion of fuels in transportation devices - e.g. automobiles, trucks, airplanes
Process emissions	Emissions from physical or chemical processes - e.g. calcination in cement manufacturing, aluminium smelting
Fugitive emissions	Intentional and unintentional releases - e.g. equipment leaks, HFC emissions from the use of air-conditioner

Different entities have different businesses, processes, products or services that generate direct emissions from the above sources of Scope 1 GHG emissions. For example, process emissions are usually only relevant to certain industry sectors like oil and gas, aluminium, cement, etc. Entities should identify all direct GHG emission sources based on their specific circumstances.

Step 2

Select measurement methods

With all else being equal, an entity should prioritise direct measurement when it is feasible for quantifying its Scope 1 GHG emissions. For example, some entities might implement an emissions monitoring system to measure the concentration and/or flow rate of the emissions from their own furnaces or boilers.

However, management of an entity should apply judgement in determining which measurement methods to be applied for quantifying its Scope 1 GHG emissions. For example, when an entity's emissions monitoring system can only cover a limited portion of its activities, it may prioritise the use of the estimation method for consistency and comparability.

Step 3

Collect activity data and emission factors (for the estimation method)

Activity data

The table below provides some examples where an entity may gather activity data from various sources of Scope 1 GHG emissions.

Table 7.3 **Activity data and documentation sources for Scope 1 GHG emissions[27]**

Sources of emissions	Examples of activity data	Examples of documentation sources
Stationary combustion	Quantity of fuel consumed, heat contents and carbon contents used, prices of fuel	Purchase receipts or utility bills, delivery receipts, contract purchase or firm purchase records, stock inventory documentation, metered fuel documentation, industry reports

[26] Adapted from page 27 of the GHG Protocol Corporate Standard.

[27] Adapted from the Scope 1 and Scope 2 Inventory Guidance published by the United States Environmental Protection Agency ("US EPA") and the sector-specific tools published by the GHG Protocol.

Sources of emissions	Examples of activity data	Examples of documentation sources
Mobile combustion	Quantity of fuel consumed, distance travelled by the mobile vehicle, heat contents and carbon contents used, prices of fuel	Purchase receipts or utility bills, delivery receipts, contract purchase or firm purchase records, stock inventory documentation, metered fuel documentation, industry reports, official odometer logs, company fleet records
Process emissions	Quantity of materials consumed, quantity of products produced, quantity of fuel consumed	Direct metering of the process, facility process data records or corresponding financial records
Fugitive emissions	Inventory of refrigerants at beginning and end of year, purchases, capacity of equipment, amounts charged to equipment, amounts recovered from equipment	Stock inventory documentation, purchase receipts, delivery receipts, contracts, repair records

Emission factors

[HKFRS S2.B29]

Emission factors for quantifying Scope 1 GHG emissions could be found from several published sources. For example, the GHG Protocol provides calculation tools and emission factors for different sources of Scope 1 GHG emissions that could be used by entities at their discretion. The IEA also publishes subscription-based emissions factors data sets periodically. Entities should select and use emission factors that best represent their activities as the basis for measuring their GHG emissions.

Step 4

Quantify and roll-up Scope 1 GHG emissions to the entity level

With the above three steps, an entity could then quantify Scope 1 GHG emissions from all the identified sources of emissions and roll them up to the entity level. The GHG Protocol Corporate Standard introduces two approaches that entities may apply for gathering data on GHG emissions from the entities' facilities, namely centralised approach and decentralised approach[28]. Entities may also implement other approaches tailored to their specific circumstances to aggregate Scope 1 GHG emissions to the entity level.

Example 7.2

A restaurant's measurement of its Scope 1 GHG emissions

Golden Dragon Restaurant Ltd. ("Golden Dragon") owns and operates a restaurant in Hong Kong. Golden Dragon is measuring its Scope 1 GHG emissions in 2024.

Step 1: Identify sources of Scope 1 GHG emissions associated with operations

Golden Dragon determines its sources of Scope 1 GHG emissions are from stationary combustion of town gas for cooking and fugitive emissions from the use of refrigeration and air-conditioning equipment in its restaurant.

Step 2: Select measurement methods

As Golden Dragon does not install any on-site emissions monitoring system for its Scope 1 GHG emissions, it uses the estimation method to quantify the Scope 1 GHG emissions from the identified sources.

[28] Refer to pages 46-47 of the GHG Protocol Corporate Standard for guidance on these approaches.

Step 3: Collect activity data and emission factors

- **Combustion of town gas:** Golden Dragon collects the activity data (i.e. quantity of town gas consumed in 2024) from the gas bills and identifies the emission factor for town gas from the 2024 ESG Report of its town gas supplier, The Hong Kong and China Gas Company Limited.

Quantity of town gas consumed in 2024	Emission factor for town gas in 2024
1,800 units	2.553 kilogram ("kg") CO_2e /unit of town gas[29]

- **Use of refrigeration and air-conditioning equipment:** Golden Dragon collects the activity data (i.e. the number of equipment, refrigerant used, the original refrigerant charge in each equipment) from its stock inventory documentations and purchase receipts and chooses the emission factors (i.e. annual HFC leakage rate from equipment) based on the Refrigeration and Air-Conditioning Equipment tool of GHG Protocol. The GWP value of the Refrigerant used is obtained from the IPCC AR6.

Equipment type	Number of equipment	Refrigerant used	GWP value	Original refrigerant charge (kg)	Annual leakage rate (%)
Refrigerator	5	R134a	1,530	80	20
Air-conditioner	2	R134a	1,530	10	5

Step 4: Quantify and roll-up Scope 1 GHG emissions to the entity level

Golden Dragon quantifies the Scope 1 GHG emissions from all the identified sources and aggregates them to the entity level.

- The stationary combustion emissions associated with the combustion of town gas is:

  1,800 units × 2.553 kgCO_2e/unit of town gas × 1 metric tonne ("t")/1,000 kg = 4.5954 tCO_2e

- Golden Dragon calculates fugitive emissions from refrigeration and air-conditioning by using the following formula from the Refrigeration and Air-Conditioning Equipment tool of GHG Protocol.

  Emissions from operation of refrigeration/air-conditioning equipment = number of equipment × original refrigerant charge in each equipment × annual leakage from equipment × GWP value × conversion factor

The fugitive emissions associated with the use of refrigeration and air-conditioning equipment is:

5 × 80kg × 20% × 1,530 ×1t/1,000kg + 2 × 10kg × 5% × 1,530 × 1t/1,000 kg = 123.93tCO_2e

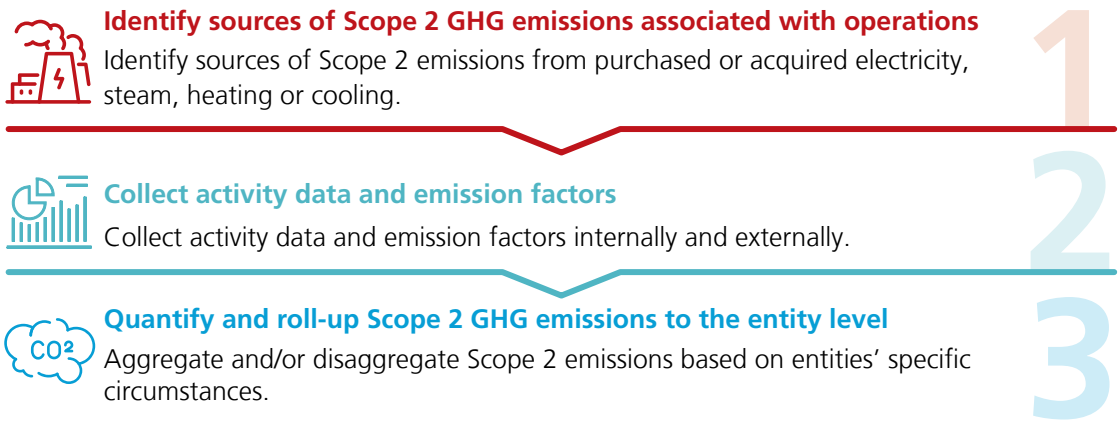
Hence, the absolute gross Scope 1 GHG emissions of Golden Dragon is:

4.5954 tCO_2e + 123.93 tCO_2e = 128.53 tCO_2e (rounding to 2 decimal places)

[29] Adapted from page 106 of ESG Report 2024 of The Hong Kong and China Gas Company Limited.

7.4.2 Scope 2 GHG emissions

Figure 7.4 Step-by-step approach for measuring Scope 2 GHG emissions



Step 1 Identify sources of Scope 2 GHG emissions associated with operations

Scope 2 GHG emissions arise from the generation of purchased or acquired electricity, steam, heating or cooling consumed by an entity. These emissions are considered an indirect emissions source because they are a consequence of activities of the entity, but physically occur at sources owned or controlled by another entity. Entities should identify all the above-mentioned Scope 2 GHG emission sources based on their specific circumstances.

Step 2 Collect activity data and emission factors

Given the nature of Scope 2 GHG emissions, it is unlikely that an entity could quantify them with the direct measurement method. To quantify Scope 2 GHG emissions, an entity applies the estimation method with the use of activity data, emission factors and GWP values.

Activity data

Metered electricity, steam, heating or cooling consumption or utility bills specifying consumption could usually provide the most precise activity data. If purchase data is not available for certain operations, an estimation should be made for data completeness. For example, if an entity is one of many tenants in a leased building and electricity consumption data for the entity's occupied space is not available due to lack of energy submetering, estimations may be used to allocate an entire building's electricity usage to all tenants on the basis of the entity's occupied floor area and the building's occupancy rate.

Emission factors

[HKFRS S2.29(a)(v)] [HKFRS S2.BC106, BC107]

HKFRS S2 requires an entity to disclose its Scope 2 GHG emissions using a location-based approach[30] and provide information about any contractual instruments[31] the entity has entered into that could inform users' understanding of the entity's Scope 2 GHG emissions. Under this approach, an entity measures the average emissions intensity of the grids on which energy consumption occurs (most commonly using grid-average emission factor data). This approach enables primary users to understand the risks and opportunities associated with local grid resources and GHG emissions.

Location-based approach emission factors could be sourced from publicly available and subscription-based data sets and/or reports. Entities should use the most appropriate, accurate, precise and highest quality emission factors available when calculating Scope 2 GHG emissions using the location-based approach. Below is a non-exhaustive list of examples of emission factor data sets and reports that entities may consider.

- Guidelines to Account for and Report on Greenhouse Gas Emissions and Removals for Buildings (Commercial, Residential or Institutional Purposes) in Hong Kong

[30] Refer to "GHG Protocol Scope 2 Guidance" for further description of the location-based approach.

[31] Contractual instruments are any type of contract between an entity and another party for the sale and purchase of energy bundled with attributes about the energy generation or for unbundled energy attribute claims (unbundled energy attribute claims relate to the sale and purchase of energy that is separate and distinct from the greenhouse gas attribute contractual instruments). **[HKFRS S2.B31]**

- Database of National Greenhouse Gas Emission Factor (China)
- Government conversion factors for company reporting of greenhouse gas emissions (United Kingdom)
- Emissions & Generation Resource Integrated Database (United States)
- GHG Protocol – Emission Factors from Cross-Sector Tools
- IEA national electricity emission factors (subscription-based)

Step 3

Quantify and roll-up Scope 2 GHG emissions to the entity level

Similar to Scope 1 GHG emissions, an entity could then quantify Scope 2 GHG emissions from all the identified sources of emissions and roll them up to the entity level.

Example 7.3

An information technology services company's measurement of its Scope 2 GHG emissions

Tech Solutions Ltd. ("Tech Solutions") operates offices in Hong Kong and it is measuring its Scope 2 GHG emissions in 2024.

Step 1: Identify sources of Scope 2 GHG emissions associated with operations

Tech Solutions operates two offices, one in Eastern District and another in Kwun Tong District. It determines its sources of Scope 2 GHG emissions are from the generation of purchased electricity provided by The Hongkong Electric Company, Limited ("HK Electric") and CLP Power Hong Kong Limited ("CLP Power"). It did not purchase any steam, heating or cooling in 2024.

Step 2: Collect activity data and emission factors

Tech Solutions collects the activity data (i.e. quantity of electricity consumed in 2024) from the electricity bills and obtains the emission factor for the generation of purchased electricity from the 2024 sustainability disclosures of its electricity suppliers.

Electricity supplier	Quantity of electricity consumed in 2024 (kWh)	Emission factor for electricity in 2024
HK Electric	30,000	0.60 $kgCO_2e/kWh$[32]
CLP Power	20,000	0.38 $kgCO_2e/kWh$[33]

Step 3: Quantify and roll-up Scope 2 GHG emissions to the entity level

Tech Solutions quantifies the Scope 2 GHG emissions for location-based method from all the identified sources and aggregates them to the entity level.

- The Scope 2 GHG emissions associated with generation of purchased electricity from the grid distribution area covered by HK Electric:

  $$30{,}000\ kWh \times 0.60\ kgCO_2e/kWh \times 1t/1{,}000\ kg = 18tCO_2e$$

- The Scope 2 GHG emissions associated with generation of purchased electricity from the grid distribution area covered by CLP Power:

  $$20{,}000\ kWh \times 0.38\ kgCO_2e/kWh \times 1t/1{,}000\ kg = 7.6tCO_2e$$

Hence, the absolute gross Scope 2 GHG emissions for location-based method of Tech Solutions is:

$$18tCO_2e + 7.6tCO_2e = 25.6tCO_2e$$

[32] Adapted from the figure "Carbon emissions per electricity unit sold" disclosed on page 104 of Sustainability Report 2024 of HK Electric Investments and HK Electric Investments Limited.

[33] Adapted from the figure "CO_2e emissions intensity of electricity sold by CLP Power Hong Kong" disclosed on ESG Data Hub of CLP Holdings Limited.

7.4.3 Scope 3 GHG emissions

[HKFRS S2.B32]

HKFRS S2 does not require an entity to include all 15 Scope 3 categories as shown in Figure 7.1 in its measurement and disclosure of Scope 3 GHG emissions. However, an entity is required to consider its entire value chain (upstream and downstream) and shall consider all 15 categories of Scope 3 GHG emissions to determine which categories are relevant. The entity shall disclose which of these categories are included in its Scope 3 GHG emissions disclosures.

[HKFRS S2.29(a)(i)(3)]

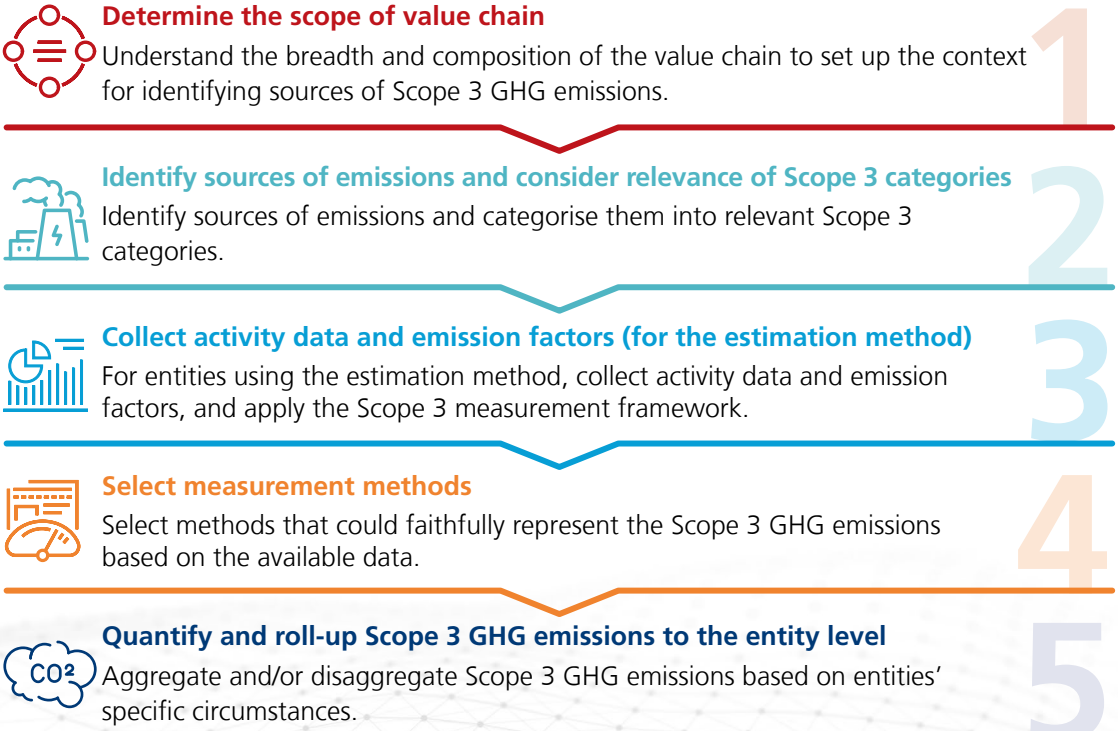
The concept of time boundary in GHG Protocol Corporate Value Chain Standard

An entity is required to disclose its absolute gross Scope 3 GHG emissions generated during the reporting period. In this context, the emissions are referred to the emissions associated with an entity's activities in the reporting period, even the emissions may have occurred in previous years or are expected to occur in future years.

For example, the upstream emissions of purchased goods and services from Scope 3 Category 1: Purchased Goods and Services may have occurred in previous years while the emissions associated with the use of sold products from Scope 3 Category 11: Use of Sold Products are expected to occur in future years. The GHG Protocol Corporate Value Chain Standard introduces the concept of time boundary[34] which is designed to account for all emissions related to the entity's activities in the reporting period, regardless of the period in which the Scope 3 GHG emissions take place. This concept of time boundary of Scope 3 GHG emissions may provide guidance for entities to determine the scope of its Scope 3 GHG emissions disclosure.

The following practical steps may guide an entity to measure its relevant Scope 3 GHG emissions.

Figure 7.5 **Step-by-step approach for measuring Scope 3 GHG emissions**



[34] Refer to pages 32 to 33 of the GHG Protocol Corporate Value Chain Standard for further details on the concept of time boundary.

Step 1

Determine the scope of value chain

Understanding and mapping interactions, resources and relationships an entity uses and depends on is the initial context-setting step to help the entity identify the sources of Scope 3 GHG emissions from its upstream and downstream value chain. For details on how to assess the scope of an entity's value chain, refer to Chapter 3 of the HKFRS SDS Guidance Part 1.

Step 2

Identify sources of emissions and consider relevance of Scope 3 categories

After determining the scope of value chain, an entity should have an understanding on the components of its upstream and downstream value chain. An entity may utilise published resources as an initial guide to identify the sources of Scope 3 GHG emissions and consider the relevance of the 15 Scope 3 categories. For example, Appendix D of the GHG Protocol Corporate Standard, CDP Technical Note: Relevance of Scope 3 Categories by Sector, and the Sector Guidance of the Science Based Targets Initiative provide examples of Scope 3 GHG emission sources of different sectors.

To determine which Scope 3 categories are relevant to an entity, an entity shall assess whether the disclosure of which categories would provide primary users with decision-useful information. It may consider the relevance of categories in terms of size (of those emissions relative to other aspects of the entity's GHG emissions), stakeholders' (particularly investors') attention and contributions to climate-related risks exposure, based on its specific circumstances. Refer to section 4.3 of Chapter 4 of the HKFRS SDS Guidance Part 1 for further guidance on identifying and disclosing material information.

For example, a property developer depends on selling its properties to generate cash flows. It identifies that the lifetime in-use operational emissions of its sold properties in the reporting year is one of its Scope 3 GHG emission sources, and determines that disclosing it would provide primary users with decision-useful information based on the consideration of stakeholders' attention. It then categorises the emissions in Scope 3 Category 11: Use of Sold Products and determines that Category 11 is a relevant category of its Scope 3 GHG emissions.

The Scope 3 GHG emission boundaries

An entity is required to include the GHG emissions associated with each relevant category in its Scope 3 GHG emissions if this disclosure would provide primary users with material information. Preparers are not permitted to limit their measurements and disclosures of Scope 3 GHG emissions on the basis of the minimum boundaries outlined in Table 5.4 of the GHG Protocol Corporate Value Chain Standard.

Using initial GHG estimation to identify Scope 3 GHG emissions hotspots

Identifying hotspots of Scope 3 GHG emissions (i.e. where GHG emissions are concentrated across an entity's value chain) could be useful for an entity to assess the relevance of Scope 3 categories and facilitate its data collection process. It may also help an entity identify and prioritise GHG emissions reduction opportunities across its value chain.

An entity may use initial GHG estimation as a starting point for identifying hotspots of Scope 3 GHG emissions. It could be done by using less-specific data, for example, spend-based industry-average data from environmentally-extended input output ("EEIO") models, to quantify the Scope 3 GHG emissions.

EEIO models estimate energy use and/or GHG emissions resulting from the production and upstream supply chain activities of different sectors and products in an economy, which could be particularly useful for initial GHG estimation for Scope 3 Category 1: Purchased Goods and Services, Category 2: Capital Goods, Category 4: Upstream Transportation and Distribution and Category 9: Downstream Transportation and Distribution.

Below are some examples of published EEIO database that entities may consider.

- China Environmental Extended Input-Output Database
- EXIOBASE
- World Input-Output Database
- Supply Chain Greenhouse Gas Emission Factors by US EPA

For other Scope 3 categories, an entity may use the less-specific data listed for each category in the "Technical Guidance for Calculating Scope 3 Emissions: Supplement to the Corporate Value Chain (Scope 3) Accounting & Reporting Standard" ("Scope 3 Technical Guidance") for the initial GHG estimation. This quantitative approach of initial GHG estimation gives the entity a better understanding of the relative magnitudes of various Scope 3 activities and provides insights for the management to apply judgement.

[HKFRS S2.B34, B35]

Reassessing which Scope 3 categories and entities to include in Scope 3 GHG emissions

If there is a significant event or significant change in circumstances (e.g. acquisition and divestment in the reporting period), an entity is required to reassess the scope of the affected climate-related risks and opportunities throughout its value chain, including reassessing which Scope 3 categories and entities throughout its value chain to include in the measurement of its Scope 3 greenhouse gas emissions. To ease application, an entity is not required to reperform the identification and assessment process at each reporting date.

Refer to Table 4.1 of Chapter 4 of the HKFRS SDS Guidance Part 1 for the examples of circumstances that may trigger reassessment of the scope of sustainability-related risks and opportunities in the value chain. These examples apply equally to climate-related risks and opportunities.

Step 3

Collect activity data and emission factors (for the estimation method)

Scope 3 GHG emissions could be measured either by direct measurement or, if not feasible, by estimation. By applying the estimation method, the emissions could be quantified with the use of activity data, emission factors and GWP values.

[HKFRS S2.B46, B48, B49]

In general, there are two types of data[35] that an entity could use for the measurement of its Scope 3 GHG emissions, as illustrated in Table 7.4.

Table 7.4 Types of data

Data Types	Definition	Examples
Primary data	Data obtained directly from specific activities within the entity's value chain	• Data collected internally through the entity's own records (e.g. quantity of products sold, quantity of money spent) • Data collected externally from suppliers and other value chain partners (e.g. supplier-specific emission factors for purchased goods or services)

[35] The term "data" used here includes both activity data and emission factors.

Data Types	Definition	Examples
Secondary data	Data not obtained directly from specific activities within the entity's value chain	• Data supplied by third-party data providers and industry-average data (e.g. from published databases, government, statistics, literature studies and industry associations) • Data used to approximate the activity or emission factors • Primary data from a specific activity (proxy data) used to estimate GHG emissions for another activity

Scope 3 measurement framework

[HKFRS S2.B38, B40] An entity is required to use a measurement approach, inputs and assumptions that result in a faithful representation of the measurement. To help an entity select the appropriate inputs and assumptions for measuring its Scope 3 GHG emissions, HKFRS S2 provides a Scope 3 measurement framework that requires an entity to prioritise inputs and assumptions with characteristics designed to improve the representational faithfulness of the entity's GHG emission measurement, namely:

[HKFRS S2.B43] • data based on direct measurement[36];

[HKFRS S2.B47] • data from specific activities within the entity's value chain (i.e. primary data); and

[HKFRS S2.B53] • data that has been verified[37].

If an entity uses data not obtained directly from activities within its value chain (i.e. secondary data), it shall prioritise the use of activity or emission data that is:

[HKFRS S2.B50] • based on, or represents, the technology used in the value chain activity the data is intended to represent;

[HKFRS S2.B51] • based on, or represents, the jurisdiction in which the activity happened; and

[HKFRS S2.B52] • timely and representative of the entity's value chain activity during the reporting period.

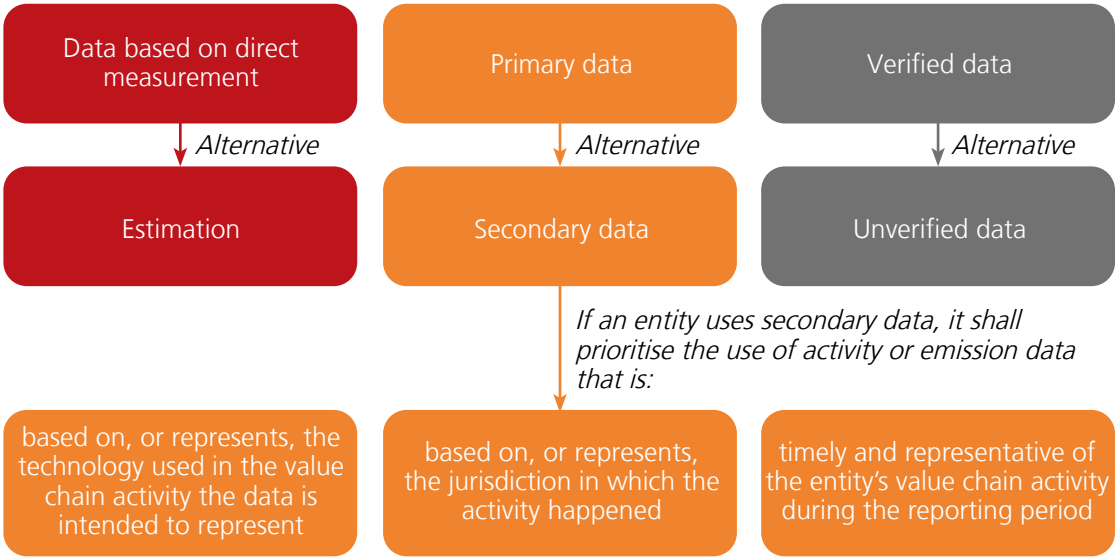
[HKFRS S2.BC118] **[HKFRS S2.B41]** These characteristics are not listed in order of priority. Instead, these are desired characteristics required to be considered when an entity determines which combination of measurement approaches, inputs and assumptions is most appropriate to faithfully represent its value chain activities and GHG emissions. An entity is required to apply the Scope 3 measurement framework to prioritise inputs and assumptions even when the entity is required by a jurisdictional authority or an exchange on which the entity is listed to use a method other than the GHG Protocol Corporate Standard for measuring its GHG emissions or whether the entity uses the transition relief on using the GHG Protocol Corporate Standard for measurement.

[36] It is expected that Scope 3 GHG emissions will include estimation due to the challenges associated with direct measurement of Scope 3 GHG emissions. [HKFRS S2.B44]

[37] Verified data might include data that has been internally or externally verified. Verification can take place in several ways, including on-site checking, reviewing calculations, or cross-checking of data against other sources. [HKFRS S2.B54]

Figure 7.6 **Prioritisation of Scope 3 measurement framework identifying characteristics[38]**

An entity shall prioritise:



[HKFRS S2.B39] An entity is also required to use all reasonable and supportable information that is available to the entity at the reporting date without undue cost or effort in selecting the measurement approach, inputs and assumptions for measuring Scope 3 GHG emissions.

[HKFRS S2.B55, B56]

Disclosure of inputs to Scope 3 GHG emissions

As part of the requirements in HKFRS S2.29(a)(iii), an entity is required to disclose information about the characteristics of the data inputs as described above to provide primary users with information about how the entity has prioritised the highest quality data available, which faithfully represents the value chain activity and its Scope 3 GHG emissions. Specifically, the entity is required to disclose information that enables primary users to understand:

- the extent to which the entity's Scope 3 GHG emissions are measured using inputs from specific activities within the entity's value chain; and
- the extent to which the entity's Scope 3 GHG emissions are measured using inputs that are verified.

Step 4

Select measurement methods

The 15 categories of Scope 3 GHG emissions represent a variety of sources of emissions across entities' value chain, and hence the measurement methods and data collection methods could be very different. HKFRS S2 does not prescribe any specific methodology for calculating the 15 categories of Scope 3 GHG emissions. Entities may find it helpful to read the Scope 3 Technical Guidance for detailed guidance for the measurement of Scope 3 GHG emissions, including measurement methods, data (including activity data and emission factors) sources and worked examples. The Scope 3 Technical Guidance also provides insights on the considerations of selecting measurement methods for each of the 15 Scope 3 categories.

[38] Refer to Question 7 of "Greenhouse Gas Emissions Disclosure requirements applying IFRS S2 *Climate-related Disclosures*"

For example, the Scope 3 Technical Guidance defines supplier-specific method, hybrid method, average-data method and spend-based method for quantifying Scope 3 Category 1: Purchased Goods and Services, ranked in order of data specificity (i.e. the data used in the method is more specific to the activity of an entity). Entities may utilise the decision tree (Figure 1.2 of the Scope 3 Technical Guidance) to select the measurement method to quantify their Scope 3 Category 1 GHG emissions, to the extent that it does not conflict with the requirements in HKFRS SDS.

[HKFRS S2.B42]

Key considerations in selecting measurement methods for Scope 3 GHG emissions

An entity's prioritisation of the measurement approach, inputs and assumptions and the entity's considerations of associated trade-offs—based on the characteristics in HKFRS S2.B40—requires management to apply judgement.

One of the key considerations is data availability. For example, the Scope 3 Technical Guidance defines three methods for the measurement of Scope 3 Category 6: Business Travel GHG emissions, namely fuel-based method, distance-based method and spend-based method (ranked in order of data specificity). An entity should prioritise the fuel-based method over the distance-based method, which in turn should be prioritised over the spend-based method when measuring Scope 3 Category 6 GHG emissions, if the data for these methods is available without undue cost and effort and with all else being equal. Management has to apply judgement on whether the more specific data could be obtained without undue cost and effort.

Another key consideration is data quality. An entity shall apply the Scope 3 measurement framework to prioritise data and inputs that are most appropriate to faithfully represent its value chain activities and GHG emissions. Below are some examples of an entity's considerations of associated trade-offs:

- **Trade-offs between timely data and data that is more representative of the jurisdiction and technology used for the value chain activity and its emissions:** More recent data might provide less detail about the specific activity, including the technology that was used in the value chain and the location of that activity. On the other hand, older data that is published infrequently might be considered more representative of the specific activity and its GHG emissions.
- **Trade-offs between data that has been verified and data that is more representative of the jurisdiction and technology used for the value chain activity and its emissions:** Data that has been verified might provide less detail about the specific activity, whereas unverified data might be considered more representative of the specific activity and its GHG emissions.

[HKFRS S2.B57]

Developing estimates for measuring Scope 3 GHG emissions

HKFRS S2 includes the presumption that Scope 3 GHG emissions can be estimated reliably using secondary data and industry averages. In those rare cases when an entity determines it is impracticable to estimate its Scope 3 GHG emissions, the entity shall disclose how it is managing its Scope 3 GHG emissions. Applying a requirement is impracticable when the entity cannot apply it after making every reasonable effort to do so.

[HKFRS S2.BC121]

HKFRS S2 uses the same definition of "impracticable" as HKAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors* (HKAS 8 *Basis of Preparation of Financial Statements* for annual reporting periods beginning on or after 1 January 2027) and thus sets a high threshold (higher than a cost-benefit threshold) for how an entity determines whether it is impracticable to meet the requirements. With the above presumption, it is expected that entities will rarely use the exemption because the measurement framework for Scope 3 GHG emissions has been designed to be applied by entities with a range of resources and circumstances. The framework also permits the use of estimation, which could be based on third-party information (for example, industry-average information).

The Scope 3 measurement framework also uses the word "prioritise" for the listed desired characteristics of inputs and assumptions used in Scope 3 measurement, which means in the case that inputs and assumptions with these desired characteristics are not available without undue cost or effort, the entity should use the "less desired" inputs and assumptions, for example, proxy data, to estimate the Scope 3 GHG emissions, instead of opting out the measurement.

Proxy data is the data derived from a similar activity that is used as a substitute for the actual activity. Below are some examples of using proxy data to estimate Scope 3 GHG emissions:

- Jinlong Foods is calculating its Scope 3 Category 1: Purchased Goods and Services GHG emissions from purchased goods and services. While cradle-to-gate emission factor for oats is available without undue cost or effort, the emission factor for barley is unavailable. Jinlong Foods applies judgement based on the similarity of farming practices between oat and barley production, assumes the cradle-to-gate emission factor of these two ingredients to be similar, and hence uses the cradle-to-gate emission factor for oats as a proxy to estimate the GHG emissions for barley.
- Unity Group is a diversified conglomerate that provides commercial lending as part of its business. Unity Group is calculating its Scope 3 Category 15: Investments GHG emissions from these lending. It collects GHG emission data from 90% of its borrowers of business loans. For those 10% of borrowers with unknown GHG emissions, Unity Group considers that borrowers from the same sector share similar characteristics, assumes the GHG emissions data from these borrowers are similar and hence uses the collected GHG emissions data from the same sectors as a proxy to estimate the GHG emissions for the 10% of borrowers with unknown GHG emissions.

The EEIO databases provided in Step 2 of this section could be useful resources for entities to estimate GHG emissions of the actual activity from a similar activity. For example, an entity may use EEIO data from similar geographical region, similar product/service or similar sector to estimate the emissions from the actual activity when the data with "desired characteristics" is not available.

Step 5

Quantify and roll-up Scope 3 GHG emissions to the entity level

After quantifying all relevant Scope 3 GHG emissions, an entity could then roll them up to the entity level and disclose based on its specific circumstances.

[HKFRS S2.29(a)(vi)(1)]

[HKFRS S1.B30]

Disaggregation of Scope 3 GHG emissions by category

In addition to disclosing absolute gross Scope 3 GHG emissions, an entity is required to disclose which of the 15 categories are included in its measure of the Scope 3 GHG emissions. While an entity is not required to disaggregate Scope 3 GHG emissions by the amount classified into each category, HKFRS S1 also states that an entity shall not aggregate information if doing so would obscure information that is material.

Therefore, management of an entity should apply judgement to disaggregate its Scope 3 GHG emissions to the extent necessary to ensure that material information is not obscured.

Refer to Example 2 of the HKFRS S2 Accompanying Guidance for illustrative example and consideration in disaggregating Scope 3 GHG emissions by category.

[HKFRS S2.29(a)(vi)(2), B37, B58 – B63]

Disclosing additional information about Scope 3 Category 15 GHG emissions

An entity is required to disclose additional information about its Category 15 GHG emissions or those associated with its investments (i.e. financed emissions), if the entity's activities include asset management, commercial banking or insurance.

[HKFRS S2.B38]

HKFRS S2 does not prescribe any specific methodology for an entity to use in calculating Scope 3 Category 15 financed emissions. Entities may find it helpful to read "PCAF (2022). The Global GHG Accounting and Reporting Standard Part A: Financed Emissions. Second Edition." ("PCAF Standard – Part A") for guidance on the measurement methods and data collection of financed emissions for different asset classes. Management of an entity is required to apply judgement on whether the measurement approach, inputs and assumptions taken provides a faithful representation of the entity's Scope 3 GHG emissions.

Entities are also recommended to read Example 4 and Example 5 of the HKFRS S2 Accompanying Guidance for illustrative examples and considerations in disaggregating financed emissions in asset management.

Example 7.4

A property developer's measurement on its Scope 3 Category 15: Investments GHG emissions

HarbourBuild Holdings Ltd. ("HarbourBuild") is a Hong Kong-listed property developer and contractor. Its core business focuses on sustainable urban development and innovative construction technologies.

Although HarbourBuild's activities do not include asset management, commercial banking or insurance, it considers increasing stakeholders' attention on its emissions associated with investments and determines that disclosing Scope 3 Category 15 GHG emissions would provide primary users with decision-useful information. HarbourBuild identifies the sources of its financed emissions and measures the emissions by applying the measurement methods in the PCAF Standard – Part A.

As of the end of 20X5, HarbourBuild's portfolio included a mixture of assets that reflect its position as an investor.

Types of Investment	Equity/Asset	HarbourBuild's Involvement/ Exposure
Listed Equity Investment	Urban Edge Developers Ltd. ("Urban Edge")	HarbourBuild's stake worths HK$60 million
Unlisted Equity Investment	Greenstone Ltd. ("Greenstone")	210,025 shares

Listed Equity Investment: Urban Edge

Even though HarbourBuild does not own or control Urban Edge, by holding a financial stake, HarbourBuild is responsible for a proportional share of its GHG emissions. The proportion share is determined by the attribution factor, which reflects HarbourBuild's share of the company's total financing. The formula to calculate the attribution factor is:[39]

$$\text{Attribution Factor} = \frac{\text{Outstanding amount}}{\text{Enterprise Value Including Cash}}$$

Definitions

Outstanding amount: the financial year-end market value of outstanding listed equity

Enterprise Value Including Cash ("EVIC"): the sum of the market capitalisation of ordinary shares at fiscal year-end. No deductions of cash or cash equivalents are made to avoid the possibility of negative enterprise values. The EVIC could usually be derived from the investee company's financial statements or sourced from financial data providers.

Urban Edge has a reporting period ending 30 September. HarbourBuild obtains the EVIC and GHG emissions data of Urban Edge in 20X5 from the company's published financial and sustainability disclosures.

Data obtained from Urban Edge's public disclosures	
EVIC	HK$3,000 million
Absolute gross GHG emissions (including Scope 1, Scope 2 and Scope 3; third-party assured)	2,500,000 tCO_2e

It adopts Option 1a in the PCAF Standard – Part A to quantify the financed emissions. The formula to calculate the financed emissions is:[40]

Financed emissions of listed equity = Attribution Factor × Verified company emissions

The financed emissions associated with the listed equity investment in Urban Edge is:

$$\frac{HK\$60\ million}{HK\$3,000\ million} \times 2,500,000\ tCO_2e = 50,000\ tCO_2e$$

This is HarbourBuild's share of Urban Edge's annual emissions and should be reported under its Scope 3 Category 15. This step ensures HarbourBuild is only allocated a fair and proportional slice of Urban Edge's footprint which is consistent with its financial exposure. For further details on the calculation methodology, refer to Section 5.1: Listed equity and corporate bonds of the PCAF Standard – Part A.

Unlisted Equity Investment: Greenstone

HarbourBuild also holds an equity investment in Greenstone, which is a privately held company specialising in transport and utilities projects. Since Greenstone is a private company and unlisted, the data availability for both financial and emissions is more limited. In such case, HarbourBuild applies the measurement method in the PCAF Standard – Part A with the best available data supplemented with reasonable estimates. Similar to the case of Urban Edge, HarbourBuild does not own or control Greenstone. It is only responsible for a proportional share of Greenstone's emissions. The proportion share is determined by the attribution factor, which reflects HarbourBuild's share of the company's total financing.

The formula to calculate the outstanding amount for unlisted equity is:[41]

$$\text{Outstanding amount for unlisted equity} = \frac{\text{Number of shares that the company holds}}{\text{Total number of shares issued by the investee}} \times \text{Total equity}$$

[39] Adapted from pages 52-54 of PCAF Standard – Part A.
[40] Adapted from page 142 of PCAF Standard – Part A.
[41] Adapted from pages 69-70 of PCAF Standard – Part A.

The formula to calculate the attribution factor for unlisted equity is:

$$\textit{Attribution factor} = \frac{\textit{Outstanding amount}}{\textit{Total equity + debt of the investee}}$$

Definition

Outstanding amount: the outstanding value of equity that the financial institution holds in the private company

Greenstone has the same reporting year-end as HarbourBuild. To obtain the required information, HarbourBuild directly requests the latest audited financial statements from Greenstone with details extracted below.

Greenstone's Financial Position as of 31 Dec 20X5	
Total Equity	HK$5,850 million
Total Debt	HK$2,350 million
Total Equity and Debt	HK$8,200 million
Total Shares Issued	1,000,000

Given that HarbourBuild owns 210,025 shares issued by Greenstone. HarbourBuild is considered responsible for 15% of Greenstone's reported annual emissions.

- Calculation of total outstanding amount: $\frac{210{,}025\ \textit{shares}}{1{,}000{,}000\ \textit{shares}} \times \textit{HK\$5,850 million} = \textit{HK\$1.23 billion}$
- Calculation of attribution factor: $\frac{\textit{HK\$1.23 billion}}{\textit{HK\$8.20 billion}} = 0.15$

HarbourBuild also obtains unverified GHG emissions data from Greenstone directly. The absolute gross GHG emissions (including Scope 1, Scope 2 and Scope 3) from Greenstone in 20X5 is 1.2 million tCO_2e. HarbourBuild adopts Option 1b in the PCAF Standard-Part A to quantify the financed emissions with the formula below:

$$\textit{Financed emissions} = \textit{Attribution factor} \times \textit{Unverified company emissions}$$

- Calculation of financed emissions: $15\% \times 1{,}200{,}000\ tCO_2e = 180{,}000\ tCO_2e$

This is HarbourBuild's share of Greenstone's annual emissions and should be reported under its Scope 3 Category 15. This step ensures HarbourBuild is only allocated a fair and proportional slice of Greenstone's footprint which is consistent with its financial exposure. For further details on the calculation methodology, refer to Section 5.2: Business loans and unlisted equity of PCAF Standard – Part A.

In case where investee companies do not disclose financial information or GHG emissions, HarbourBuild could consider applying the PCAF data quality hierarchy to estimate financed emissions. This involves using secondary data such as sector-average emissions intensity factors, EEIO models or other reliable databases. HarbourBuild might also explore opportunities to engage with investee companies to improve the availability of the data, with the goal of replacing proxy data with actual reported data over time.

FAQ 7.1

How should an entity account for emissions from entities along its value chain with different reporting period?

[HKFRS S2.B19]

As an entity is required to consider its entire value chain to disclose information about its Scope 3 GHG emissions, it is likely that an entity might have a different reporting period from some of the entities in its value chain. HKFRS S2 acknowledges such difference and permits an entity to use GHG emissions information from entities in its value chain for a reporting period different from the entity's as long as:

- the entity uses the most recent data available from those entities in its value chain without undue cost or effort to measure and disclose its GHG emissions;
- the length of the reporting periods is the same; and
- the entity discloses the effects of significant events and changes in circumstances (relevant to its GHG emissions) that occur between the reporting dates of entities in its value chain and the data of the entity's general purpose financial reports.

For example, HarbourBuild has a reporting period ending 31 December, while one of its value chain partners, Urban Edge, has a reporting period ending 30 September. In such circumstances, GHG emissions information from Urban Edge for HarbourBuild's reporting period might not be readily available for HarbourBuild to use before its disclosures are authorised for issue.

In this fact pattern, HarbourBuild is permitted to use the most recent GHG emissions data available from Urban Edge given that the length of the reporting periods is the same, and HarbourBuild is required to disclose, if material, the effects of any significant events and changes relevant to Urban Edge's GHG emissions between 1 October and 31 December.

FAQ 7.2

What are the key considerations in revising comparative amounts of GHG emissions from the preceding period?

[HKFRS S1.70]

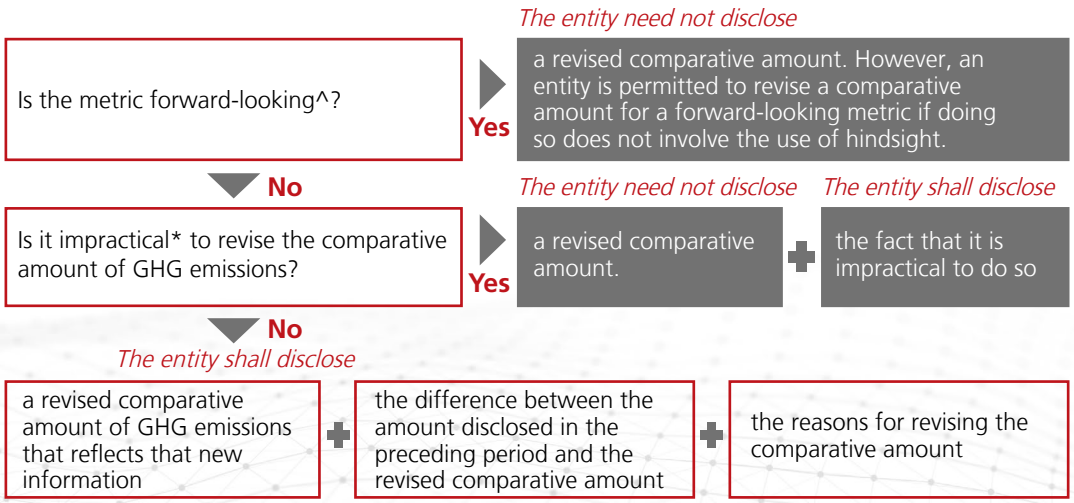
Unless another HKFRS SDS permits or requires otherwise, HKFRS S1 requires an entity to disclose comparative information in respect of the preceding period for all amounts disclosed in the reporting period. This requirement is also applicable to GHG emissions.

[HKFRS S1.B50]

In some cases, an entity is required to adjust the comparative amount of GHG emissions disclosed in the preceding period when new information is identified in the reporting period:

1. The amount is a metric and an estimate, the new information is identified in the reporting period and provides evidence of circumstances that existed in the preceding period.

[HKFRS S1.B51(b)]



[HKFRS S1.B51(a), B54]

[HKFRS S1.B50]

^ Forward-looking metrics relate to possible future transactions, events and other conditions.
* Applying the requirement is "impracticable" if the entity cannot do so after making every reasonable effort to do so.

[HKFRS S1.B52]

2. The amount is a metric and an estimate, and the entity redefines or replaces the GHG emissions metric (including the revision of emission factors and/or GWP) in the reporting period.

[HKFRS S1.B52(a), B54]

The entity shall disclose

Is it impractical to adjust the comparative amount of GHG emissions? **Yes** → the fact that it is impractical to do so

No

[HKFRS S1.B52]

The entity shall disclose

a revised comparative amount of GHG emissions + explanation of what are the changes + the reasons for those changes, including why the redefined or replaced metric provides more useful information

[HKFRS S1.B55, B56]

3. There are material prior period errors, including mathematical mistakes, mistakes in applying the definitions for GHG emissions or GHG targets, oversights or misinterpretations of facts, and fraud.

[HKFRS S1.B58(a),(b)]

The entity shall disclose

Is it practicable to correct the error in all the prior periods presented? **Yes** → the nature of the prior period error + the correction for each prior period disclosed

No

[HKFRS S1.B58 ,B59]

The entity shall disclose

Is it practicable to determine the effect of one or more prior period(s) presented? **Yes** → the nature of the prior period error + the correction for the prior period(s) disclosed, from the earliest date practicable + If correction of the error in the prior period(s) is impracticable: the circumstances that led to the existence of that condition + a description of how and from when the error has been corrected

No

[HKFRS S1.B58(a),(c)]

The entity shall disclose

the nature of the prior period error + the circumstances that led to the existence of that condition

Below are some key practical considerations when an entity revises the comparative amounts of GHG emissions disclosed in the preceding period:

- **Connections with the financial statements:** The requirements for the revision of comparative information in HKFRS SDS might not be the same as the requirements in IFRS Accounting Standards or other generally accepted accounting principles or practices. It is important for an entity to ensure that connections with the financial statements are considered when revising preceding period estimated amounts that are metrics. For example, if an entity changes the measurement method for financed emissions and adjusts the comparative amount disclosed in the preceding period, it may be necessary to explain the relationship between the prior period amounts that are adjusted and the related information in the accompanying financial statements that are unadjusted. Refer to Chapter 9 of this guidance for further discussion on the considerations of disclosures' connectivity.

- **Material information:** Besides the above illustrated cases, entities are also required to disclose material information that is useful to primary users. For example, although an entity is not required to adjust comparative GHG emissions information as a result of changes in the composition of the reporting entity, such as an acquisition or disposal of a subsidiary, it might need to provide additional information about the effect of the acquisition or disposal of a subsidiary if it is decision-useful for primary users, in accordance with HKFRS S1.B26. Refer to Question 13 of "Greenhouse Gas Emissions Disclosure requirements applying IFRS S2 *Climate-related Disclosures*" for more guidance on this consideration.
- **Impact of revisions to other related information:** Entities should consider the impact of revisions to other related information. For example, the narrative, descriptive disclosures or targets that are based on the revised comparative amount might not be as understandable after the revisions. Entities have to apply judgement on whether the revisions would affect the understandability and usefulness of the above-mentioned related information and determine whether to revise that information or provide additional explanations to improve understandability.

Example 7.5

A food manufacturer revising comparative amounts of GHG emissions from the preceding period

Jinlong Foods quantified and disclosed its Scope 3 Category 5: Waste Generated in Operations GHG emissions in 20X5. It obtained primary supplier-specific data from 2 out of 5 waste treatment partners at the end of 20X5 without undue cost or effort. For the waste treated by the remaining partners, Jinlong Foods used secondary industry-average data to estimate the associated emissions.

In 20X6, Jinlong Foods is able to collect supplier-specific data from one of the remaining partners for both 20X5 and 20X6. With the new information identified, Jinlong Foods is required to revise the comparative information disclosed in 20X5, including:

1) a revised amount of Scope 3 Category 5 GHG emissions in 20X5 that reflects the new information;
2) the difference between the amount disclosed in 20X5 and the revised comparative amount; and
3) the reasons for revising the comparative amount.

Below is an excerpt of Jinlong Foods's disclosure on Scope 3 Category 5 GHG emissions in 20X6.

	GHG emissions (tCO_2e)	
	20X6	20X5
Scope 3 Category 5: Waste Generated in Operations	28,000	30,000*

* The 20X5 Scope 3 Category 5 GHG emissions has been revised from 31,000 to 30,000 (a decrease of 1,000 tCO_2e) as we have identified a primary data from our waste treatment partner for the calculation in 20X5, which is considered to be more representative to the emissions associated with our waste generated in operations.

8 Transition Plans

Objectives	Explain the importance of developing transition plans and provide guidance on how to prepare and structure transition plan disclosures
ISSB educational materials and other resources	• Disclosing information about an entity's climate-related transition, including information about transition plans, in accordance with IFRS S2 • Educational material - Nature and social aspects of climate-related risks and opportunities
Supplementary Resources	• Transition Plan Taskforce Disclosure Framework • Asset Managers Sector Guidance • Asset Owners Sector Guidance • Banks Sector Guidance • Electric Utilities & Power Generators Sector Guidance • Food & Beverage Sector Guidance • Metals & Mining Sector Guidance • Oil & Gas Sector Guidance

8.1 Introduction

Transition plans translate climate-related goals into actionable steps. This chapter outlines disclosure requirements about an entity's climate-related transition under HKFRS S2 and provides guidance on how to prepare and structure climate-related transition plan disclosures.

Since June 2024, the IFRS Foundation has assumed responsibility for the Transition Plan Taskforce's ("TPT") disclosure-specific materials. Building upon the disclosure-specific materials developed by the TPT, the IFRS Foundation issued an educational material Disclosing information about an entity's climate-related transition, including information about transition plans, in accordance with IFRS S2 (IFRS Transition Plans Guidance Document) in June 2025 to support entities applying IFRS S2.

This chapter follows and adapts the IFRS Transition Plans Guidance Document for entities that are applying HKFRS SDS, with practical steps on how entities may prepare the required climate-related disclosures. Entities may refer to the TPT Disclosure Framework and its sector specific guidelines as supplementary resources when preparing climate-related transition plans.

8.2 What is a transition plan

[HKFRS S2.Appendix A] A transition plan is an aspect of an entity's overall business strategy and the outcome of its transition planning process. HKFRS S2 refers it as a climate-related transition plan and defines it "as an aspect of an entity's overall strategy that lays out the entity's targets, actions or resources for its transition towards a lower-carbon economy, including actions such as reducing its greenhouse gas emissions".

[HKFRS S2.BC47] For some entities, a transition plan is a key component of the overall business strategy, facilitating adjustments to the business model in response to climate-related risks and opportunities. For other entities, a transition plan may be more narrowly focused, targeting a specific product line, business unit, or set of activities, sitting alongside the entity's overall business strategy. The requirements in HKFRS S2 are intended to reflect the fact that the details contained in an entity's disclosures of its climate-related transition plan will reflect the entity's individual circumstances, including any relevant industry-based disclosures.

8.3 Why a transition plan can be useful

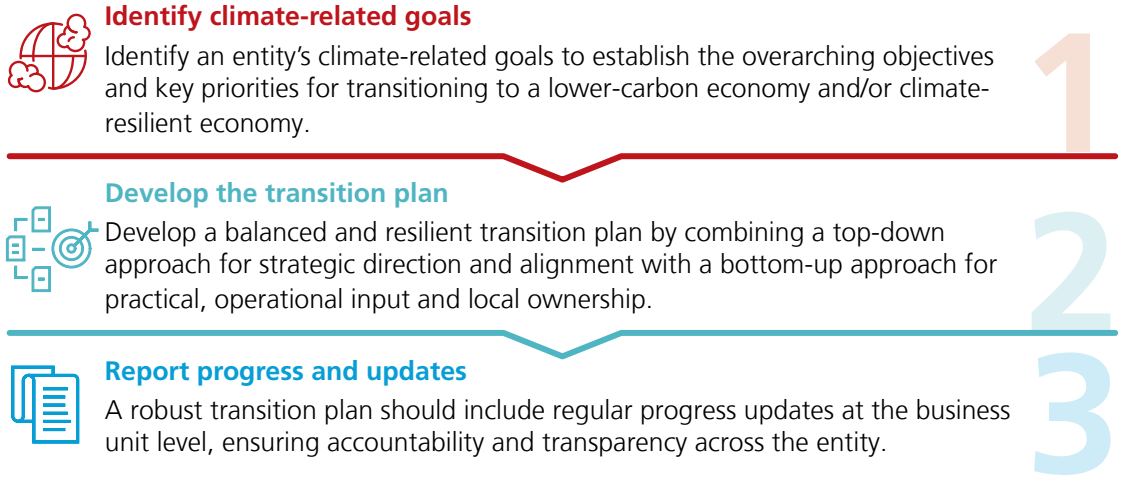
A transition plan serves multiple key purposes that benefit both entities and their stakeholders. It offers a strategic blueprint for entities to align their actions with their climate-related goals. By outlining specific steps and timelines, entities can effectively synchronise their operational and strategic actions with their environmental objectives, promoting focused and measurable transformation. Additionally, the transition plan plays a critical role in holding entities accountable for their publicly stated climate commitments by establishing progress tracking mechanisms. This accountability not only builds trust among stakeholders but also reinforces the credibility of organisations in their climate transition.

A transition plan also offers forward-looking strategic information that helps integrate climate-related transition into financial practices. It enhances the quality of information available to investors and other stakeholders, enabling them to accurately assess risks and make informed capital allocation decisions. At the same time, it assists policymakers and regulators with greater visibility into the trajectory of the economy wide transition, supporting the design of effective climate policies and regulatory frameworks.

8.4 How to prepare transition plan disclosures

The following practical steps may guide entities to prepare and structure their transition plan disclosures. The steps depicted in this section are not intended to be rigid or linear. They may be iterative and adapted based on the entities' specific context.

Figure 8.1 Step-by-step approach to prepare and structure transition plan disclosures



Step 1 Identify climate-related goals

Identifying an entity's climate-related goals is the foundational step in preparing the transition plan disclosures. This process establishes the overarching objectives and key priorities for entities to transition to a lower-carbon economy and/or climate-resilient economy.

An entity may begin by assessing its climate-related risks and opportunities, enabling the development of clear and ambitious action plan. This assessment facilitates the identification of priority areas for establishing initiatives, such as reducing GHG emissions, enhancing energy efficiency and fostering innovation for climate resilience.

Following this, the entity could establish measurable goals that reflect its commitment to a lower-carbon economy and/or climate-resilient economy. These goals may align with external requirements, commitments and science-based targets. Additionally, entities could define time-bound objectives and integrate these goals into their broader business strategies. This approach ensures accountability, provides direction for decision-making, and enhances transparency in progress reporting.

Step 2

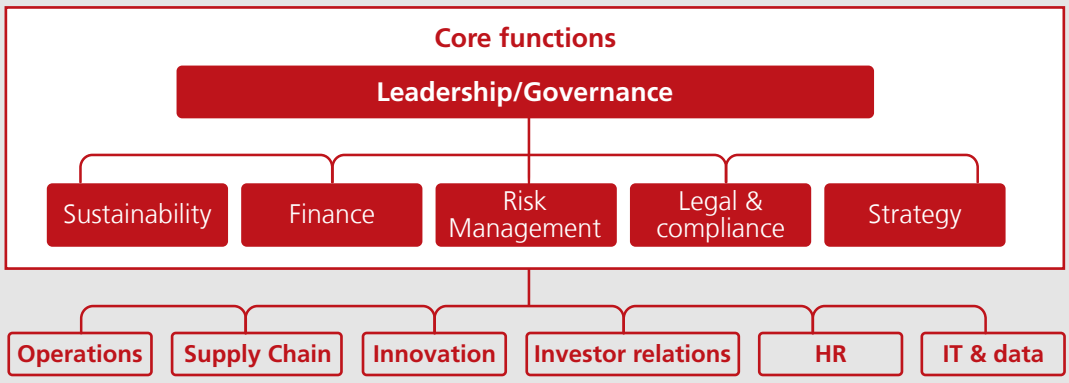
Develop the transition plan

Once the entity's climate-related goals have been established, the execution details of the transition plan should be developed through a combination of top-down and bottom-up approaches.

- Top-down approach: Set the strategic direction from leadership, including long-term climate-related goals, resource allocation, and alignment with regulatory and investor expectations. It ensures operational insights are connected to overarching goals and embedded in governance and strategy.
- Bottom-up approach: Business units and operational teams to provide detailed input on feasible pathways, technologies, metrics and timelines. This grounds the plan in operational realities and helps identify practical steps required to achieve the overarching goals while also fostering ownership at the local level.

Bringing these approaches together creates a balanced and resilient transition plan. The top-down perspective ensures ambition, alignment and accountability, while the bottom-up contributions ensure accuracy, feasibility and relevance to day-to-day operations.

Figure 8.2 **Example functions involved in developing the transition plan**



Example functions involved in developing the transition plan:

Functions	Responsibilities
Leadership/Governance	Provides oversight and challenges the transition plan and related disclosures.
Sustainability	Leads on decarbonisation strategy and setting carbon reduction targets.
Finance	Integrates climate-related risks info financial planning, reporting and disclosures.
Risk Management	Assesses and quantifies climate- and nature-related risks.
Legal & compliance	Ensures disclosures are legally compliant and aligned with investor expectations.
Strategy	Develops and aligns the transition plan with the entity's ambitions to guide effective climate actions.

Step 3

Tracking progress and updating

Preparing transition plan disclosures requires cross-function collaboration on collecting information about current and planned transition initiatives. This process aims at capturing key elements such as objectives, timelines, resources needed for the short, medium and long term actions of an entity. Transition plan should also be regularly updated at the business-unit level ensuring accountability and transparency across the entity. Each business unit should monitor its implementation of climate-related actions, track progress against defined milestones, and report on any challenges or adjustments. To ensure clarity, progress should be measured using well-defined metrics and benchmarks, which allow for consistent tracking and comparison over time.

[HKFRS S2.14(c)] These updates should then be consolidated and incorporated into the entity's overall sustainability or financial disclosures, in alignment with frameworks such as HKFRS S2. By including detailed updates with clear metrics and milestones, entities can provide stakeholders with a more granular and measurable understanding of how the transition plan is being executed across different operational areas. This reinforces credibility, enhances transparency, and demonstrates a strong commitment to achieving climate-related goals. It is worth noting again that HKFRS S2 does not require entities to have a transition plan or to publish a formal transition plan document. However, if an entity does have a transition plan, the entity shall disclose quantitative and qualitative information about the progress of plans disclosed in previous reporting periods although HKFRS S2 does not include requirements regarding the frequency at which the transition plan is updated. Further details on the disclosure structure and content of the transition plan are provided in Section 8.5.

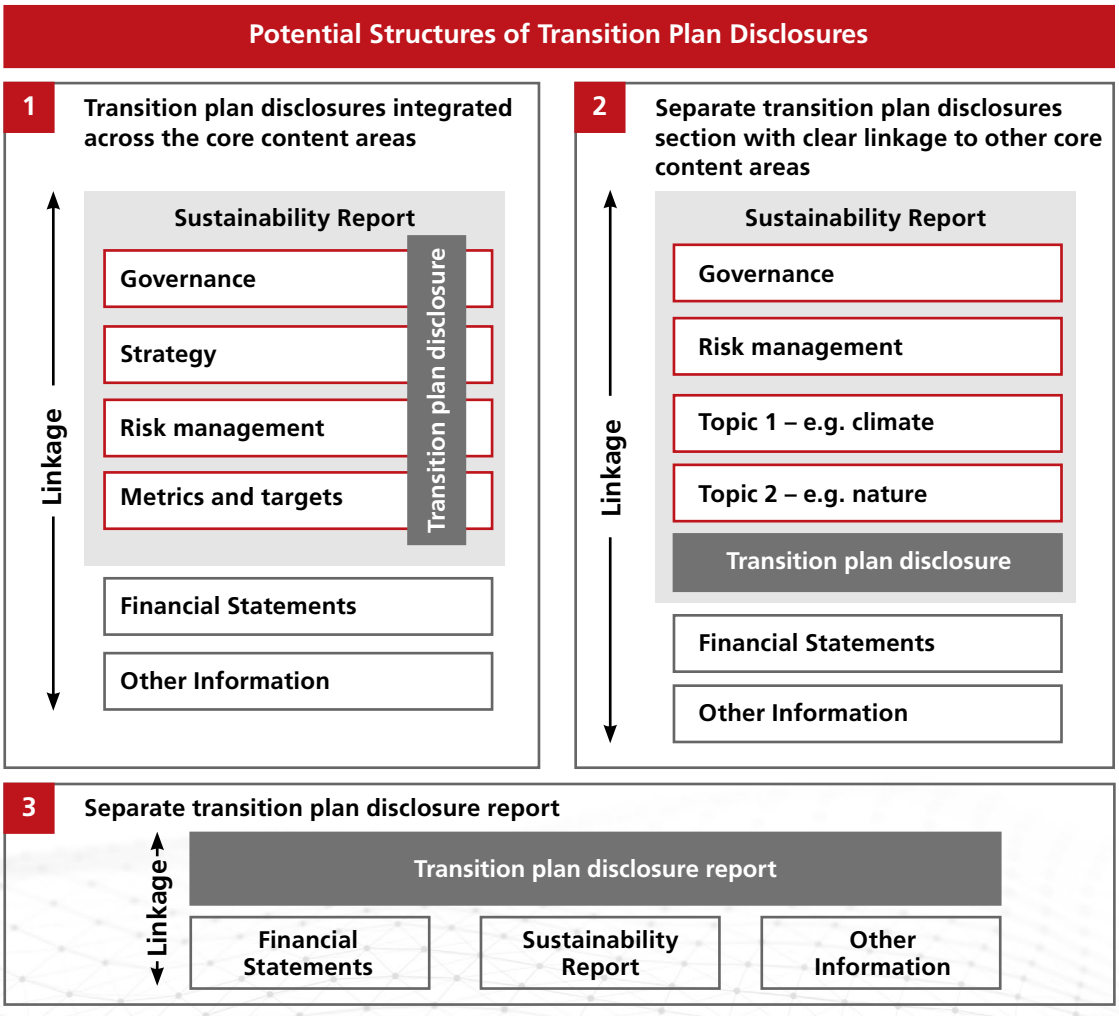
8.5 Transition plan disclosures

8.5.1 Transition Plan Disclosures Structures

Transition plan disclosures include relevant details that are clear and interconnected throughout the entity's financial report and sustainability report. Entities can determine the most appropriate structure for incorporating information about any transition plans, as illustrated in Figure 8.3.

Regardless of the chosen structure, the information needs to be presented coherently and in a way that facilitates linkage with other information and minimises duplication whenever possible.

Figure 8.3 Potential structures of transition plan disclosures[42]



[42] Adapted from page 10 of KPMG – Telling your transition story.

Option 1: Integrated transition plan disclosure across the core content areas

Entities applying the disclosure requirements in HKFRS S2 could provide information about their climate-related transition around core content areas related to governance, strategy, risk management and metrics and targets. For example, under governance, an entity may disclose the board's or a specific committee's oversight responsibilities for climate-related risks and opportunities. In the chapter of strategy, the entity could describe how climate-related risks and opportunities are integrated into its business decisions and overall strategy.

Option 2: Disclose transition plan in a separate section of the sustainability report

Entities may choose to provide information about their climate-related transition plan in a dedicated section of the sustainability report. It is recommended that this section should clearly linked with other relevant parts of the report. For instance, if the implementation of the transition plan involves new governance structures or risk management processes, those elements can be cross-referenced to the governance and risk sections of the report to avoid duplication of content. This ensures a cohesive and comprehensive presentation, allowing primary users to easily access all pertinent details related to the transition plan without repeating the same content, leading to a more concise and organised report.

Option 3: Disclose transition plan in a separate report

Entities may also choose to issue a dedicated transition plan report, separate from other published reports, to clearly explain their climate-related transition strategy, targets, timelines and progress. This approach helps to ensure that important details are not overshadowed or being diluted by other sustainability or financial information.

[HKFRS S1.63, B45] [HKFRS S1.B47] If an entity issues a standalone transition plan report, the entity may satisfy HKFRS SDS requirements by cross-referencing to information included in the standalone transition plan report, provided that: (i) cross-referenced information is available on the same terms and at the same time as the sustainability financial disclosures and (ii) complete set of sustainability-related financial disclosure is not made less understandable by including information by cross-reference. Entities should clearly indicate where the relevant information can be found, explain how to access it, and reference to the specific part of the report.

8.5.2 Transition Plan Disclosure Content

[HKFRS S2.14(a)] HKFRS S2 does not require entities maintain a transition plan or publish a formal transition plan document. However, an entity shall disclose information about how it has responded to, or plans to respond to, climate-related risks and opportunities which could include information about the entity's transition plan, if one exists.

In this section, the following elements will be included to guide entities in preparing relevant disclosures about their climate-related transition plans:

- **Disclosure requirements** under HKFRS S2 relating to an entity's climate-related transition in response to climate-related physical risks, transition risks, and opportunities.
- **Mapping** between HKFRS S2 disclosure requirements and the TPT Disclosure Framework.
- **Practical guidance and illustrative examples** to support entities in providing relevant and meaningful information about their climate-related transition. The examples in this chapter focus on information about climate-related transition required under HKFRS S2 and are not intended to be a comprehensive disclosure or a complete transition plan disclosure.

HKFRS SDS Disclosure Requirements: Climate-Related Transition Plan

The HKFRS SDS include several disclosure requirements related to transition planning, but it does not require entities to have a transition plan or to publish a formal transition plan document. Only if an entity has set a strategic goal[43] for its climate-related transition, by applying the requirements in HKFRS S2, the entity should provide information about its climate-related transition even in the absence of a formal transition plan.

Examples of key relevant disclosure requirements include:

[HKFRS S2.14(a)(i)] • Current and anticipated changes to the entity's business model

[HKFRS S2.14(a)(ii)] • Current and anticipated direct mitigation and adaptation efforts

[HKFRS S2.14(a)(iii)] • Current and anticipated indirect mitigation and adaptation efforts

[HKFRS S2.14(a)(iv)] • Any climate-related transition plan the entity has, including key assumptions and dependencies of the entity's transition plan

[HKFRS S2.14(a)(v)] • How the entity plans to achieve any climate-related targets

8.5.2.1 Governance

In line with HKFRS SDS requirements, entities are required to provide information on the governance processes, controls, and procedures that they use to monitor, manage and oversee sustainability-related risks and opportunities. Where a strategic goal related to its climate-related transition has been developed or planning to be developed, entities shall describe how governance bodies oversee the design of strategic goals, the processes for monitoring progress, and the integration of these goals into broader governance practices.

Table 8.1 Mapping between the requirements in HKFRS S2, TPT Disclosure Framework and relevant sections in this document: Governance[44]

Paragraphs of HKFRS S2[45]	Relevant TPT disclosure element or sub-element	Relevant sections in this document
HKFRS S2.6(a)(i)-(v) (and HKFRS S2.5, 29(g)(i)-(ii) and 34(b))	• Board oversight and reporting (5.1) • Incentives and remuneration (5.4.a.i-iv) • Incentives and remuneration (5.4.b) • Skills, competencies and training (5.5)	• 8.5.2.1 Governance • 8.5.2.1.1 Body(s) or individual(s) responsible for a strategic goal • 8.5.2.1.2 Management's role in the process used for strategic goal • 8.5.2.1.3 Incentive and remuneration linked to a strategic goal • 8.5.2.1.4 Skills, competencies and knowledge to implement a strategic goal
HKFRS S26(b)(i)-(ii) (and HKFRS S2.5)	• Management roles, responsibility and accountability (5.2)	

[43] The term 'strategic goal' in this document is defined in line with the IFRS Transition Plans Guidance Document, which describes it as 'a goal related to an entity's transition towards a lower-carbon economy and/or climate-resilient economy. Such a climate-related strategic goal is referred to in this document simply as a "strategic goal". Additionally, the concept of 'strategic goal' is also reflected in the TPT Disclosure Framework under the idea of 'strategic ambition'.

[44] Adapted from Table 1 of the IFRS Transition Plans Guidance Document.

[45] The most relevant paragraph for a specified topic is mentioned first. Other relevant paragraphs for the topic are mentioned in brackets.

8.5.2.1.1 Body(s) or individual(s) responsible for a strategic goal

Entities should explain how governance bodies or individuals oversee climate-related strategic goals, including who is accountable, how targets are reviewed and monitored, and the extent to which these goals are integrated into broader decision-making such as strategy, risk management, major transactions, budgeting, and performance objectives.

8.5.2.1.2 Management's role in the processes used for strategic goal

When disclosing the role of governance bodies or individuals in defining a strategic goal, entities should disclose how cross-functional teams are engaged, how issues are escalated, and what controls and assurance processes support oversight. This may include details on internal monitoring, external assurance or verification of disclosures, and whether shareholder approval is required through binding or advisory votes.

8.5.2.1.3 Incentive and remuneration linked to a strategic goal

Entities should set out how incentives and remuneration are linked to the strategic goal, covering both executives and employees. Useful information may include averages or ranges of executive remuneration linked to relevant metrics, whether incentives apply across the workforce or to specific roles, the metrics used, the proportion of employees covered, and the types of incentive plans in which these metrics are embedded.

8.5.2.1.4 Skills, competencies and knowledge to implement a strategic goal

Entities should explain how they assess and address the skills, competencies, and knowledge needed to achieve their climate-related strategic goals. Disclosures may cover how required capabilities are identified, how existing skills are mapped against these needs, and any gaps found. They might determine that it is relevant to disclose actions taken to build capacity, such as recruitment, workforce training, and upskilling initiatives. Moreover, entities may provide information on how governance bodies and executive management access relevant expertise, for example through board effectiveness assessments, training or engagement sessions, and regular briefings on transition issues.

Example 8.1

A food & beverage company disclosing its governance structure for the transition plan

EverFresh Foods Ltd. ("EverFresh") is a regional food company with operations within food processing, bottling, and distribution across Asia. In 202X, EverFresh adopted a strategic goal to achieve net-zero GHG emissions by 205X, with short-term targets set by 203X, both targets are under validation by the Science Based Targets Initiative ("SBTi")[46] in this year. In pursuit of its net zero target, the company has formalised a transition plan to monitor and guide its progress. The company has also disclosed its governance processes for overseeing and implementing its transition plan in its 202X Sustainability Report.

Body(s) or individual(s) responsible for a strategic goal

EverFresh has established a clear governance framework to oversee delivery of its transition plan across all levels of the business. The Strategy and Sustainability Committee has direct oversight of the plan, which includes meeting quarterly to review progress against short-term and long-term targets, ensuring climate considerations are integrated into strategic decision.

Management's role in the processes used for strategic goal

Responsibility for execution is delegated to the Chief Sustainability Officer, who leads a cross functional transition plan working group with colleagues from procurement, operations and logistics to coordinate the implementation. The team reports regularly to the Board on the progress of carbon reduction and potential risks.

Incentive and remuneration linked to a strategic goal

Accountability is reinforced by remuneration policies with 10% of the variable remuneration of executives being linked to climate objectives including greenhouse gas emissions reduction targets, renewable energy usage across operations.

Skills, competencies and knowledge to implement a strategic goal

EverFresh invests heavily in capacity building to ensure its employees have the appropriate skills, competencies and knowledge to achieve its decarbonisation goal. All employees receive annual sustainability awareness training, while targeted modules are offered to leadership and functional teams on topics such as climate risk management, energy efficiency and sustainable sourcing. The company also places particular emphasis on packaging and circular economy solutions by providing dedicated programmes to equip R&D and procurement team with expertise on sustainable packaging. The Board will also participate in regular training, effectiveness assessments, and internal workshops to maintain the knowledge required to guide the transition effectively.

8.5.2.2 Strategy

Disclosures on strategy should explain how an entity has responded or plans to respond to climate related risks and opportunities. They show how short, medium and long term actions are integrated into business planning and resilience.

[46] The Science Based Target initiatives (SBTi) is a corporate climate action organisation that enables companies and financial institutions worldwide to play their part in combating the climate crisis. Partner organisations who facilitated SBTi's growth and development are CDP, the United Nations Global Compact, the We Mean Business Coalition, the World Resources Institute, and the World Wide Fund for Nature. The SBTi's Corporate Net-Zero Standard is the world's only framework for corporate net-zero targets setting in line with climate science. It includes the guidance, criteria, and recommendations companies need to set science-based net zero targets consistent with limiting global temperature rise to 1.5°C. Refer to SBTi's website Ambitious corporate climate action - Science Based Targets Initiative.

Table 8.2 **Mapping between the requirements in HKFRS S2, TPT Disclosure Framework and relevant sections in this document: Strategy[47]**

Paragraphs of HKFRS S2	Relevant TPT disclosure element or sub-element	Relevant sections in this document
HKFRS S2.8 and 9(a)	-	• 8.5.2.2 Strategy
HKFRS S2.9(c) and 14(a)(iv)	• Key assumptions and external factors (1.3)	• 8.5.2.2.1 Climate-related transition plan
HKFRS S2.9(b), 13 and 14(a)(i)-(iii)	• Business model and value chain (1.2) • Business operations (2.1) • Products and services (2.2) • Policies and conditions (2.3) • Engagement strategy (3)	• 8.5.2.2.2 Business model and value chain, mitigation and adaptation efforts
HKFRS S2.14(a)(v)	• Strategic ambition (1.1.a, 1.1.b and 1.1.c.i)	• 8.5.2.2.3 Plans to achieve any climate-related targets
HKFRS S2.14(b)	• Financial planning (2.4.a)	• 8.5.2.2.4 Funding the implementation of a strategic goal
HKFRS S2.9(d), 15 and 16(c)(i)-(ii)	• Financial planning (2.4.b)	• 8.5.2.2.5 Linking with financial statements
HKFRS S2.9(d),15 and 16(d)	• Financial planning (2.4.c)	
HKFRS S2.18	• Financial planning (2.4.d)	
HKFRS S2.19	• Financial planning (2.4.f.i)	
HKFRS S2.20	• Financial planning (2.4.f.ii)	
HKFRS S2.21	• Financial planning (2.4.f.g)	
HKFRS S2.22	-	• 8.5.2.2.6 Scenario analysis

8.5.2.2.1 Climate-related transition plan

[HKFRS S2.14(a)(iv)] For any formal transition plan that an entity has developed, the entity should clearly identify, document and disclose the key dependencies and assumptions underlying its transition plan. Useful information could include what has been identified, how assessments have been conducted, and how these factors have influenced strategic goals, objectives, or priorities. Entities are also encouraged to indicate the expected timeframe over which assumptions are applied, together with any implications for the credibility and resilience of the plan.

[47] Adapted from Table 1 of the IFRS Transition Plans Guidance Document.

Table 8.3 **Information about assumptions and dependencies**

	Description	Examples
[HKFRS S2.BC52] Assumption	A belief, expectation, hypothesis or premise that an entity expects will occur and therefore builds into its climate-related transition plan.	• **Policy and regulatory action:** assuming renewable energy subsidies will be maintained over the next five years. • **Macroeconomic trends:** assuming an average annual real GDP growth rate of 4-5% through 2030 in Asia. • **Technological developments:** assuming large-scale commercial availability of green hydrogen or carbon capture and storage facilities by 2030, supporting decarbonisation of heavy industry. • **Market dynamics:** assuming rapid growth in consumer demand for "green labelled" products in major urban cities.
[HKFRS S2.BC52] Dependency	Critical factors and conditions required for an entity's transition plan to be realised.	• **Renewable energy access:** success of the transition plan depends on sufficient wind/solar generation growth and effective grid integration allowing direct power purchase agreements. • **Regulatory alignment:** transition plan depends on local government policy support for permitting and approval of new green infrastructure. • **Skill development:** transition plan depends on sufficient supply of engineers and technicians with advanced skills in automation and renewable energy technologies to execute low-carbon production upgrades.

8.5.2.2.2 Business model and value chain, mitigation and adaptation efforts

In providing information about their climate-related transition, entities may explain how both their business model and operations are changing to address climate risks and opportunities. Common areas of change include:

- **Business model**
  - Upstream: Changes in geographical sourcing, supplier mix, and supply-chain locations and others
  - Within the business model: Changes in investment strategy, production or distribution technology, energy and fuel use and others
  - Downstream: Changes in product and service portfolios, entry into or exit from specific markets, after sales services and others
- **Business operations**
  - Changes in the use of cleaner technologies, reskilling or redeploying staff, sourcing alternative materials, relocating activities, and others

Entities could highlight planned changes to product and service portfolios, such as expanding lower emissions solutions and phasing out carbon intensive products. Supporting policies may address procurement standards, energy use, adaptation, land use, environmental and social safeguards, and advancement of social equity or mitigation of potential adverse social impacts. Disclosures might also describe engagement with key stakeholders in the value chain, such as suppliers, customers, regulators and communities.

8.5.2.2.3 Plans to achieve any climate-related targets

In setting out actions and measures to achieve climate-related targets, entities may consider:

- Establishment of emission reduction targets by scope
- Innovation in climate solutions
- Introduction of measures to drive supply chain decarbonisation
- Promote policy change to enable the shift toward a low GHG emissions economy transition
- Support for hard-to-abate sectors
- Investments in enabling activities
- Regeneration and restoration of ecosystem

Disclosures might link these actions to regulatory requirements, voluntary commitments, science-based targets, sector pathways, and net zero scenarios if applicable.

8.5.2.2.4 Funding the implementation of a strategic goal

Entities should explain how the strategic goal will be financed, including planned CAPEX and research and development budgets. They may also present the amounts in totals, percentages, or ranges as appropriate.

8.5.2.2.5 Linking with financial statements

Entities should describe how the climate-related transition will affect:

- **Financial position:** changes in valuations, new investments, or financing arrangement
- **Financial performance:** impacts on revenue, operating costs, asset impairment, margin, and over different time horizons
- **Cash flows:** both short-term implementation costs and anticipated longer-term benefits

Quantitative and/or qualitative information should be provided to illustrate the current and anticipated financial effects, by using reasonable and supportable data available at the reporting date. Refer to Chapter 6 of this guidance for further details.

8.5.2.2.6 Scenario analysis

Entities should use climate-related scenario analysis to assess climate resilience and to guide disclosures on risks, opportunities, and transition plans. Refer to Chapter 5 of this guidance for further details.

Example 8.2

A real estate company disclosing its transition plan strategy

Lotus Properties Ltd. ("Lotus") is a Hong Kong listed company engaged in real estate development and the management of a portfolio of hotels across Asia. Its operations include large scale commercial and residential projects as well as hospitality assets serving international and domestic customers.

Climate-related transition plan

Lotus has committed to reducing its Scope 1 and Scope 2 operational emissions by 30% in absolute terms by 203X and achieving company wide net zero emissions, including Scope 3, by 205X. The company's transition plan is integrated with its strategic planning cycle and capital allocation framework, with quarterly progress reviews by the Risk Committee and annual recalibration based on market conditions and regulatory developments.

Climate-related transition plan – Key assumptions

The company's transition plan assumes that (i) regional power grids in Hong Kong, Chinese Mainland, and Southeast Asia will achieve 40-50% renewable energy mix by 203X, enabling significant Scope 2 reductions; (ii) low carbon building materials such as green cement and recycled steel will reach price parity with conventional materials by 203X; (iii) premium demand for certified green buildings will grow by 15-20% annually; and (iv) carbon pricing mechanisms will be implemented across major markets at US$50-80 per tonne CO_2e by 203X.

Climate-related transition plan – Critical dependencies

Plan delivery depends on (i) **regulatory support:** effective enforcement of building energy codes and green building incentives across operating jurisdictions; (ii) **supply chain readiness**: availability of certified low carbon construction materials at scale, particularly in emerging markets; (iii) **stakeholder cooperation:** tenants and hotel operator participation in energy reduction programmes, with contractual commitments securing 70% participation rates; and (iv) **technology accessibility:** commercial availability of heat pump systems, smart building technologies, and energy storage solutions suited to tropical climates.

Business model and value chain, mitigation and adaptation efforts

Lotus is systematically repositioning itself as a sustainable brand by embedding LEED Gold or equivalent standards into all new developments (targeting 100% by 204X), implementing comprehensive retrofit programmes for existing assets (addressing 60% of portfolio by 203X), and transitioning to circular procurement practices emphasising recycled materials and local suppliers. The company has established dedicated green financing structures, targeting HK$1.2 billion in sustainability-linked loans by 202X, and is piloting climate adaptation measures including flood-resistant design features and enhanced cooling systems across vulnerable coastal properties.

Plans to achieve any climate-related targets

Short-term (0-3 Years): Deploy green building certifications for 85% of new developments, deploy energy retrofits of 15 priority properties (representing 35% of portfolio emissions), install 25MW of on-site solar capacity, and launch guest engagement programmes achieving 20% energy reduction per occupied room.

Medium-term (3-5 Years): Expand retrofits to remaining portfolio, integrate low-carbon materials representing 60% of construction inputs, implement district-level renewable energy partnerships, and achieve operational carbon intensity reduction of 45% versus 202X base year.

Long-term (> 5 Years): Complete value chain decarbonisation through Scope 3 engagement, deploy nature-based solutions across 50% of land holdings, and operate all properties to net-zero standards with verified carbon removals for residual emissions.

Funding the implementation of a strategic goal

Lotus expects to allocate HK$2.8 billion over 202X-203X to transition activities, representing approximately 25% of planned CAPEX. Funding sources include: (i) HK$1.6 billion from operating cash flows, leveraging improved margins from energy-efficient operations; (ii) HK$800 million from sustainability-linked financing, including green bonds and climate-focused development loans with interest rate step-downs tied to emission reduction milestones; and (iii) HK$400 million from strategic partnerships, including joint ventures with renewable energy developers and cost-sharing agreements with anchor tenants. The company has secured committed facilities for 70% of near-term requirements and maintains investment-grade credit metrics to access additional sustainable finance as needed.

Linking with financial statements

Short-term (0-3 years): In this financial year, Lotus has spent HK$0.5 billion for the transition activities as part of their transition plan. In the upcoming 3 years, the transition strategy is estimated to reduce profit margins by 2-3% given that the retrofit and financing costs are expected to be absorbed.

Medium-term (3-5 years): In the next 3 to 5 years, these investments are expected to deliver energy and maintenance savings of 15-20%, enhance asset valuations from green certifications by approximately 8-12% premium to comparable properties. Roughly one quarter of planned investment will be directed to transition projects, which is expected to improve efficiency, attract tenants and guests seeking sustainable properties, delivering rental premiums of 5-8% on certified properties.

Long-term (>5 years): In the long term, after the major implementation phase, Lotus expects to achieve net benefits of HK$200-300 million annually from 203X as operational savings and premium revenue materialise. Over time, these improvements are anticipated to reduce the company's average fixed expense reflecting the impact of energy efficiency and sustainable investments. Additionally, the strategy is also expected to lower operating risks, improve access to sustainable finance and increase the company's resilience to climate impacts.

Scenario analysis

Lotus has assessed the resilience of its strategy under two selected climate scenarios. The review highlighted potential short-term increases in costs but also opportunities from stronger demand for sustainable properties and hotels and benefits from insurance savings and operational continuity. The analysis validates plan robustness across scenarios while identifying critical monitoring indicators for adaptive management.

8.5.2.3 Metrics and Targets

Disclosures on metrics and targets set out how an entity tracks progress towards its climate-related goals. They highlight both qualitative context and quantitative measures, enabling primary users to assess delivery against commitments.

Table 8.4 Mapping between the requirements in HKFRS S2, TPT Disclosure Framework and relevant sections in this document: Metrics and Targets[48]

Paragraphs of HKFRS S2[49]	Relevant TPT disclosure element or sub-element	Relevant sections in this document
HKFRS S2.27	-	• 8.5.2.3 Metrics and targets
HKFRS S2.29(a)	• GHG metrics and targets (4.3.l-m)	• 8.5.2.3.1 Climate-related metrics
HKFRS S2.29(e)-(f)	• Financial metrics and targets (4.2.e-g)	
HKFRS S2.33 (and HKFRS S2.34-35)	• Strategic ambition (1.1.e) • Governance, engagement, business and operational metrics and targets (4.1) • Financial metrics and targets (4.2.a, c-e) • GHG metrics and targets (4.3.i-k)	• 8.5.2.3.2 Climate-related targets
HKFRS S2.33(h) (and HKFRS S2.36(d))	• Strategic ambition (1.1.c)	
HKFRS S2.36(a)-(c) (and HKFRS S2.27 and 35)	• GHG metrics and targets (4.3.a-h)	
HKFRS S2.36(e)	• Carbon credits (4.4.c, e and g)	

8.5.2.3.1 Climate-related metrics

Entities should clearly disclose GHG emissions, including Scope 1, Scope 2 and Scope 3 GHG emissions. Transparent disclosures on the metrics can demonstrate progress towards climate-related targets and support the credibility of transition strategies. Refer to Chapter 7 of this guidance for further details.

8.5.2.3.2 Climate-related targets

Entities should disclose the climate-related targets they have set to help primary users to understand both current performance and the future path of climate-related transition. Useful information may include what is being measured, objectives of the target, milestones, alignment with benchmarks, and the trajectory of progress. Entities may also report on broader targets, such as governance incentives, workforce skills, supplier and client engagement outcomes, operational metrics, and the development of low-emission products and services. In each case, both qualitative context and quantitative measures may be provided to strengthen transparency and credibility, particularly regarding commitments to a lower carbon economy and/or climate-resilient economy.

[48] Adapted from Table 1 of the IFRS Transition Plans Guidance Document.

[49] The most relevant paragraph for a specified topic is mentioned first. Other relevant paragraphs for the topic are mentioned in brackets.

[HKFRS S2.BC51]

Climate-related Targets vs Greenhouse Gas Emissions Targets

It is important to recognise that climate-related targets and greenhouse gas emissions targets are not equivalent. The targets are defined as follows:

- Climate-related targets: Any target has set to respond to climate-related risks and opportunities by an entity, such as targets on renewable energy, energy efficiency and water consumption.
- Greenhouse gas emissions targets: One of the climate-related targets specifically refer to the greenhouse gas emissions targets. Such targets provide information on the timing and pathway of the entities' transition plans to reduce its emissions and contribute to a lower-carbon economy.

Under HKFRS SDS, entities are not required to set either type of target. However, if such targets exist, entities shall provide relevant disclosures on their targets.

Sector Specific Metrics and targets

IFRS Transition Plans Guidance Document provides examples of sector-specific metrics and targets that entities can consider when setting up their metrics and targets to monitor the progress of transition plan[50].

Sector	Metrics and Targets Type	Description
Asset management	GHG emission and removals	Absolute gross GHG financed emission targets that has set and associated metrics, including at the: • Sector level • Fund level • Asset class level • Portfolio level • Investee entity level
Banking	Governance, engagement, business and operational	Metrics and target drive and monitor progress towards the strategic goal and targets segmented by: • Economic system • Various sectors the entity finances • Entity's various business lines (e.g. commercial banking, wholesale banking) • On- and off-balance sheet activities
Electric utilities and power generators	Business, sector and strategy	CAPEX metrics and targets: • Low- and zero-carbon energy generation and storage assets • Transmission and distribution grid infrastructure • Technologies (e.g. digitalisation, electric vehicle chargers)

[50] Adapted from pages 52-54 of the IFRS Transition Plans Guidance Document.

Sector	Metrics and Targets Type	Description
Oil and Gas	Governance, engagement, business and operational	Operational metrics and targets that an entity uses to drive and monitor progress towards strategic goal: • Production volume by product type over the short and medium term for each of the entity's upstream and midstream value chain segments • Sales volumes by product type over the short and medium term for entity's downstream value chain segment • Capacity and production of low-carbon products by product type over the short and medium term

Example 8.3

A consumer electronics company disclosing its metrics and targets

Luminex Co., Ltd ("Luminex") is a Hong Kong listed global consumer electronics company engaged in the design, manufacture, and sale of smartphones and connected digital devices.

Luminex recognises that its operations and products are exposed to climate related transition risks, particularly energy intensive manufacturing processes, global supply chain dependencies, and increasing regulatory and consumer expectations for low carbon technology. At the same time, the transition to a lower carbon economy presents business opportunities in product innovation, market differentiation, and enhanced long-term resilience.

In response, Luminex has developed a transition plan that sets metrics and associated targets at both the organisation wide level and for its flagship products. This approach helps demonstrate how climate related goals are being embedded into Luminex's overall strategy and product offering.

Company-wide climate-related targets

Luminex discloses the following organisation level metrics, together with time bound targets, to track progress towards its climate commitments:

- Net zero Scope 1 and Scope 2 greenhouse gas emissions by 205X, with an interim reduction of 50% by 204X (202X base year).
- 100% renewable electricity by 205X, with 80% achieved by 204X.
- At least 60% of annual R&D expenditure directed to sustainable product design and low carbon materials by 205X achieve its group-wide targets, Luminex embeds climate considerations into product design, production, and end-of-life management. Product-specific metrics and targets address key lifecycle impacts such as sourcing, manufacturing, packaging, and waste, translating strategic ambitions into measurable actions across the value chain.

The table below illustrates targets for the flagship Edge Series Phone. Luminex plans to expand this approach to other major product categories over time, ensuring consistent integration of climate objectives across its full portfolio.

Component	Strategy	20X5 Progress	Target
Product	Develop carbon neutral product	30% reduction in emissions compared to business-as-usual	Achieve carbon neutrality by 204X
Design and Source	Source recycled or renewable materials	25% recycled or renewable materials used per phone	50% recycled or renewable materials used per phone by 204X
Packaging	Adopt sustainable, recyclable, or biodegradable packaging	40% of packaging is recyclable or compostable	100% sustainable packaging by 204X
Waste	Zero waste to landfill	30% of product components can be recycled or reused	60% of product components can be recycled or reused by 204X

8.5.2.4 Overarching Requirements

To meet the requirements of HKFRS SDS, entities are expected to provide clear, decision useful disclosures on their climate related transition. These disclosures might explain how time horizons are defined, include both qualitative and quantitative information on financial effects, and show alignment with external commitments or benchmarks.

Table 8.5 Mapping between the requirements in HKFRS S2, TPT Disclosure Framework and relevant sections in this document: Overarching Requirements[51]

Paragraphs of HKFRS S2	Relevant TPT disclosure element or sub-element	Relevant sections in this document
HKFRS S2.10(b)	-	• 8.5.2.4 Overarching requirements
HKFRS S2.10(c)-(d)	Strategic ambition (1.1.e)	• 8.5.2.4.1 Identify planning horizon
HKFRS S2.14(c)	-	• 8.5.2.4.2 Quantification
HKFRS S2.17	Financial planning (2.4.e)	

8.5.2.4.1 Identify planning horizon

HKFRS SDS do not specify what constitutes short, medium and long term time horizons, as these may vary depending on entities' financial and business planning cycle. Instead, entities should disclose the definitions they apply for the time horizons.

8.5.2.4.2 Quantification

Entities should disclose qualitative and quantitative information on their climate-related transition, such as single amounts, ranges, or progress against prior plans, showing both current and anticipated financial effects on position, performance, and cash flows.

[51] Adapted from Table 1 of the IFRS Transition Plans Guidance Document.

8.5.2.4.3 External references[52]

Entities might refer to international agreements, sector benchmarks, or science based targets, clarifying which commitments or reference points they use and how these align with their strategic goals.

FAQ 8.1

Are entities required to set and commit to a SBTi targets as part of their transition plans?

Entities are not obliged to set or commit to a SBTi target as part of its transition plan or mandating specific target setting methodologies or external frameworks. The essential requirement is to disclose information about an entity's climate-related transition plan, including the assumptions and dependencies underpinning them and provide decision-useful information for investors. Alignment with external framework, such as SBTi, can add credibility and comparability but remains voluntary.

HKFRS S2 requires the following key disclosures:

[HKFRS S2.33-36]
- Climate-related targets the entity, including any greenhouse gas emissions targets, has set and the relevant details

[HKFRS S2.14(a)]
- Description of the entity's transition plan objectives and actions

[HKFRS S2.14(a)(iv)]
- Explanation of key assumptions and dependencies underlying the transition plan

[HKFRS S2.14(b), (c)]
- Decision-useful information about how the entity plans to resource and keep track on the progress of the transition plans

There are other frameworks available for target setting beyond SBTi including the following:

- **Nationally Determined Contributions ("NDCs"):** Countries' climate commitments under the Paris Agreement can inform company-level targets, particularly for entities operating in specific jurisdictions
- **Sector pathways:** Industry-specific decarbonisation roadmaps (e.g. for steel, cement)
- **Regulatory requirements:** Sector-specific regulations may mandate climate targets (e.g. banking stress testing requirements, power sector renewable energy standards, aviation emissions trading scheme)
- **Internal methodologies:** Company-developed approaches based on business strategy and risk assessment

Benefits of using globally recognised science-based frameworks:

- **Enhanced credibility:** Science-based, NDC-aligned, or regulatory methodologies provide third-party validation of target ambition
- **Improved comparability:** Standardised approaches enable investor benchmarking across companies and sectors
- **Policy alignment:** NDC-aligned or regulatory targets demonstrate contribution to national climate-related goals and compliance obligations
- **Access to capital:** Many sustainable finance instruments favour science-based targets
- **Stakeholder confidence:** External validation can strengthen relationships with customers, suppliers, and regulators

[52] HKFRS S2 does not require companies to refer to external reference to external commitments, benchmark or reference points. However, entities may consider to include relevant information if applicable. Refer to Section 3.4.3 of IFRS Transition Plans Guidance Documents for guidance.

Practical considerations for entities:

- **With established SBTi, NDC-aligned, or regulatory targets:** Explain how they integrate with the entity's business strategy and link to financial planning
- **With sector-specific guidance:** Consider whether the entity's industry has established pathways (e.g., steel and cement) that provide relevant benchmarks even without formal science-based commitment
- **Regulated industries:** Banking, power, aviation, and other sectors may need to align targets with supervisor expectations or mandatory frameworks
- **Without referencing to external frameworks:** Focus on clearly articulating the entity's climate objectives, the rationale behind them, and how they align with the entity's business model and risk management

HKFRS SDS prioritise transparency and decision-usefulness over compliance with specific frameworks. The aim of climate-related disclosures should enable primary users to assess the credibility and achievability for entities to meet their climate-related goals.

FAQ 8.2

Should entities use carbon credits to offset their emissions for achieving their GHG targets?

[HKFRS S2.BC151]

There is ongoing debate and controversy regarding the use of carbon credits to achieve an entity's strategic objectives. HKFRS S2 is not designed to express a view on the appropriateness of using carbon credits in setting its greenhouse gas emissions targets or as part of its transition plans. Instead, the requirements set out in HKFRS S2 are designed to provide transparency about an entity's planned use of carbon credits and information about those carbon credits. The following information should be disclosed:

[HKFRS S2.36(e), B70, B71]

- Planned use of carbon credits with clear explanation to which extent these carbon credits are relied on to achieve the net GHG targets.
- Information about the purchased carbon credits, which include the third-party scheme verify or certify the carbon credits, the type of carbon credit, and any factors necessary for primary users to understand the credibility and integrity of the carbon credits.

FAQ 8.3

[HKFRS S2.14]

Does the disclosure of a transition plan mean the entity already has comprehensive targets and plans for its carbon inventory?

Entities are not required to have comprehensive targets and detailed plans covering their entire carbon inventory before publishing a transition plan. What is essential is to present the overall climate-related strategic goal and information that enables users of general-purpose financial reports understand the effects of climate-related risks and opportunities on their strategy and decision making. As capabilities and data improve, entities are encouraged to develop and disclose more specific targets and plans across its Scope 1, Scope 2 and Scope 3 GHG emissions, thereby enhancing transparency and accountability.

FAQ 8.4

To what extent should entities disclose climate-adjacent matters of their transition plan?

Entities are expected to disclose climate-adjacent matters of their transition plan in order to provide a complete and transparent view of how the transition plan addresses not only emissions but also related challenges and dependencies.

Strategically, entities might determine that it is relevant to disclose how adjacent matters are factored into long-term planning, such as how workforce transitions are resourced and sequenced, how suppliers are supported to meet new requirements, or how community relationships are managed during facility repurposing. From a governance perspective, disclosure should show how leadership reviews these adjacent issues, incorporates them into risk and capital decisions and ensures accountability for addressing them over time. Refer to example 3 of the ISSB educational material – Nature and social aspects of climate-related risks and opportunities on how an entity might disclose information about an entity's response to a climate-related risk on the social aspect.

While HKFRS SDS do not prescribe how much detail must be disclosed, entities are expected to provide such information when it is material and decision useful, showing that transition governance extends beyond climate metrics to cover the broader people, markets and communities affected.

9 Connected Information

Objectives

To explain the requirements for connected information under HKFRS SDS and provide guidance to achieve such connectivity

ISSB and International Accounting Standards Board (IASB) educational materials and other resources

- Webcasts – Connectivity between the financial statements and sustainability-related financial disclosures
- Educational material – Effects of climate-related matters on financial statements[53]

9.1 Introduction

Investors and other capital market participants need both financial statements and sustainability-related financial disclosures to make informed decisions. It is important that these reports provide connected information about an entity.

[HKFRS S1.21, B39] HKFRS SDS require information to be provided in a manner that enables users of general purpose financial reports to understand the following types of connections:

- The connections between the items to which the information relates – e.g. the identified sustainability-related risks and opportunities (see section 9.2); and
- The connections between disclosures provided by the entity:
  - Within its sustainability-related financial disclosures (see section 9.3); and
  - Across its sustainability-related financial disclosures and other general purpose financial reports published by the entity – such as its related financial statements (see section 9.4).

9.2 Connected information – between the items to which the information relates

Business issues, including sustainability-related risks or opportunities, are often connected, with trade-offs or interdependence between them. Clarifying the connectivity between different sustainability-related risks and opportunities and the entity's strategic response helps investors understand an entity's overall exposure.

[HKFRS S1.B40] Connected information provides insight into connections between the items to which the information relates. For example:

- if an entity pursued a particular sustainability-related opportunity and that resulted in an increase in the entity's revenue, connected information will depict that relationship between the entity's strategy and its financial performance;
- if an entity identified a trade-off between two sustainability-related risks it is exposed to and took action on the basis of its assessment of that trade-off, connected information will depict the relationship between those risks and the entity's strategy; and
- if an entity committed to a particular sustainability-related target, but that commitment has not yet affected the entity's financial position or financial performance because the applicable recognition criteria have not been met, connected information will depict that relationship.

[53] This is an IASB educational material on the requirements in IFRS Accounting Standards to report on the effects of climate-related matters in the financial statements when those effects are material. It has been republished in light of the issuance of IFRS S1 and IFRS S2.

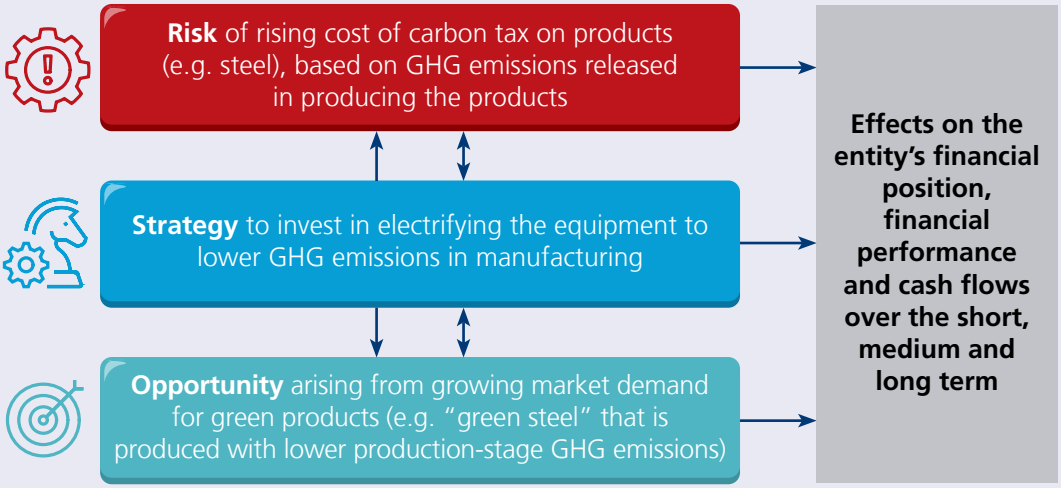
Example 9.1

Connection of related items in disclosure

Titan Steelworks Co., Ltd. ("Titan Steelworks") is a steel manufacturing company that engages in raw material procurement, steel production and distribution, and exports its products to Europe. In its disclosures, it might identify the following items and explain their connections and financial effects:

- A risk of increasing carbon taxes on its steel products exported to Europe, impacting its cost of sales.
- Its strategic response to invest in electrifying its equipment to lower the GHG emissions associated with its production of steel products, impacting its CAPEX.
- An opportunity to increase sales of its products that are processed using more environmentally friendly practices (i.e. "green steel"), given the projected global green steel market growth fuelled by rising demand for eco-friendly steel in industries such as construction and transportation.
- Its plan to closely monitor market developments to review the value of less-green products and the need for accelerating the replacement of carbon-intensive equipment (i.e. whether there is any indication of impairment of assets).

Sustainability-related risks and opportunities and an entity's strategic response



9.3 Connected information – within sustainability-related financial disclosures

An entity needs to ensure connections between the disclosures provided within its sustainability-related financial disclosures, such as connections between disclosures on the four core content areas (i.e. governance, strategy, risk management and metrics and targets) required under HKFRS S1.25. For example, for an individual sustainability-related risk or opportunity, an entity needs to connect information across these content areas.

Example 9.2

Connection of related items in sustainability-related financial disclosures[54]

Following Example 9.1 where Titan Steelworks has identified specific sustainability-related risks and opportunities and the associated strategic response, it prepares sustainability-related financial disclosures and takes care to connect the related disclosures to ensure primary users can assess the overall effect on the company's prospects.

Component	Example disclosure area
Governance	• Governance activities of the board, including review and approval of the transition plan as part of its **strategy** and the associated GHG emissions reduction **targets**, as well as the review of progress towards the targets
Strategy	• Transition **risk** of rising cost of carbon tax on products • **Opportunity** arising from growing market demand for green products • **Strategy** to reduce GHG emission intensity of its production process through electrifying its equipment • Current and anticipated financial effects of the climate-related risks, opportunities and strategy
Risk management	• How the existing risk management processes prioritise and monitor climate-related transition **risks**
Metrics and targets	• GHG emissions reduction **targets** set • Scope 1, Scope 2 and Scope 3 GHG emissions **metrics** and comparison against the base period to measure progress towards targets • Other climate-related **metrics** under HKFRS S2.29, including the amount and percentage of assets or business activities vulnerable to climate-related transition **risks** and aligned with climate-related **opportunities**, the amount of CAPEX, financing and investment deployed towards these **risks** and **opportunities**

9.4 Connected information – across sustainability-related financial disclosures and other general purpose financial reports

Information needs to be consistent and connected across sustainability-related financial disclosures and other general purpose financial reports (e.g. general purpose financial statements, strategic report, management commentary, governance report, integrated report). For instance, this consistency should enable insights into how strategic decisions related to sustainability connect to the income statement.

In this section, financial statements are used as an example of other general purpose financial reports to illustrate how to foster connected information. To foster connected information between sustainability-related financial disclosures and financial statements, it would be helpful to have a good understanding about:

1. How financial statements and sustainability-related financial disclosures provide **complementary perspectives** on the reporting entity (see section 9.4.1);
2. **What information** about sustainability-related risks and opportunities is disclosed in the financial statements and sustainability-related financial disclosures (see section 9.4.2); and
3. The **considerations** for providing connected information across financial statements and sustainability-related financial disclosures (see section 9.4.3).

[54] Adapted from Example 13A of KPMG – First Impressions – General and climate-related requirements.

9.4.1 How financial statements and sustainability-related financial disclosures provide complementary perspectives on the reporting entity

HKFRS SDS have specific requirements to **support the connection** between sustainability-related financial disclosures and financial statements. Some key requirements that align with those for preparing financial statements include:

[HKFRS S1.1]
- Being designed to provide information that is **useful to primary users** in making their investment decisions

[HKFRS S1.20]
- Disclosing information for the **same reporting entity**

[HKFRS S1.60, 64]
- Covering the **same reporting period** and being **reported at the same time**, **as part of general purpose financial reports**

[HKFRS S1.24]
- Using the **same presentation currency** for monetary amounts

[HKFRS S1.23]
- Using **consistent data and assumptions** to the extent possible

While both sustainability-related financial disclosures and financial statements are to provide information that is useful to primary users in making their investment decisions, these reports have **different objectives** and hence provide **distinct information about an entity**.

Table 9.1 Comparison of information in sustainability-related financial disclosures and financial statements[55]

	Financial statements	Sustainability-related financial disclosures
Information concerned	**Assets, liabilities, equity, income and expenses** of the entity.	**Sustainability-related risks and opportunities** that could reasonably be expected to affect an entity's prospects, which could arise from: • The entity's own activities • The entity's interaction throughout its value chain.
Timeframe and perspective of elements captured	• Sustainability-related financial disclosures are likely to include more qualitative information and forward-looking information than financial statements. • Sustainability-related financial disclosures provide information about sustainability-related risks and opportunities that are not limited to information about whether those risks and opportunities have affected or relate to an entity's assets, liabilities, equity, income or expenses. For example, sustainability-related financial disclosures include information about: - other aspects of the entity (e.g. governance, strategy and risk management processes in relation to a sustainability-related risk or opportunity); and - anticipated financial effects.	

[55] Adapted from page 17 of the ISSB educational material Sustainability-related risks and opportunities and the disclosure of material information.

Due to having different reporting objectives, sustainability-related financial disclosures provide complementary perspectives on the reporting entity, considering the following factors:

- **Information about sustainability-related risks and opportunities** provides primary users with early indications about where the entity is heading (in terms of potential future changes in the financial position, financial performance or cash flows), before those risks and opportunities actually affect the entity's financial position, financial performance or cash flows.
- Financial implications over **longer time periods** and interactions throughout an entity's **value chain** would more often be considered.

9.4.2 What information about sustainability-related risks and opportunities is disclosed in the financial statements and sustainability-related financial disclosures

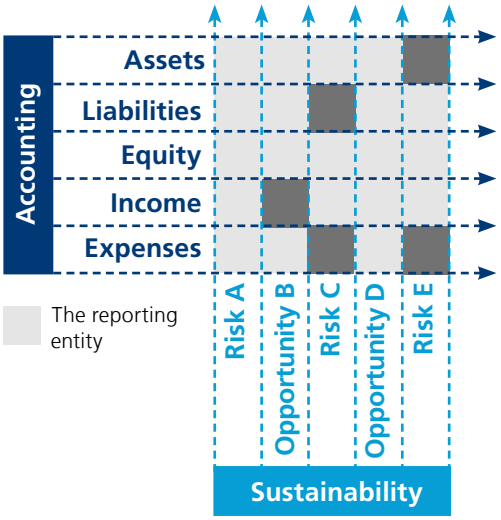
Both financial statements and sustainability-related financial disclosures consider sustainability-related matters; however, there is a fundamental difference in the information they disclose. The former looks through the lens of assets, liabilities, equity, income and expenses, while the latter looks through the lens of sustainability-related risks and opportunities that could reasonably be expected to affect an entity's cash flows, its access to finance or cost of capital over the short, medium or long term.

Effects of sustainability-related risks and opportunities on the financial statements

Forward-looking information about future transactions, events and other conditions is included in financial statements only if it affects the recognition and measurement of assets, liabilities, equity, income and expenses (e.g. provision for future restructuring costs based on confirmed reorganisation plans, contingent liabilities related to possible future legal claims, assumptions about future market conditions used for measuring the fair value of assets and liabilities and measuring expected losses), and if that information is useful to primary users for investment decision making.

Sustainability-related risks and opportunities, by their nature, are more likely to be forward-looking. However, these risks and opportunities can also affect the entity today – the business model, strategy and its financial position, financial performance and cash flows in the reporting period (i.e. current financial effects of sustainability-related risks and opportunities). In such cases, the related impacts might be reflected in the financial statements. Figure 9.1 shows how sustainability-related risks and opportunities can affect assets, liabilities, equity, income and expenses.

Figure 9.1 Example impacts of sustainability-related risks and opportunities on financial statement items[56]



As illustrated in this figure, a line item in the financial statements (e.g. assets, expenses) could be affected by one or more sustainability-related risks or opportunities. For example, in the figure, expenses are affected by sustainability-related risks C and E.

[56] Adapted from Webcasts – Connectivity between the financial statements and sustainability-related financial disclosures *Webcast 1: IFRS Standards – Complementary and connected information (slide 14).*

HKFRS Accounting Standards do not refer explicitly to sustainability-related topics. An entity needs to:

- Understand the nature and effects of the specific sustainability-related risk and opportunity; and
- Consider the effects of sustainability-related risks and opportunities in applying HKFRS Accounting Standards when such effects are material in the context of the financial statements taken as a whole.

Table 9.2 **Examples of sustainability-related risks and opportunities and potential financial reporting effects[57]**

Example sustainability-related risks and opportunities	Example of relevant accounting standards[58]	Potential financial reporting effect
Sustainability-related regulation (e.g. clean-up and remediation, carbon tax, restrictions on polluting assets)	HKFRS 15, HKAS 16, HKAS 36, HKAS 37	• Provisions: Recognition and measurement • PP&E: Useful life and impairment • Revenue and costs
GHG emissions reduction target and plans (e.g. increase use of renewable energy and alternative raw materials, equipment replacement)	HKAS 2, HKAS 16, HKAS 36, HKAS 37	• Inventory: Net realisable value • PP&E: Useful life and impairment • Provisions: Recognition and measurement
Sustainability-linked financing (e.g. borrowing rate impacted by entity's sustainability performance, breaches of covenants in the event of missing sustainability targets, financing green technology through leases)	HKFRS 9, HKAS 32, HKFRS 16, HKAS 1	• Financial instruments: Current/non-current classification of liabilities, identification of derivatives • Leases: Identification and measurement • Going concern

[57] Adapted from IASB educational material – Effects of climate-related matters on financial statements, KPMG – Are you clear on climate reporting in the financial statements?

[58] HKAS 1 *Presentation of Financial Statements* (HKFRS 18 *Presentation and Disclosure in Financial Statements* for annual reporting periods beginning on or after 1 January 2027)
HKAS 2 *Inventories*
HKAS 16 *Property, Plant and Equipment*
HKAS 32 *Financial Instruments: Presentation*
HKAS 36 *Impairment of Assets*
HKAS 37 *Provisions, Contingent Liabilities and Contingent Assets*
HKFRS 9 *Financial Instruments*
HKFRS 15 *Revenue from Contracts with Customers*
HKFRS 16 *Leases*

Considering what information to disclose in the financial statements and sustainability-related financial disclosures

Some HKFRS Accounting Standards specify information that is required to be included in the financial statements, which include the notes. An entity shall also consider whether to provide additional disclosures when compliance with the specific requirements in HKFRS Accounting Standards is insufficient to enable users of financial statements to understand the impact of particular transactions, other events and conditions on the entity's financial position and financial performance[59].

[HKFRS S1.25] [HKFRS S1.15(b)]

To determine the information to include in sustainability-related financial disclosures, an entity follows the requirements of HKFRS SDS, including providing information about sustainability-related risks and opportunities around four core content areas (i.e. governance, strategy, risk management and metrics and targets), and disclosing additional information if compliance with the specifically applicable requirements in HKFRS SDS is insufficient to enable users of general purpose financial reports to understand the effects of sustainability-related risks and opportunities on the entity's cash flows, its access to finance and cost of capital over the short, medium and long term.

Sustainability-related financial disclosures provide information that complements or expands upon information provided in the related financial statements. Applying these standards can support in making connections between the sustainability-related risks and opportunities reported in the sustainability-related financial disclosures and the information reported in the financial statements.

For example, consider the interaction between information in financial statements and disclosure related to current financial effects within sustainability-related financial disclosures. To provide connected information, an entity should assess if the sustainability-related risk or opportunity has affected the financial position, financial performance or cash flows. Then, examine what information about that effect is provided in the financial statements. The notes to the financial statements might explain how sustainability-related risks and opportunities have affected an entity's current financial position, financial performance and cash flows. This explanation could provide information that HKFRS SDS require an entity to disclose regarding current financial effects.

9.4.3 The considerations for providing connected information across financial statements and sustainability-related financial disclosures

To clarify and explain the connections between financial statements and sustainability-related financial disclosures, entities are required to consider the following aspects:

- The connections between **sustainability-related risks and opportunities** and **elements of the financial statements** (i.e. assets, liabilities, equity, income and expenses) (see section 9.4.2)
- The connections between **data and assumptions** used in sustainability-related financial disclosures and those used in financial statements (see section 9.4.3.1); and
- The connections between **information** in sustainability-related financial disclosures and information in financial statements and other general purpose financial reports (see section 9.4.3.2).

9.4.3.1 The connections between data and assumptions used in sustainability-related financial disclosures and those used in financial statements

[HKFRS S1.23]

HKFRS SDS require that data and assumptions used in the preparation of the sustainability-related financial disclosures are consistent – to the extent possible considering HKFRS Accounting Standards or other applicable accounting requirements – with the corresponding data and assumptions used in preparing the related financial statements.

[59] Paragraph 31 of HKAS 1 *Presentation of Financial Statements* (Paragraphs 19-20 of HKFRS 18).

For example, if an entity presents climate-related commitments in the sustainability-related financial disclosures, then the data and assumptions used in the financial statements have to be consistent, to the extent possible, considering the recognition and measurement requirements of the applicable financial reporting framework. Refer to Example 9.3 for an illustration.

[HKFRS S1.B42(c)] Where there are any significant differences between the data and assumptions, an entity is required to disclose information about the significant differences.

FAQ 9.1

Why might the data and assumptions used in sustainability-related financial disclosures differ from those in financial statements and still be appropriate?

Different data and assumptions may be used due to different requirements in HKFRS SDS and HKFRS Accounting Standards.

For example, HKFRS S2.22 requires an entity to use climate-related scenario analysis to assess its climate resilience. Scenario analysis is a process for management to identify and assess uncertain outcomes in a range of hypothetical situations, based on its view of the risks and opportunities affecting the business. Scenario time horizons may extend well into the future (e.g. 2040, 2050) to take into account the impact of climate change that may not be apparent for several years or even decades, but could be deemed material to the value of an entity today.

Financial statement balances sometimes depend on assessments of expected value, which will also be based on management's view of the risks and opportunities facing the business. For example, under HKAS 36.9, an entity is required to assess at each reporting date whether there is an indication that an asset or cash-generating unit may be impaired. Sustainability-related risks and opportunities may give rise to such indications. For instance, a decline in demand for high-carbon products could indicate that a related manufacturing plant may be impaired, requiring the asset to be tested for impairment.

When estimating the recoverable amount of an asset in the impairment analysis, an entity needs to follow requirements including[60]:

- basing cash flow projections on reasonable and supportable assumptions that represent management's best estimate of the range of future economic conditions (including climate-related impacts);
- basing cash flow projections on the most recent financial budgets/forecasts approved by the management, where these projections shall cover a maximum period of five years, unless a longer period can be justified; and
- estimating future cash flows for an asset in its current condition, excluding any estimated cash flows expected to arise from future restructurings or enhancing the asset's performance.

As sustainability-related financial disclosures and financial statements are prepared according to different requirements to provide different perspectives on an entity, as mentioned in section 9.4.1, there could be legitimate reasons for data and assumptions to vary between an entity's sustainability-related financial disclosures and its financial statements.

[60] Under paragraph 33(c) of HKAS 36, cash flow projections beyond the period covered by the most recent budgets or forecasts are estimated by extrapolating the projections based on the budgets or forecasts using a steady or declining growth rate for subsequent years, unless an increasing rate can be justified.

9.4.3.2 The connections between information in sustainability-related financial disclosures and information in financial statements and other general purpose financial reports

In connecting information in sustainability-related financial disclosures and financial statements, an entity should demonstrate "connected thinking" and avoid unnecessary duplication.

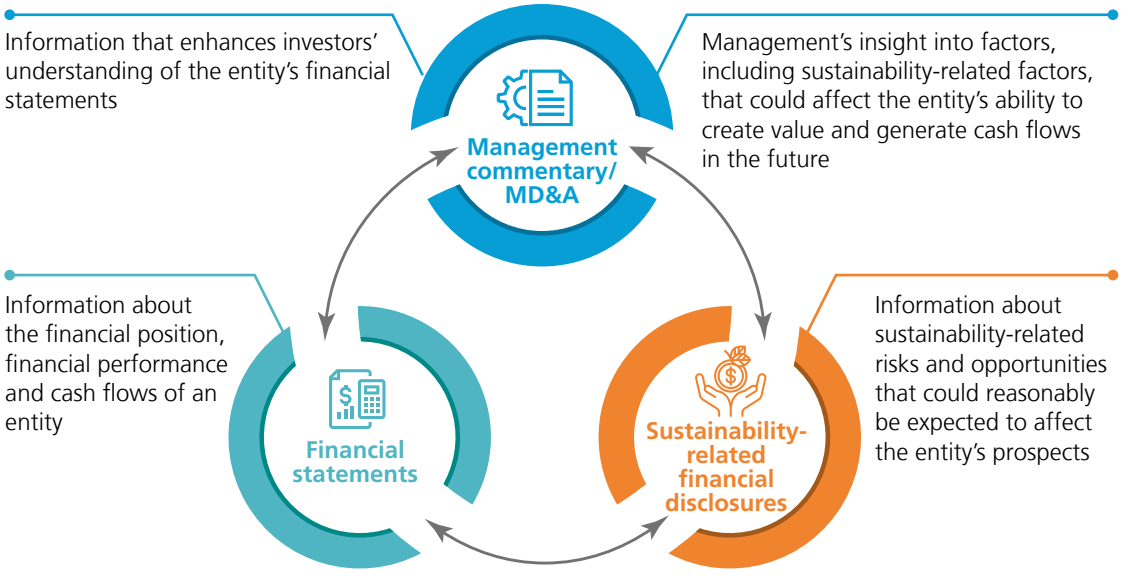
Demonstrate connected thinking

Management's views on each sustainability-related risk or opportunity need to inform both sustainability-related financial disclosures and financial statements. Connected information requires that a single view of the business model and strategy should be recognised across an entity's general purpose financial reports.

An entity should evaluate the information presented in different reports and ensure that its disclosures form a cohesive and connected story. In doing so, it is encouraged to:

- **Review the different information disclosed in general purpose financial reports and connect to the overall strategy and business model** – considering, for example,
  - how business strategy and model (in management discussion & analysis ("MD&A")) relate to the management of sustainability-related risks and opportunities (in MD&A, sustainability-related financial disclosures);
  - how sustainability-related risks and opportunities (in sustainability-related financial disclosures) have affected assets, liabilities, equity, income and expenses (in financial statements); and
  - how sustainability-related financial disclosures are consistent with data and assumptions used to prepare financial statements.

Figure 9.2 Connections of information in general purpose financial reports



- **Review the reporting process**
  - If the different elements of general purpose financial reports are developed in silo, it is unlikely to deliver a coherent narrative. Entities are recommended to foster greater interaction and collaboration between the various departments involved in preparing the reports – e.g. finance, investor relations, risk management, sustainability – to ensure consistency and connectivity across reporting.

Avoid unnecessary duplication

[HKFRS S1.B42(b)] Given that both the financial statements and sustainability-related financial disclosures can cover information related to sustainability-related risks and opportunities, there can be an overlap of information. In providing connected information, an entity shall avoid unnecessary duplication if HKFRS SDS require the disclosure of common items of information.

[HKFRS S1.BC69] Even in the area of overlap, the information in financial statements and sustainability-related financial disclosures is not necessarily duplicative. Applying the definition of material information and the respective disclosure requirements could result in an entity providing different information in each of those reports because those reports serve different objectives and provide different types of information about an entity. Example 9.3 below illustrates how different information about a sustainability-related matter would be presented in different reports and manners, reflecting the fact that the information conveyed through each differs.

[HKFRS S1.B45] HKFRS SDS permit an entity to include information in its sustainability-related financial disclosures by cross-reference to another report published by the entity (e.g. its financial statements), provided that:

- the cross-referenced information is available on the same terms and at the same time as the sustainability-related financial disclosures; and
- the complete set of sustainability-related financial disclosures is not made less understandable by including information by cross-reference.

[HKFRS S1.B47] If an entity includes information required by an HKFRS SDS by cross-reference:

- the sustainability-related financial disclosures shall clearly identify the report within which that information is located and explain how to access that report; and
- the cross-reference shall be to a precisely specified part of that report.

Example 9.3

Disclosing connected information about climate-related commitments in financial statements and sustainability-related financial disclosures[61]

This example illustrates how sustainability-related financial disclosures are connected to and complement the information in financial statements.

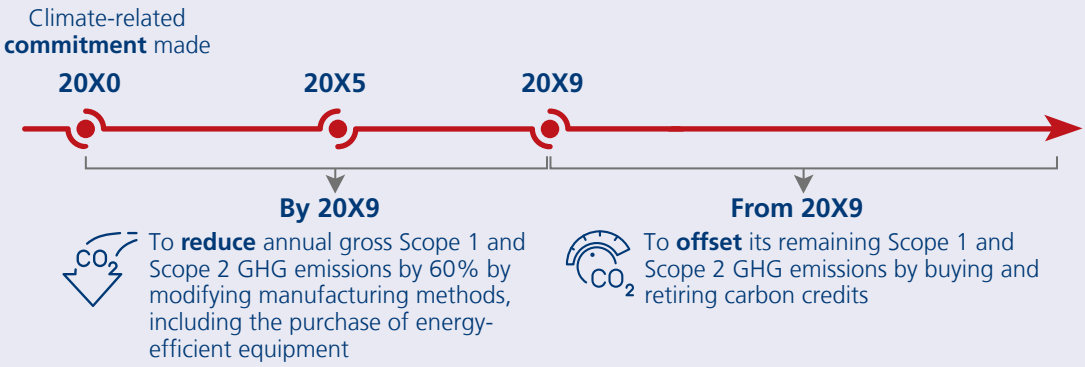
Fact pattern

In 20X0, Oriental Home Products publicly states its commitment:

- to reduce its current GHG emissions by at least 60% by 20X9; and
- to offset its remaining emissions in 20X9 and thereafter, by buying carbon credits and retiring them from the carbon market.

With this statement of commitment, Oriental Home Products publishes a detailed plan setting out how it will gradually modify its manufacturing methods between 20X1 and 20X9 to achieve the 60% reduction in emissions by 20X9. The modifications will involve investing in more energy-efficient equipment, among others. Management is confident that the entity can make all these modifications and continue to sell its products at a profit.

[61] Adapted from Webcasts – Connectivity between the financial statements and sustainability-related financial disclosures *Webcast 4: Example – Climate-related commitments.*



Illustrating reported information (non-exhaustive)

This example **does not** include application of all requirements in HKFRS Accounting Standards and HKFRS SDS but specifically highlights how information about current and anticipated financial effects in sustainability-related financial disclosures complements the information in the financial statements. It provides example considerations for disclosures in these reports.

FY 20X0 reporting period

In 20X0, Oriental Home Products publicly stated its GHG emissions target and plans to achieve it.

Financial statements

Example considerations	Disclosures
Are there effects on the **recognition and measurement** of assets, liabilities, equity, income and expenses?	N/A. No financial effects in the reporting period (Note 1).
If recognition and measurement are affected, is the related amount to be **separately provided (disaggregated)**?	N/A. No financial effects about which to provide disaggregated information.
Are there any **other related disclosures** that should be provided?	Its transition plan has no effect on its financial position and financial performance and the reason why (if that information is material in the context of the financial statements) (Note 2). The amount of contractual commitments to acquire property, plant and equipment, if any (HKAS 16.74(c)).

Sustainability-related financial disclosures

Example considerations	Disclosures
What are the related **current financial effects**?	Its transition plan to address its climate-related risks has not had financial effects in the reporting period, and the reasons why there were no financial effects for the identified risk.
How is the financial position, financial performance and cash flows expected to change over time (i.e. what are the related **anticipated financial effects)**?	Information about the planned purchases of energy-efficient equipment and carbon credits and related sources of funding, including quantitative information. (Note 3)

Sustainability-related financial disclosures	
Example considerations	**Disclosures**
What **other disclosures** related to transition plans and climate-related targets are required that provide **complementary** information?	Information such as: • how it plans to achieve its net emissions target and its gross GHG emissions target; • key assumptions and dependencies; and • that its climate target covers gross Scope 1 and Scope 2 GHG emissions and that it plans to use carbon credits to offset any remaining emissions.

Notes:

1. Oriental Home Products considers that it is not required to recognise a provision for the commitment to reduce its GHG emissions in its financial statements based on the requirements of HKAS 37[62]. Even if the commitment creates a constructive obligation[63], it does not have a present obligation as a result of a past event (i.e. damage done). The present obligation occurs only when it emits the GHG that it has committed to offset (i.e. from 20X9 onwards). Furthermore, the commitment to reduce its GHG emissions will not require an outflow of economic resources. Although Oriental Home Products will incur expenditure to modify its manufacturing methods, it will receive other resources in exchange (e.g. new equipment bought). Therefore, there is no net outflow of economic resources[64].

2. In making the materiality judgement, Oriental Home Products may take into account both entity-specific and external qualitative factors, for instance[65]:

   - whether it has significant exposures to climate-related risks;
   - whether the transition plan is strategically important and will significantly affect its future operations;
   - whether there are potential inconsistencies between the information in financial statements and its sustainability-related financial disclosures; and
   - the significance of climate-related transition risks to entities operating in the same industry and the climate-related policies adopted by the jurisdictions in which Oriental Home Products operates.

[HKFRS S2.20]

3. An entity needs not provide quantitative information about the anticipated financial effects of a climate-related risk or opportunity if the entity does not have the skills, capabilities or resources to provide that quantitative information (Refer to Chapter 1 of the HKFRS SDS Guidance Part 1 for more guidance on the application of the capabilities mechanism).

[HKFRS S2.19]

   An entity also needs not provide the quantitative information about the current or anticipated financial effects if it determines that those effects are not separately identifiable, or the level of measurement uncertainty involved in estimating those effects is so high that the resulting quantitative information would not be useful.

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[62] Under paragraph 14 of HKAS 37, an entity recognises a provision only when all of the following criteria are met:
a) an entity has a present obligation (legal or constructive) as a result of a past event;
b) it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation; and
c) a reliable estimate can be made of the amount of the obligation.

[63] Paragraph 10 of HKAS 37 defines a constructive obligation as an obligation that derives from an entity's actions where:
a) by an established pattern of past practice, published policies or a sufficiently specific current statement, the entity has indicated to other parties that it will accept certain responsibilities; and
b) as a result, the entity has created a valid expectation on the part of those other parties that it will discharge those responsibilities.

If the entity's statement has not created a constructive obligation, the entity does not recognise a provision.

[64] Refer to the IFRS Interpretations Committee agenda decision on Climate-related Commitments (IAS 37 *Provisions, Contingent Liabilities and Contingent Assets*) for more detailed guidance.

[65] These factors are based on references from paragraphs 1.10 and 1.11 of the Near-final staff draft – Disclosures about Uncertainties in the Financial Statements Illustrated using Climate-related Examples. At the time of writing, the final amendments have not yet issued by the IASB.

FY 20X5 reporting period

In 20X5, Oriental Home Products carried out its transition plan and purchased energy-efficient equipment. It is assumed there are no other financial effects from the entity's plans to reduce emissions.

Financial statements

Example considerations	Disclosures
Are there effects on the **recognition and measurement** of assets, liabilities, equity, income and expenses?	Energy-efficient equipment is recognised as an asset and depreciated over its useful life.
If recognition and measurement are affected, is the related amount to be **separately provided (disaggregated)**?	Disaggregates information about energy-efficient equipment if that information is material in the context of the financial statements.
Are there any **other related disclosures** that should be provided?	The purchases of equipment as additions to each class of property, plant and equipment as part of their carrying amount reconciliation (HKAS 16.73(e)).

Sustainability-related financial disclosures

Example considerations	Disclosures
What are the related current **financial effects**?	Information about purchases of the energy-efficient equipment, the carrying amount of that equipment and related depreciation expense (Note 1).
How do we expect the financial position, financial performance and cash flows to change over time (i.e. what are the related **anticipated financial effects**)?	Information about the planned purchases of energy-efficient equipment and carbon credits and related sources of funding, including quantitative information (Notes 2, 3).
What **other disclosures** related to transition plans and climate-related targets are required that provide **complementary** information?	Information such as: • the progress in executing the transition plan; • its performance against its target; and • the planned use of carbon credits, including information about the credibility and integrity of those credits.

Notes:

1. To avoid duplication, Oriental Home Products may, subject to specified criteria, describe the current financial effects about the purchase of the energy-efficient equipment, the carrying amount and the related depreciation expense in its sustainability-related financial disclosures by cross-referencing to the related financial statements. Refer to the section "Avoid unnecessary duplication" above for more information.
2. Compared with 20X0, in 20X5, Oriental Home Products might have more visibility and be able to provide more specific disclosures regarding future costs, such as those related to the purchase of carbon credits, as the dates at which these purchases might be required are closer.

[HKFRS S2.20]

3. An entity needs not provide quantitative information about the anticipated financial effects of a climate-related risk or opportunity if the entity does not have the skills, capabilities or resources to provide that quantitative information. However, continuous improvement is expected over time as skills and capabilities develop (Refer to Chapter 1 of the HKFRS SDS Guidance Part 1 for more guidance on the application of the "capabilities mechanism"). Oriental Home Products should evaluate and provide the quantitative information when it has the skills, capabilities or resources.

[HKFRS S2.19]

An entity also needs not provide the quantitative information about the current or anticipated financial effects if it determines that those effects are not separately identifiable, or the level of measurement uncertainty involved in estimating those effects is so high that the resulting quantitative information would not be useful.

How sustainability-related financial disclosures are complementary to the information provided in the financial statements

As shown in the example illustration in 20X0, sustainability-related financial disclosures provide information about an entity's transition plan and the planned actions to reach its targets, before the financial statements recognise any effects of the climate-related commitments. That information allows primary users to assess the effects on the entity's prospects, the achievability of the targets and the related resources that may be needed in the future.

With time, the sustainability-related financial disclosures provide information on the progress towards achieving the entity's targets and information to understand the credibility of the carbon credits that the entity is using. This complements the information in financial statements by offering insights into ongoing initiatives and effectiveness, providing a more holistic view of the entity's activities and performance.

Appendices

Appendix 1 Additional supporting resources and educational materials

Name	Description
AR6 Scenario Explorer and Scenarios Database	Contains 3,131 quantitative scenarios with data on socio-economic development, greenhouse gas emissions, and sectoral transformations across energy, land use, transportation, and industry to support the assessment of quantitative pathways in the IPCC AR6.
CDP Technical Note: Relevance of Scope 3 Categories by Sector	Provides insight on the relevance of Scope 3 categories to CDP's high-impact sectors and specific sectoral activities.
China Environmental Extended Input-Output Database	Contains EEIO data across various industries in China, including total GHG emissions, gross industry output and sector-specific emission factors.
China Products Carbon Footprint Factors Database	Contains product life cycle emission factors for different sectors in China.
Database of National Greenhouse Gas Emission Factor (China)	Contains national and regional emission factors and calculation tools in China.
Emissions & Generation Resource Integrated Database (United States)	Contains regional emission factors for electric power generated in the United States.
EXIOBASE	Contains EEIO data across 44 countries, 200 products, 163 industries, 417 emission categories and 662 material and resources categories.
GHG Protocol – Calculation Tools and Guidance	Provides cross-sector, country-specific and sector-specific tools and guidance for calculating GHG emissions.
Global Energy and Climate ("GEC") Model 2024 scenarios	Includes selected key input data for all three IEA's modelled scenarios (STEPS, APS, NZE), containing macro drivers such as population, economic developments and prices as well as techno-economic inputs such as fossil fuel resources or technology costs.
Government conversion factors for company reporting of greenhouse gas emissions (United Kingdom)	Provides emission factors for entities on quantifying Scope 1, 2 and 3 GHG emissions on their United Kingdom operations.
Hong Kong World's Sustainable Finance Hub – Calculator for Scope 1 and Scope 2 Greenhouse Gas Emissions of a Corporation	A publicly available GHG emission calculator that aims to assist corporate to assess or report their Scope 1 and Scope 2 GHG emissions based on the levels of actual activities.

Name	Description
IEA emission factors	Includes national and regional emission factors for electricity and electricity/heat generation.
KPMG – Are you clear on climate reporting in the financial statements?	Provides guidance to assess the impact of climate-related matters on financial statements, and how to clearly explain to investors and stakeholders the financial implications of climate-related matters.
KPMG – First Impressions – General and climate-related requirements	Provides detailed insight on the key impacts of the ISSB Standards, using illustrative examples, and includes how companies might apply them.
KPMG – GHG emissions reporting – Handbook	Provides guidance on understanding the standards and guidance of the GHG Protocol.
KPMG – Net-zero commitments: When to recognise a liability and how to tell a connected story	Provides guidance to enhance disclosures on the impact of net-zero commitments in a company's reporting with illustrative example.
KPMG – Telling your transition story	Introduces transition plan disclosures under IFRS Sustainability Disclosure Standards.
NGFS Phase V scenarios	Covers a broad range of physical and transition risks, the NGFS has designed seven long-term scenarios with the help of a consortium of renowned academic research institutions.
Partnership for Carbon Accounting Financials: The Global GHG Accounting and Reporting Standard	Provides detailed guidance to measure GHG emissions associated with seven asset classes, facilitated emissions and insurance-associated emissions.
PwC – In-depth planning guide on climate transition planning for financial institutions	Provides guidance to financial institutions on how to develop a credible climate transition plan.
PwC – Sustainability reporting guide	Serves as a compendium of the disclosure requirements under the primary sustainability reporting frameworks. It also provides insights and perspectives, interpretative and application guidance, illustrative examples and discussion on emerging issues.
PwC – Example sustainability disclosures under IFRS Sustainability Disclosure Standards	Contains an illustrative example of a basis of preparation and selected sustainability notes only for an entity reporting under the IFRS Sustainability Disclosure Standards.
PwC – Sustainability Now: podcast series	The podcast series on sustainability reporting are shared by PwC specialists and guest speakers and contains latest ESG regulatory requirements.
Supply Chain Greenhouse Gas Emission Factors by US EPA	Contains EEIO data for 1,016 U.S. commodities.

Name	Description
Task Force on Climate-Related Financial Disclosures	Provides materials developed by the TCFD to support adoption of the TCFD recommendations. The website is no longer updated or monitored, but remains available as a resource of materials.
Technical Guidance for Calculating Scope 3 Emissions: Supplement to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard	Provides detailed guidance and methods for calculating the 15 categories of Scope 3 GHG emissions.
World Input-Output Database	Contains EEIO data across 43 countries and 56 industries.

Appendix 2 Defined terms and abbreviations

The following key terms are used throughout this guidance.

Term	Description
business model	An entity's system of transforming inputs through its activities into outputs and outcomes that aims to fulfil the entity's strategic purposes and create value for the entity and hence generate cash flows over the short, medium and long term.
carbon credit	An emissions unit that is issued by a carbon crediting programme and represents an emission reduction or removal of **greenhouse gases**. Carbon credits are uniquely serialised, issued, tracked and cancelled by means of an electronic registry.
climate resilience	The capacity of an entity to adjust to climate-related changes, developments or uncertainties. Climate resilience involves the capacity to manage **climate-related risks** and benefit from **climate-related opportunities**, including the ability to respond and adapt to **climate-related transition risks** and **climate-related physical risks**. An entity's climate resilience includes both its strategic resilience and its operational resilience to climate-related changes, developments and uncertainties.
climate-related physical risks	Risks resulting from climate change that can be event-driven (acute physical risk) or from longer-term shifts in climatic patterns (chronic physical risk). Acute physical risks arise from weather-related events such as storms, floods, drought or heatwaves, which are increasing in severity and frequency. Chronic physical risks arise from longer-term shifts in climatic patterns including changes in precipitation and temperature which could lead to sea level rise, reduced water availability, biodiversity loss and changes in soil productivity. These risks could carry financial implications for an entity, such as costs resulting from direct damage to assets or indirect effects of supply-chain disruption. The entity's financial performance could also be affected by changes in water availability, sourcing and quality; and extreme temperature changes affecting the entity's premises, operations, supply chains, transportation needs and employee health and safety.

Term	Definition
climate-related risks and opportunities	Climate-related risks refers to the potential negative effects of climate change on an entity. These risks are categorised as **climate-related physical risks** and **climate-related transition** risks. Climate-related opportunities refers to the potential positive effects arising from climate change for an entity. Efforts to mitigate and adapt to climate change can produce climate-related opportunities for an entity.
climate-related transition plan	An aspect of an entity's overall strategy that lays out the entity's targets, actions or resources for its transition towards a lower-carbon economy, including actions such as reducing its **greenhouse gas** emissions.
climate-related transition risks	Risks that arise from efforts to transition to a lower-carbon economy. Transition risks include policy, legal, technological, market and reputational risks. These risks could carry financial implications for an entity, such as increased operating costs or asset impairment due to new or amended climate-related regulations. The entity's financial performance could also be affected by shifting consumer demands and the development and deployment of new technology
CO_2 equivalent (CO_2e)	The universal unit of measurement to indicate the **global warming potential** of each **greenhouse gas**, expressed in terms of the **global warming potential** of one unit of carbon dioxide. This unit is used to evaluate releasing (or avoiding releasing) different **greenhouse gases** against a common basis.
financed emissions	The portion of gross greenhouse gas emissions of an investee or counterparty attributed to the loans and investments made by an entity to the investee or counterparty. These emissions are part of Scope 3 Category 15 (investments) as defined in the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011).
general purpose financial reports	Reports that provide financial information about a **reporting entity** that is useful to **primary users** in making decisions relating to providing resources to the entity. Those decisions involve decisions about: (a) buying, selling or holding equity and debt instruments; (b) providing or selling loans and other forms of credit; or (c) exercising rights to vote on, or otherwise influence, the entity's management's actions that affect the use of the entity's economic resources. General purpose financial reports include — but are not restricted to — an entity's general purpose financial statements and **sustainability-related financial disclosures**.
global warming potential	A factor describing the radiative forcing impact (degree of harm to the atmosphere) of one unit of a given **greenhouse gas** relative to one unit of CO_2.

Term	Definition
greenhouse gases (GHG)	The seven greenhouse gases listed in the Kyoto Protocol — carbon dioxide (CO_2); methane (CH_4); nitrous oxide (N_2O); hydrofluorocarbons (HFCs); nitrogen trifluoride (NF_3); perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).
HKFRS Sustainability Disclosure Standards	Standards of that name issued by the Hong Kong Institute of Certified Public Accountants.
indirect greenhouse gas emissions	Emissions that are a consequence of the activities of an entity, but occur at sources owned or controlled by another entity.
internal carbon price	Price used by an entity to assess the financial implications of changes to investment, production and consumption patterns, and of potential technological progress and future emissions-abatement costs. An entity can use internal carbon prices for a range of business applications. Two types of internal carbon prices that an entity commonly uses are: (a) a shadow price, which is a theoretical cost or notional amount that the entity does not charge but that can be used to understand the economic implications or trade-offs for such things as risk impacts, new investments, the net present value of projects, and the cost and benefit of various initiatives; and (b) an internal tax or fee, which is a carbon price charged to a business activity, product line, or other business unit based on its **greenhouse gas** emissions (these internal taxes or fees are similar to intracompany transfer pricing).
impracticable	Applying a requirement is impracticable when an entity cannot apply it after making every reasonable effort to do so.
latest international agreement on climate change	An agreement by states, as members of the United Nations Framework Convention on Climate Change, to combat climate change. The agreements set norms and targets for a reduction in **greenhouse gases**.
material information	In the context of **sustainability-related financial disclosures**, information is material if omitting, misstating or obscuring that information could reasonably be expected to influence decisions that **primary users of general purpose financial reports** make on the basis of those reports, which include financial statements and sustainability-related financial disclosures and which provide information about a specific **reporting entity**.
primary users of general purpose financial reports (primary users)	Existing and potential investors, lenders and other creditors.
reporting entity	An entity that is required, or chooses, to prepare general purpose financial statements.
scenario analysis	A process for identifying and assessing a potential range of outcomes of future events under conditions of uncertainty.
Scope 1 greenhouse gas emissions	Direct **greenhouse gas** emissions that occur from sources that are owned or controlled by an entity.

Term	Definition
Scope 2 greenhouse gas emissions	**Indirect greenhouse gas emissions** from the generation of purchased or acquired electricity, steam, heating or cooling consumed by an entity. Purchased and acquired electricity is electricity that is purchased or otherwise brought into an entity's boundary. Scope 2 greenhouse gas emissions physically occur at the facility where electricity is generated.
Scope 3 greenhouse gas emissions	**Indirect greenhouse gas emissions** (not included in **Scope 2 greenhouse gas emissions**) that occur in the **value chain** of an entity, including both upstream and downstream emissions. Scope 3 greenhouse gas emissions include the **Scope 3 categories** in the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011).
Scope 3 categories	**Scope 3 greenhouse gas emissions** are categorised into these 15 categories — as described in the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011): (1) purchased goods and services; (2) capital goods; (3) fuel- and energy-related activities not included in **Scope 1 greenhouse gas emissions** or **Scope 2 greenhouse gas emissions**; (4) upstream transportation and distribution; (5) waste generated in operations; (6) business travel; (7) employee commuting; (8) upstream leased assets; (9) downstream transportation and distribution; (10) processing of sold products; (11) use of sold products; (12) end-of-life treatment of sold products; (13) downstream leased assets; (14) franchises; and (15) investments.
sustainability-related financial disclosures	A particular form of **general purpose financial reports** that provide information about the **reporting entity's** sustainability-related risks and opportunities that could reasonably be expected to affect the entity's cash flows, its access to finance or cost of capital over the short, medium or long term, including information about the entity's governance, strategy and risk management in relation to those risks and opportunities, and related metrics and targets.

Term	Definition
users of general purpose financial reports (users)	See **primary users of general purpose financial reports (primary users)**. These definitions describe the same population.
value chain	The full range of interactions, resources and relationships related to a **reporting entity's business model** and the external environment in which it operates. A value chain encompasses the interactions, resources and relationships an entity uses and depends on to create its products or services from conception to delivery, consumption and end-of-life, including interactions, resources and relationships in the entity's operations, such as human resources; those along its supply, marketing and distribution channels, such as materials and service sourcing, and product and service sale and delivery; and the financing, geographical, geopolitical and regulatory environments in which the entity operates.

The following abbreviations are used in this guidance.

Abbreviation	Long form
AR6	IPCC Sixth Assessment Report
CDSB	Climate Disclosure Standards Board
EEIO	Environmentally-extended input output
ESG	Environmental, social and governance
ESRS	European Sustainability Reporting Standards
FSB	Financial Stability Board
GHG	Greenhouse gas
GHG Protocol Corporate Standard	Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004)
GRI	Global Reporting Initiative
HKEX	The Hong Kong Exchanges and Clearing Limited
HKEX ESG Code	Environmental, Social and Governance Reporting Code as set out in Appendix C2 to the HKEX Listing Rules
HKEX IG	Implementation Guidance issued by HKEX
HKFRS SDS	HKFRS S1 *General Requirements for Disclosure of Sustainability-related Financial Information* and HKFRS S2 *Climate-related Disclosures*
HKICPA	Hong Kong Institute of Certified Public Accountants

Abbreviation	Long form
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ISSB Standards	IFRS Sustainability Disclosure Standards
NDCs	Nationally Determined Contributions
NGFS	Network for Greening the Financial System
PCAF	Partnership for Carbon Accounting Financials
SASB	Sustainability Accounting Standards Board
SBTi	Science Based Targets Initiative
SSP	Shared Socioeconomic Pathways
TCFD	Task Force on Climate-related Financial Disclosures
TIG	Transition Implementation Group on IFRS S1 and IFRS S2
TPT	Transition Plan Taskforce
UNFCCC	United Nations Framework Convention on Climate Change
US EPA	United States Environmental Protection Agency

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