KPMG

Climate risk in the financial statements

Handbook

US GAAP

December 2025

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Contents

Climate risk amid global uncertainty

Since we published the 2024 edition of this handbook, profound global economic and regulatory shifts have created heightened uncertainty. Climate-related risk is one area impacted. Companies that once made strategic and financial decisions based on assumptions about stable climate policies and predictable transition pathways now face a reality in which those assumptions may no longer hold.

Recent changes – such as delays and pullbacks regarding climate legislation and environmental protections in key jurisdictions – have added significant uncertainty to compliance requirements, carbon pricing and investment incentives. At the same time, physical climate risks remain, compounding operational and financial challenges for some companies.

These developments mean companies may need to reassess prior judgments and financial statement disclosures related to climate risk. Assumptions underpinning asset valuations, impairment testing and long-term investment strategies may need to be updated to reflect the current regulatory and economic context.

Management should approach this reassessment with rigor, recognizing that climate risk is no longer a static consideration but a dynamic factor shaped by policy volatility and market uncertainty. We hope our US GAAP handbook will help you prepare.

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About this publication

The purpose of this publication is to assist you in understanding the potential effects of climate risk on financial statements prepared in accordance with US GAAP.

Climate risk as a component of sustainability

This publication focuses on climate risk as just one component of sustainability. While many of the concepts discussed may have broader applicability, it is not intended to cover all sustainability issues that might affect the financial statements.

In addition, this publication focuses mainly on the risks associated with climate change because they link to the risk that the financial statements might be misstated if they are not accounted for properly – e.g. impairments and other writedowns, liabilities and contingent losses. However, climate-related opportunities (e.g. new and innovative investments and arrangements) are included to the extent that we are encountering issues in practice.

Direct and indirect effects

This publication deals with two distinct manifestations of climate risk:

- events and transactions that have clear financial statement implications – e.g. a flood, fire or hurricane that damages property, or the issuance of a sustainability-linked bond; and
- estimates and valuations that are based on current expectations and projected financial information – e.g. the useful lives of long-lived assets and impairment calculations. While equally important in preparing financial statements, the implications on the financial statements are often less clear because they may only impact one input to the estimate among many.

Not a complete picture

This publication comprises a collection of issues and examples that we believe are relevant for entities thinking about the ways in which climate risk can affect their financial statements. Our intent is to stimulate your thinking about how climate risk might manifest in your financial statements.

For the issues raised, the questions and brief summaries do not represent all of the accounting that might be relevant, and we provide links to further resources. And with the exception of chapter 16, in general we do not discuss the specific disclosures that relate to the accounting issues discussed. We also do not discuss disclosures outside of the financial statements.

December 2025 edition

This edition of our Handbook includes both new guidance (identified with **) and updated guidance (identified with #) based on our continued experience in responding to questions about the application of US GAAP when climate risk was one of the drivers in the background. In particular, this edition includes new illustrative examples on lease arrangements in chapter 4 and updated guidance about accounting for insurance recoveries in chapter 9.

FASB developments#

In March 2021, the FASB staff published an education paper, Intersection of Environmental, Social, and Governance Matters with Financial Accounting Standards. The examples raised in that paper are included in this publication.

In September 2025, the FASB issued a final standard that creates a new derivative scope exception under Topic 815, which may have implications for instruments with sustainability-linked features. See chapter 7, Forthcoming requirements.

In December 2024, the FASB issued a proposed standard on accounting for environmental credits and environmental credit obligations. The final standard is expected in early 2026. See chapter 13, Future developments.

In December 2025, the FASB issued a final standard on accounting for government grants. While the FASB's project on government grants is not explicitly tagged as a sustainability-related project, it helps to resolve certain sustainability 'accounting' issues. See section 16.7, Forthcoming requirements.

References to the literature

Our commentary is referenced to the FASB's Accounting Standards Codification® and other literature, as appropriate. The following are examples:

- 360-10-35-2 is paragraph 35-2 of ASC Subtopic 360-10
- CON 8.QC11 is paragraph QC11 of Concepts Statement No. 8
- GHGP S3 Std is the Corporate Value Chain (Scope 3) Accounting and Reporting Standard issued by the Greenhouse Gas Protocol
- ASU 2016-02.BC193 is paragraph 193 of the basis for conclusions to Accounting Standards Update 2016-02
- AU-C 320.04 is paragraph 4 of Section 320 of the AICPA Clarified Statements on Auditing Standards
- TQA 2210.15 is paragraph 15 of Technical Question & Answer Section 2210.

Abbreviations and terminology

We use the following abbreviations and terminology in this publication:

ARO	Asset retirement obligation
ASU	Accounting Standards Update
ESG	Environmental, Social, Governance
GHG emissions	Greenhouse gas emissions
ISSB	International Sustainability Standards Board
MD&A	Management's Discussion & Analysis
Net zero	Target to reduce carbon emissions, generally in line with the Paris agreement although there is no single definition. See Question 9.3.50 in KPMG Handbook, GHG emissions reporting
Paris agreement	Aims to limit global warming to well below 2°C (above pre-industrial levels) and pursue efforts to limit it to 1.5°C.
PFI	Projected financial information
PP&E	Property, plant and equipment
PPA	Power purchase agreement
PTC	Production tax credit
REC	Renewable energy credit or certificate
TCFD	Task Force on Climate-related Financial Disclosures

1. Executive summary

About climate risk

The TCFD recommendations categorize climate risk as follows.

Physical risk	Transition risk
Effects of climate risk on the physical environment	Risks arising from transition to a lower-carbon economy
Examples: Floods, hurricanes, wildfires, drought, rising temperatures and sea levels, weather pattern changes.	Examples: Changing customer behavior, availability of capital, stigmatization of industries, stranded assets.

High-risk industries

While the effects of climate risk are relevant to all entities, certain industries are more susceptible by their nature. The following industries have been identified as high risk in the TCFD recommendations: finance because of its central role in the economy, and the other industries by virtue of being responsible for the largest proportion of GHG emissions, energy usage and water usage.

Finance	Energy	Transportation	Material and buildings	Agriculture, food, forestry products
Banks Insurance companies Asset owners Asset managers	Oil and gas Coal Electric utilities	Air freight Passenger air Maritime Rail Trucking Automobiles, components	Materials, mining Chemicals Construction materials Capital goods Real estate	Beverages Agriculture Packaged foods, meats Paper, forest products

Although industry is an indicator of risk, ultimately the nature and extent of risk to which an entity is exposed depends on numerous factors, including its business model, assets, geographical locations, services provided and supply chains.

Questions to ask

To help you formulate a view of the potential effects of climate risk on your financial statements, this publication asks a series of questions – first at the business level and then specific to each accounting topic. These questions are not intended to be exhaustive. Instead, they are designed to help you create your own checklist that you can modify and adapt to suit the company's specific circumstances.

Big picture

As a starting point to understanding the potential effects of climate risk on your financial statements, an in-depth understanding of your organization and its business environment is required. The objective is to gain an understanding of the pressures the entity faces that may give rise to climate risk – if not now, then in the future.

These pressures are multi-dimensional.

- Internal (arising from the entity's actions) and external (arising from third-party actions).
- Domestic and foreign.
- Direct (e.g. via physical operations or a stock exchange listing) and indirect (e.g. via customers and suppliers).

The following are some general questions (not exhaustive) that look at the bigger picture and help you determine the pressure points in the business; none are determinative. They are supplemented by more specific accounting-based questions in the sections that follow.

QUESTION	RELEVANCE
Does the company operate in a high-risk industry?	In general, entities in higher-risk industries are predisposed to a wider variety of risks related to climate, and the severity of any particular risk may be greater.
Will the company be affected by country or jurisdictional plans to reduce emissions?	Exposure to country or jurisdictional actions or plans to reduce emissions results in increased likelihood of transition risk.
What is the company's exposure via its wider supply chain and customer base?	The ecosystem is interconnected, with each party potentially putting pressure on its suppliers to reduce emissions. As a result, every entity faces potential pressure from its customers, and may in turn put pressure on its suppliers.
Has the company committed to reduce emissions? Have its competitors?	While a commitment to reduce emissions may in the first instance be little more than a statement of intent, the plans and actions that follow are likely to have widespread accounting implications.

QUESTION	RELEVANCE
Is the company planning acquisitions and/or disposals?	Many plans to reduce emissions are accompanied by strategic acquisitions and disposals.
What climate risk information is the company communicating outside of financial reporting?	In addition to a formal sustainability report, other communications that may be relevant to financial reporting include information posted on the corporate website, CDP questionnaires and social media.
What are investors telling the company?	Shareholder activism related to emissions reduction plans is becoming increasingly common and more successful.
What are lenders telling the company?	Lending facilities linked to sustainability (and emissions targets and ratings) are common. Potential access to lower interest rates may provide an incentive to embark on a plan to reduce emissions, or speed the progress of an existing plan.
What can the company learn from its insurance premiums?	Insurers are at the forefront of pricing climate risk into their business models. Increasing insurance premiums may provide early warning of high-risk operations from a climate perspective.
What pressure is the company getting from key customers?	Are key customers making inquiries as to the entity's emissions reduction plans? This may provide early warning of more direct action as customers seek to credentialize their supply chain.
What pressure is the company placing on key suppliers?	In the reverse of pressure from customers, is the entity making inquiries as to the emissions reduction plans of key suppliers.

QUESTION	RELEVANCE
Is the company's strategy changing in response to new regulation?	A strategic shift in response to new or unexpected changes in regulation can affect estimates and judgments if management's intent changes.

In formulating an understanding of these pressure points, not all of the information may be in the finance function. Other sources of information may include the teams covering sustainability, asset management, client relationships, sales and marketing, among others.

In addition, the entity may produce a sustainability or other impact report outside of the finance function, which may be another key source of information in understanding the pressure points.

Long-lived assets

Read more: Chapter 3

QUESTION	ACTIONS IF 'YES'
Will existing assets be replaced earlier than expected (required or voluntary)?	Review the estimated useful lives of PP&E.
For assets that are routinely replaced while they still have significant resale value, are market changes affecting those values?	Review the salvage values used in calculating depreciation.
Are market changes affecting customer sentiment?	Review the useful lives of intangible assets, including the appropriateness of any that are indefinite-lived.
Are assets located in areas that are becoming high risk for extreme weather events?	Understand the timing of the different accounting entries, which can be in different reporting periods: loss recognition, loss recovery, additional gains.
Are new environmental regulations requiring assets to be disposed of in a certain way, or changing the manner of disposal for assets that were already subject to regulation?	New AROs may need to be recognized and existing ones may need to be remeasured.

QUESTION	ACTIONS IF 'YES'
Is significant expenditure on new assets expected?	Understand which costs are capitalized versus expensed.
Will future expenditure have a significant software component?	The accounting for software costs is complex; understand the requirements for what costs are capitalized versus expensed.

Leases

Read more: Chapter 4

QUESTION	ACTIONS IF 'YES'
Is an asset used for multiple purposes?	Understand how consideration of the asset's primary use may affect whether there is an identified asset.
Do leases contain rights that allow the lessor to substitute the asset?	Understand the limited circumstances in which substitution rights lead to a conclusion that there is no lease.
Does the customer control the use of the identified asset?	Understand when a customer has the right to direct the use of an identified asset, leading to a conclusion that there is a lease.
Has the company entered into a battery energy storage system (BESS) usage arrangement?	Understand the terms of the arrangement as a starting point to identifying whether there is a lease and, if so, whether it comprises a single or multiple separate lease components.
Lessee: Is the exercise (or non-exercise) of renewal options in leases being reconsidered?	Understand how a business decision can trigger the need to reassess or remeasure the lease term or the lease payments.
Lessee: Will modifications be negotiated with the lessor?	Understand when a modification results in the remeasurement of the lease liability and right-of-use asset versus a separate contract.
Lessee: Will leases be terminated?	Understand the accounting for termination payments.

QUESTION	ACTIONS IF 'YES'
Lessor: Will leases be modified?	Understand the accounting from the lessor's perspective, which is not aligned (conceptually or mechanically) with the lessee's accounting.

Research and development

Read more: Chapter 5

QUESTION	ACTIONS IF 'YES'
Has the company communicated R&D activities as part of its net-zero strategy?	Understand whether the communicated activities are R&D within the scope of Subtopic 730-10.
Will costs be incurred?	Understand the types of expenditure that will be incurred, and the assets (tangible or intangible) that will be developed or acquired. This is a starting point to analyzing which costs should be capitalized (and the subsequent timing of recognition in profit or loss) versus expensed immediately.
Has the company received funding for R&D activities, or is it funding R&D activities?	Understand the terms and conditions of the R&D funding arrangement to determine whether it is a borrowing or an obligation to perform services.

Impairment of nonfinancial assets

Read more: Chapter 6

QUESTION	ACTIONS IF 'YES'
Are industry and market conditions changing?	• Understand the external and internal pressure points that affect the recoverability of assets. • Set up a process for monitoring events that might trigger the impairment testing of groups of
Is the legal or regulatory environment changing?	
Are new competitors emerging?	

QUESTION	ACTIONS IF 'YES'
Are costs increasing?	assets or of goodwill more broadly. • Understand the ripple effect of extreme weather events on all aspects of the entity's value chain as one of the pressure points on the entity.
Is financial performance deteriorating?	
Are projects essential to the company's future strategy struggling to produce results?	
Are operations exposed to areas that are becoming high risk for extreme weather events?	
Are operations being reorganized, either physically or in terms of reporting?	Consider whether there is a change in how goodwill or long-lived assets should be grouped for impairment testing, which may lead to a need for immediate testing.

Financial instruments

Read more: Chapter 7

QUESTION	ACTIONS IF 'YES'
Will debt instruments containing a sustainability feature be issued (e.g. a sustainability-linked bond)?	Evaluate whether the sustainability feature represents an embedded derivative and, if so, whether it needs to be separated from the host contract.
Does the company provide financing to entities in industries that are susceptible to climate risk?	Climate risk may introduce idiosyncratic risk to a borrower or industry, requiring the lender to evaluate its expected credit loss methodology.
Do the company's climate-related commitments require changes to the measurement or classification of available-for-sale or held-to-maturity debt securities?	• Review the measurement and classification of available-for-sale and held-to-maturity debt securities. • Available-for-sale: assess whether there has been a change in the intent to sell, or it is more likely than not that the entity will be required to sell, debt

QUESTION	ACTIONS IF 'YES'
	securities classified as available-for-sale. • Held-to-maturity: assess whether the intent and ability to hold securities that remain in the held-to-maturity category to maturity is in doubt.
Have the underlying investees associated with equity securities without readily determinable fair values or equity method investments experienced losses due to extreme weather events?	Consider whether investee operating losses may have impaired the value of investments.
Has the company provided guarantees to parties that are susceptible to climate risk?	Consider whether performance under guarantees is more likely, or expected losses greater.
Has climate affected the probability of forecasted transactions occurring?	Review hedging relationships to determine if they should be discontinued.
Does the company hold over-the-counter derivative instruments in which the counterparty is in an industry susceptible to climate risk?	

Power purchase agreements

Read more: Chapter 8

QUESTION	ACTIONS IF 'YES'
Did the company execute a PPA?	Understand the terms and conditions of the PPA that affect the determination of the appropriate accounting, which may be different for a physical versus a virtual PPA.
Does the PPA represent or contain a variable interest in the energy producer?	Evaluate whether the entity holds a variable interest in the power producer, and if so determine if consolidation is required.

QUESTION	ACTIONS IF 'YES'
Is the PPA a lease or does it contain a lease?	Consider whether the PPA conveys the right to control the use of an identified asset for a period of time in exchange for consideration.
Is the PPA a derivative or does it contain embedded derivatives?	If the PPA is not a lease, consider whether it contains the characteristics of a derivative.

Contingencies and insurance

Read more: Chapter 9

QUESTION	ACTIONS IF 'YES'
Are new environmental regulations changing what assets require environmental remediation or the manner in which remediation is done?	Consider whether new environmental remediation liabilities need to be recognized or existing ones remeasured.
Is there pending or threatened litigation or possible claims related to climate risk?	Consider whether accrual and/or disclosure related to pending or threatened litigation, actual or possible claims or assessments, is required or whether existing accruals need to be remeasured.
Are operations exposed to areas that are becoming high risk for extreme weather events?	Understand the timing of the different accounting entries, which can be in different reporting periods: loss recognition, loss recovery, additional gains.
Is insurance coverage changing?	Understand the implications for financial performance if losses are becoming more likely with shrinking insurance recoveries.

Revenue and inventories

Read more: Chapter 10

QUESTION	ACTIONS IF 'YES'
Do revenue contracts include emissions reduction targets?	Understand the implications for revenue recognition.
Are customers seeking to negotiate modified (or even terminate) contracts?	Understand when a modification results in an adjustment to revenue recognized under the current contract (current period or prospective) versus a separate contract.
Is climate risk affecting the selling price of inventories?	Review the net realizable (or market) value of inventories.
Is climate risk affecting the cost of materials used in production?	
Is climate risk affecting the availability of materials used in production?	Reassess what is considered 'normal' operating capacity in allocating overhead to inventory.
Are production facilities located in areas that are becoming high risk for extreme weather events?	Understand the accounting for 'normal' versus 'abnormal' inventory costs.

Compensation and benefits

Read more: Chapter 11

QUESTION	ACTIONS IF 'YES'
Will emissions reduction targets be included in stock option awards?	Understand the implications for the recognition of compensation.
Is vesting of an award linked to a sustainability target (e.g. scope 3 emissions reduction)?	Analyze whether the vesting condition meets the definition of a performance condition and consequently whether the award is equity-classified.
Will emissions reduction targets be included in other compensation arrangements?	Understand the implications for the recognition of compensation.

QUESTION	ACTIONS IF 'YES'
Will emissions reduction plans result in employees being terminated?	Understand the different types of termination benefits, which have different accounting requirements.
Will voluntary terminations be offered?	Understand the timing of liability recognition, which is based on 'acceptance'.
Will an arrangement for ongoing termination benefits be set up for longer term use as the company carries out its strategy?	Understand the timing of liability recognition, which is based on 'probability of entitlement'.
Will a restructuring result in a one-time arrangement under which employees will be involuntarily terminated?	Understand the timing of liability recognition, which is based on 'communication' date.

Income taxes and related incentives

Read more: Chapter 12

QUESTION	ACTIONS IF 'YES'
Are industry and market conditions changing?	• Understand the external and internal pressure points that affect the recoverability of deferred tax assets. • If a process is set up for monitoring events that might trigger the impairment testing of groups of assets or of goodwill more broadly, that same process can be used to help assess valuation allowances.
Is the legal or regulatory environment changing?	
Are new competitors emerging?	
Are costs increasing?	
Is financial performance deteriorating?	
Are projects essential to the company's future strategy struggling to produce results?	
Are operations exposed to areas that are becoming high risk for extreme weather events?	

QUESTION	ACTIONS IF 'YES'
Are tax laws changing in jurisdictions in which the company operates?	Understand the timing of accounting for the effects of changes in tax law or tax rates.
Will the company enter into transactions that qualify for tax credits?	Understand the nature of the various credits to be received as a starting point to determining the appropriate accounting.

Carbon credits

Read more: Chapter 13

QUESTION	ACTIONS IF 'YES'
Do the company's sustainability communications refer to the use of carbon credits in reducing emissions?	Understand the terms and conditions of the arrangement(s) being referred to in communications, which are often written without involvement of the finance function.
Has the company purchased carbon credits on a stand-alone basis, or are they linked to or embedded in other acquisition transactions?	Understand how the arrangement(s) works, and whether the carbon credits are linked to or embedded with other goods or services in the contract(s). This is a starting point to determining the appropriate accounting.
Is the company selling or retiring carbon credits as part of revenue transactions, or otherwise advertising low-carbon attributes in goods or services being sold?	

Acquisitions and restructuring

Read more: Chapter 14

QUESTION	ACTIONS IF 'YES'
Do contracts to acquire businesses include consideration that is contingent on emissions reduction targets?	Understand the accounting for contingent consideration, as part of the acquisition accounting and subsequently.

QUESTION	ACTIONS IF 'YES'
Will operations be restructured?	Understand how to account for the cost of exit activities, including terminating contracts.
Will the company dispose of assets as part of its strategy?	Assess the criteria for classifying assets (disposal groups) as held-for-sale, and understand the related measurement.
Will the disposals represent a significant change in operations?	Assess whether a (planned) disposal rises to the level of a discontinued operation.

Fair value measurement and projections

Read more: Chapter 15

QUESTION	ACTIONS IF 'YES'
Are any assets measured at fair value?	Prepare an inventory of assets measured at fair value.
Are any liabilities measured at fair value?	Prepare an inventory of liabilities measured at fair value.
Are different approach(es) used to measure fair value?	Map the inventory of assets and liabilities measured at fair value to the approaches used.
Has climate risk been considered in measuring fair value using the income approach?	Review the key assumptions in measuring fair value.
Is climate risk a factor in assessing the recoverability of long-lived assets?	Review the key assumptions in estimating the recoverability of long-lived assets.

Presentation and disclosure

Read more: Chapter 16

QUESTION	ACTIONS IF 'YES'
Do conditions and events related to climate risk raise substantial	Understand the steps required in management's assessment of whether it is probable the entity will

QUESTION	ACTIONS IF 'YES'
doubt about the company's ability to continue as a going concern?	be unable to meet its obligations over a period of one year from the date the entity's financial statements are issued (or available to be issued).
Are operations being reorganized, either physically or in terms of reporting?	Consider whether there is a change in operating segments or reportable segments.
Does the company have climate-related contingencies that do not meet the criteria to be recognized?	Assess whether the disclosures being made are appropriately robust.
Is the company subject to climate-related risks and uncertainties that could affect estimates in the financial statements in the near term?	Assess the quality of the disclosures being made.
Does the company have significant concentrations (e.g. through its supply chain or customer base) that create exposure as a result of climate risk?	
Has the company made purchase commitments as a result of its emissions reduction strategy that require disclosure?	Assess purchase contracts and determine if they fall in the scope of disclosures for commitments.
Has the company received government assistance to support any of its climate-related actions?	Assess whether the disclosure requirements of Topic 832 (government assistance disclosures) apply.

2. Climate risk and the financial statements

Detailed contents

2.1 How climate risk manifests

The discussion in this chapter is based on the recommendations of the TCFD. These recommendations underpin today's global sustainability reporting standards beyond climate, which leverage the TCFD's clear framework for disclosing governance, strategy, risk management, and metrics and targets. In addition, the disclosures required by California climate law SB-261 (climate-related financial risks) are based on TCFD recommendations (see KPMG Hot Topic, All about California's climate laws).

However, while the TCFD recommendations remain in use, the TCFD organization itself completed its work in 2023 with the issuance of the first IFRS® Sustainability Disclosure Standards by the ISSB. From 2024, its monitoring activities have been taken over by the IFRS Foundation. In November 2024, the ISSB published a progress report on climate-related disclosures that includes the extent of alignment with the TCFD recommendations.

TCFD CLIMATE-RELATED RISKS

The Task Force divided climate-related risks into two major categories: (1) risks related to the *transition* to a lower-carbon economy and (2) risks related to the *physical* impacts of climate change.

a. Transition Risks

Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed, and focus of these changes, transition risks may pose varying levels of financial and reputational risk to organizations.

Policy and Legal Risks

Policy actions around climate change continue to evolve. Their objectives generally fall into two categories—policy actions that attempt to constrain actions that contribute to the adverse effects of climate change or policy actions that seek to promote adaptation to climate change. Some examples include implementing carbon-pricing mechanisms to reduce GHG emissions, shifting energy use toward lower emission sources, adopting energy-efficiency solutions, encouraging greater water efficiency measures, and promoting more sustainable land-use practices. The risk associated with and financial impact of policy changes depend on the nature and timing of the policy change.

Another important risk is litigation or legal risk. Recent years have seen an increase in climate-related litigation claims being brought before the courts by property owners, municipalities, states, insurers, shareholders, and public interest organizations. Reasons for such litigation include the failure of organizations to mitigate impacts of climate change, failure to adapt to climate change, and the insufficiency of disclosure around material financial risks. As

the value of loss and damage arising from climate change grows, litigation risk is also likely to increase.

Technology Risk

Technological improvements or innovations that support the transition to a lower-carbon, energy-efficient economic system can have a significant impact on organizations. For example, the development and use of emerging technologies such as renewable energy, battery storage, energy efficiency, and carbon capture and storage will affect the competitiveness of certain organizations, their production and distribution costs, and ultimately the demand for their products and services from end users. To the extent that new technology displaces old systems and disrupts some parts of the existing economic system, winners and losers will emerge from this "creative destruction" process. The timing of technology development and deployment, however, is a key uncertainty in assessing technology risk.

Market Risk

While the ways in which markets could be affected by climate change are varied and complex, one of the major ways is through shifts in supply and demand for certain commodities, products, and services as climate-related risks and opportunities are increasingly taken into account.

Reputation Risk

Climate change has been identified as a potential source of reputational risk tied to changing customer or community perceptions of an organization's contribution to or detraction from the transition to a lower-carbon economy.

b. Physical Risks

Physical risks resulting from climate change can be event driven (acute) or longer-term shifts (chronic) in climate patterns. Physical risks may have financial implications for organizations, such as direct damage to assets and indirect impacts from supply chain disruption. Organizations' financial performance may also be affected by changes in water availability, sourcing, and quality; food security; and extreme temperature changes affecting organizations' premises, operations, supply chain, transport needs, and employee safety.

Acute Risk

Acute physical risks refer to those that are event-driven, including increased severity of extreme weather events, such as cyclones, hurricanes, or floods.

Chronic Risk

Chronic physical risks refer to longer-term shifts in climate patterns (e.g., sustained higher temperatures) that may cause sea level rise or chronic heat waves.

Source: Final Report. Recommendations of the Task Force on Climate-related Financial Disclosures, June 2017.

Physical risk can be witnessed in the extreme weather events occurring in the US and in other parts of the world, both in the number of instances and in their severity – e.g. floods, hurricanes, wildfires, drought. This risk typically manifests in events and transactions that have clear financial statement implications – e.g. loss and replacement of physical assets.

Of the two categories of climate risk used by the TCFD in its recommendations, perhaps the easiest to understand is physical risk because many entities have felt the financial impact of hurricanes, floods and other extreme weather events on their businesses.

Reports about rising temperatures and sea levels, and changes in weather patterns, are examples of physical risks that have a longer tail. Although such phenomena have a less immediate accounting outcome, in many cases they are driving business strategy and investments, and may be relevant in estimates that have a longer-term outlook – e.g. useful lives and salvage values of PP&E.

Transition risk encompasses the myriad of risks of transitioning to a lower-carbon economy. These include risks related to the following.

- Policy and legal, such as
  - increased pricing of GHG emissions
  - enhanced emissions reporting obligations
  - exposure to litigation
  - increased compliance costs, insurance premiums and other operating costs
  - reduced demand for products resulting from fines and judgments.
- Technology, such as:
  - the substitution of existing products and services with lower-emission options
  - unsuccessful investment in new technologies
  - costs to transition to lower-emissions technology
  - reliability.
- Market, such as:
  - changing customer behavior
  - uncertainty in market signals
  - increased cost of raw materials
  - availability of capital.
- Reputation, such as:
  - customer satisfaction
  - stigmatization of industries
  - increased stakeholder concern or negative stakeholder feedback.

2.2 High-risk industries

While the effects of climate risk are relevant to all entities, certain industries are more susceptible by their nature. The following industries have been identified as high risk by the TCFD in its recommendations: finance because of its central role in the economy, and the other industries by virtue of being responsible for the largest proportion of GHG emissions, energy usage and water usage.

- Finance
  - Banks
  - Insurance companies
  - Asset owners
  - Asset managers
- Energy
  - Oil and gas
  - Coal
  - Electric utilities
- Transportation
  - Air freight
  - Passenger air transportation
  - Maritime transportation
  - Rail transportation
  - Trucking services
  - Automobiles and components
- Material and buildings
  - Materials and mining
  - Chemicals
  - Construction materials
  - Capital goods
  - Real estate
- Agriculture, food, forestry products
  - Beverages
  - Agriculture
  - Packaged foods and meats
  - Paper and forest products

Although industry is an indicator of risk, ultimately the nature and extent of risk to which an entity is exposed depends on numerous factors, including its business model, assets, geographical locations, services provided and supply chains.

2.3 General considerations in preparing financial statements

Estimation uncertainty

Estimation uncertainty is inherent in preparing financial statements. An estimate is the outcome of applying an accounting principle (method) using the best information available at the measurement date, and it changes as new information becomes available. Some estimates are based on market data and market-based assumptions (e.g. fair value) and others are based on management's evidence-based actions and plans (e.g. testing the recoverability of long-lived assets).

However, in the absence of a specific requirement, estimates are never based on what-if scenarios or wishful thinking – and a mere intention does not drive accounting. This point is important in the context of climate risk. While a commitment to reduce emissions may be one factor in considering the reasonableness of estimates, management intent on its own does not trigger recognition of a liability or the writedown of an asset. Moreover, as federal, state and local jurisdictions address climate-related laws, regulations and environmental protections, companies need to assess how expected regulatory changes may require updates to previous estimates if strategies shift. (Management intent is important in the classification of securities as held-to-maturity or available-for-sale – see chapter 7.) This is explored in the chapters that follow.

Materiality

The financial statements are prepared within the overall framework of materiality. Similarly, the auditors' report provides an opinion as to whether the financial statements present fairly, in all material respects, the financial position of the entity at specified dates, and the results of its operations and its cash flows for specified periods, in conformity with US generally accepted accounting principles.

The concept of materiality is not discussed in specific Codification Topics, but some guidance on materiality is included in FASB Concepts Statement No. 8 (CON 8). CON 8 was amended in 2018 to reflect an up-to-date understanding of the reporting environment, and to clearly distinguish between relevance (related to the broader financial reporting environment) and materiality (specific to an entity). [CON 8.BC3.18–BC3.18A]

The purpose of the FASB Concepts Statements is to establish the concepts that the FASB itself uses in developing guidance; as such, they are not authoritative for entities in preparing their financial statements. However, it provides a framework that is consistent with the precedent on 'materiality' established by the Supreme Court, and with the SEC staff's interpretive guidance on materiality is derived from the Supreme Court precedent. For this reason, we believe all entities should consider the SEC staff's interpretive guidance on materiality. [CON 8.QC11 – QC11B, SAB Topic 1M]

As reported in SAB Topic 1M, “The Supreme Court has held that a fact is material if there is — a substantial likelihood that the...fact would have been viewed by the reasonable investor as having significantly altered the ‘total mix’ of information made available.”

The concept of a ‘reasonable investor’ (or ‘reasonable person’) is used as the basis for determining what is material. There is no definition, but the term derives from the Supreme Court precedent on materiality. The reasonable person is a user of the financial statements who relies on their accuracy to make economic decisions.

The reasonable person test does not consider every financial statement user individually, but instead as a group. An entity should assume that financial statement users: [AU-C 320.04]

- have a reasonable knowledge of business and economic activities and accounting, and a willingness to study the information in the financial statements with reasonable diligence;
- understand that financial statements are prepared, presented and audited to levels of materiality;
- recognize the uncertainties inherent in the measurement of amounts based on the use of estimates, judgment and the consideration of future events; and
- make reasonable economic decisions based on all information in the financial statements.

The term ‘reasonable person’ may also include regulators, lenders and other users of the financial statements.

There is no requirement to consider every financial statement user (or possible user) individually, because users’ needs may vary widely. While the nature of the users of the financial statements is a key consideration in determining materiality, entities do not determine different materialities for different users. Instead, an entity considers the financial statement users as one group that relies on the accuracy of the financial statements and considers the common financial information to make decisions. This group could be influenced by several of the factors relevant to a materiality assessment.

2.4 Questions to ask

As a starting point to understanding the potential effects of climate risk on your financial statements, an in-depth understanding of the entity and its business environment is required. The objective is to gain an understanding of the pressures faced by the entity that may give rise to climate risk – if not now, then in the future.

These pressures are multi-dimensional.

- Internal (arising from the entity’s actions) and external (arising from third-party actions).
- Domestic and foreign.

- Direct (e.g. via physical operations or a stock exchange listing) and indirect (e.g. via customers and suppliers).

The following are some general questions (not exhaustive) that look at the bigger picture and help you determine the pressure points in the business; none are determinative. They are supplemented by more specific accounting-based questions in the chapters that follow.

QUESTION	RELEVANCE
Does the company operate in a high-risk industry?	In general, entities in higher-risk industries are predisposed to a wider variety of risks related to climate, and the severity of any particular risk may be greater.
Will the company be affected by country or jurisdictional plans to reduce emissions?	Exposure to country or jurisdictional actions or plans to reduce emissions results in increased likelihood of transition risk.
What is the company's exposure via its wider supply chain and customer base?	The ecosystem is interconnected, with each party potentially putting pressure on its suppliers to reduce emissions. As a result, every entity faces potential pressure from its customers, and may in turn put pressure on its suppliers.
Has the company committed to reduce emissions? Have its competitors?	While a commitment to reduce emissions may in the first instance be little more than a statement of intent, the plans and actions that follow are likely to have widespread accounting implications.
Is the company planning acquisitions and/or disposals?	Many plans to reduce emissions are accompanied by strategic acquisitions and disposals.
What climate risk information is the company communicating outside of financial reporting?	In addition to a formal sustainability report, other communications that may be relevant to financial reporting include information posted on the corporate website, CDP questionnaires and social media.
What are investors telling the company?	Shareholder activism related to emissions reduction plans is becoming increasingly common and more successful.

QUESTION	RELEVANCE
What are lenders telling the company?	Lending facilities linked to sustainability (and emissions targets and ratings) are common. Potential access to lower interest rates may provide an incentive to embark on a plan to reduce emissions, or speed the progress of an existing plan.
What can the company learn from its insurance premiums?	Insurers are at the forefront of pricing climate risk into their business models. Increasing insurance premiums may provide early warning of high-risk operations from a climate perspective.
What pressure is the company getting from key customers?	Are key customers making inquiries as to the entity's emissions reduction plans? This may provide early warning of more direct action as customers seek to credentialize their supply chain.
What pressure is the company placing on key suppliers?	In the reverse of pressure from customers, is the entity making inquiries as to the emissions reduction plans of key suppliers.
Is the company's strategy changing in response to new regulation?	A strategic shift in response to new or unexpected changes in regulation can affect estimates and judgments if management's intent changes.

In formulating an understanding of these pressure points, not all of the information may be in the finance function. Other sources of information may include the teams covering sustainability, asset management, client relationships, sales and marketing, among others.

In addition, the entity may produce a sustainability or other impact report outside of the finance function, which is another key source of information in understanding the pressure points.

3. Long-lived assets

Detailed contents

3.1 Questions to ask

In thinking about the effects of climate risk on the financial statements, two of the most cited examples are potential impairments of long-lived assets and the reassessment of useful lives. However, with so much investment in new assets, including new technology, it is also important to understand the concepts behind which costs are capitalized and which are expensed.

This chapter discusses some of the concepts behind depreciation, involuntary conversions, AROs, and conversion and upgrade costs. Impairment is discussed in chapter 6, assets held-for-sale in section 14.4, and assets acquired as part of R&D activities in chapter 5.

In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Will existing assets be replaced earlier than expected (required or voluntary)?	Review the estimated useful lives of PP&E. Section 3.2 ▶
For assets that are routinely replaced while they still have significant resale value, are market changes affecting those values?	Review the salvage values used in calculating depreciation. Section 3.2 ▶
Are market changes affecting customer sentiment?	Review the useful lives of intangible assets, including the appropriateness of any that are indefinite-lived. Section 3.2 ▶
Are assets located in areas that are becoming high risk for extreme weather events?	Understand the timing of the different accounting entries, which can be in different reporting periods: loss recognition, loss recovery, additional gains. Section 3.3 ▶
Are new environmental regulations requiring assets to be disposed of in a certain way, or changing the manner of disposal for assets that were already subject to regulation?	New AROs may need to be recognized and existing ones may need to be remeasured. Section 3.4 ▶
Is significant expenditure on new assets expected?	Understand which costs are capitalized versus expensed. Section 3.5 ▶
Will future expenditure have a significant software component?	The accounting for software costs is complex; understand the requirements for what costs are capitalized versus expensed. Section 3.5 ▶

3.2 Useful lives and salvage values

A long-lived asset is depreciated over its estimated useful life, which is the period over which the asset is expected to provide economic benefit or service potential to the entity. Technology innovations, new legislation or changes in an entity's use of an asset could affect its useful life. [360-10-35-2 – 35-4]

The other estimate relevant to calculating depreciation is salvage (or residual) value, which is the estimated fair value expected to be recovered at the end of the asset's estimated useful life. Estimates of fair value are discussed in chapter 15. [360-10-35-4]

In considering the possible effects of climate on the financial statements, the useful lives of PP&E is one of the most cited examples. Whether through operational commitments or in response to changes in consumer trends or regulation, an entity may need to reevaluate the estimated useful life of long-lived assets and their salvage values.

In addition, if a decision is made to abandon PP&E before the end of its previously estimated useful life, depreciation or amortization is revised to reflect the shortened useful life and the salvage value is updated consistent with the decision to abandon the asset.

Similarly, intangible assets initially deemed to have indefinite useful lives may be determined to have useful lives and require amortization on a prospective basis. For example, the indefinite life of a brand name that is directly associated with an emissions intensive product might be called into question by changing customer preferences toward low-carbon alternatives. [350-30-35-1 – 35-3]

Example 3.2.1
Impact of net-zero commitment on useful lives

Scenario 1: Net zero by 2050 with strategy in place

Energy Co is an oil and gas company that has committed to be net zero by 2050 and has a strategy in place for achieving that goal. In addition to reducing its emissions, Energy Co's strategy includes investing in low-carbon solutions and phasing out some of its existing oil and gas activities.

Energy Co's refineries, plants and pipeline are depreciated over a period of 15 to 50 years. Following a review, Energy Co adjusts the remaining useful lives of certain PP&E downward. The change is accounted for prospectively (in the current and future years) as a change in estimate.

Note: Impairment testing is carried out before adjusting the useful lives of PP&E (see section 6.3).

Scenario 2: Net zero by 2050 with strategy not yet in place

In the current year, Retailer has committed to being net zero by 2050 and has indicated that it will formulate a strategy for achieving its goal, including measuring scope 3 emissions, over the next two years.

In the absence of a strategy, Retailer is able to assess that at a minimum it will need to make its stores more energy efficient, which will involve investing in new lighting, heating and ventilation solutions if it remains in its current locations.

Retailer's owned buildings are depreciated over up to 50 years, and store leasehold improvements are depreciated over their useful lives but not exceeding the expected lease term of five to ten years. Following a review, Retailer concludes that no adjustment to the remaining useful lives of existing PP&E is required based on its plans and actions to date.

Example 3.2.2
Impact of changing consumer preferences on salvage values

Manufacturer produces goods for the 'consumer discretionary' sector, and its focus on high-end products requires it to constantly reevaluate its product range. This typically means that Manufacturer disposes of manufacturing plant before the end of its economic life and reinvests in new manufacturing plant.

As more countries commit to the Paris agreement and more companies make net-zero commitments, Manufacturer's discussions with key customers (retailers) indicate that consumers are increasingly demanding more sustainable products and this change is not temporary.

Following a review, Manufacturer concludes that no adjustment to the remaining useful lives of its existing manufacturing plant is required, but salvage values need to be adjusted downward. This is because changing consumer preferences are reducing the estimated fair value (see chapter 15) on disposal of the manufacturing plant. The change is accounted for prospectively (in the current and future years) as a change in estimate.

Note: Impairment testing is carried out before adjusting the salvage values of PP&E (see section 6.3).

3.3 Involuntary conversions

Climate risk, and in particular physical risks such as floods and hurricanes, may cause loss or significant damage to PP&E, requiring a full or partial writeoff. The writeoff (involuntary conversion) is accounted for separately from any insurance recovery or subsequent rebuild costs. [610-30-25-1 – 25-4]

Therefore, the following are distinct accounting events that may occur in different periods:

- writeoff of the PP&E when the loss occurs;
- recognition of the insurance recovery (see section 9.4):
  - up to the amount of the recognized loss when receipt is probable and estimable;
  - for any remaining amount when final settlement is reached.
- rebuild costs are either expensed as they are incurred or capitalized based on the initial recognition guidance in Topic 360.

In addition, an involuntary conversion of one or more items of PP&E may indicate an impairment loss for the larger asset group (see section 6.3).

Subsequent events, which are often particularly important in accounting for insurance recoveries (see Example 3.3).

Example 3.3
Involuntary conversion caused by natural disaster

A hurricane destroyed one of Manufacturer's distribution centers in Year 1, including most of the related equipment and fixtures. The PP&E destroyed had a net book value of $10,000 and an estimated replacement cost of $15,000.

The PP&E was insured and the following is the timeline of events related to the insurance recovery.

- Year 1: Manufacturer estimated an insurance recovery of at least $12,000.
- February Year 2: Manufacturer reached a settlement with the insurer for $13,000.
- March Year 2: Manufacturer issued its Year 1 financial statements.
- April Year 2: Manufacturer received the insurance settlement.

The destroyed PP&E was replaced during Year 2 at a cost of $16,000; all costs qualified for capitalization.

Manufacturer records the following journal entries related to the loss and subsequent recovery.

$	*Debit*	*Credit*
Income statement[1]	10,000	
PP&E		10,000
Year 1: To recognize writeoff of PP&E destroyed.		
Other asset	10,000	
Income statement[1]		10,000
Year 1 (recognized subsequent event triggered by settlement in February Year 2): To recognize probable recovery up to amount of loss recognized.[2]		

$	Debit	Credit
Receivable	13,000	
Other asset		10,000
Income statement[1,2]		3,000
February Year 2: To recognize full recovery upon settlement with insurer.		
Cash	13,000	
Receivable		13,000
April Year 2: To recognize receipt of recovery.		
PP&E	16,000	
Cash		16,000
Year 2: New PP&E acquired.		

Notes:

1. This example does not illustrate the income statement presentation of the loss and subsequent recovery. The guidance in Topic 220 should be considered and several presentation approaches may be acceptable.
2. Manufacturer recognizes the expected insurance proceeds up to the amount of the recognized loss when receipt is 'probable'. This estimation does not require settlement with the insurer.

   Manufacturer recognizes the remaining recovery of $3,000 in Year 2 when the settlement is reached; this is when the gain contingency is realized (or realizable). Settlement of the claim in the subsequent events period is a nonrecognized subsequent event that is disclosed. [855-10-25-3]

3.4 Asset retirement obligations

An ARO is an obligation associated with the retirement of a tangible long-lived asset, and includes environmental remediation liabilities that both (1) arise from the normal operation of a long-lived asset and (2) are associated with the retirement of that asset.

AROs are recognized legal obligations, including liabilities that result from the doctrine of promissory estoppel. Therefore, an ARO can result from a governmental action, an agreement between entities, or a promise conveyed to a third party (including the public) that imposes a reasonable expectation of performance under the doctrine of promissory estoppel. [410-20-55-1 – 55-4]

Determining whether a legal obligation exists can be more complicated for an entity operating in multiple locations and jurisdictions. The entity should evaluate the statutes, regulations and laws in each locality, state and foreign jurisdiction in which it owns or operates tangible long-lived assets, and determine its legal obligations related to asset retirement activities.

In summary, Subtopic 410-20 requires entities in all industries to:

- recognize a liability for all legal obligations, including conditional AROs, associated with the retirement of tangible long-lived assets;

- recognize the liability at fair value (see chapter 15), and capitalize an equal amount as a cost of the related long-lived asset, which is depreciated over its estimated remaining useful life;
- increase the liability for the passage of time (accretion) and report the change as an operating expense (accretion expense);
- adjust the liability for changes arising from a change in the timing or amount of the estimated undiscounted future cash flows, with a corresponding change to the carrying amount of the asset; and
- recognize a gain or loss on the settlement of the obligation when the associated asset is retired. The extensive use of estimates may cause entities to record a gain or loss when they settle the ARO.

The liabilities recognized exclude those accounted for under Topic 842 (leases), but in general include the following: [410-20-15-3(e)]

- obligation to remove leasehold improvements added by the lessee; and
- obligation to restore the leased asset to the condition it was in at lease commencement if it has been modified by the lessee.

An obligation is not recognized for discretionary (i.e. non-ARO) retirement costs. Instead, the entity generally recognizes the costs of the discretionary retirement activities when it incurs the costs or performs the activities. An exception arises when an adjustment is made against the salvage value of a long-lived asset (see section 3.2).

Example 3.4
Timing of recognition of an ARO

Scenario 1: New environmental regulation enacted

A new environmental regulation is enacted that requires Manufacturer to decommission an existing, in-use manufacturing plant following specific decontamination procedures, instead of simply transporting it as-is to an approved facility. Because the regulation has been enacted, Manufacturer recognizes an ARO.

Scenario 2: New environmental law anticipated

Unlike in Scenario 1, the new environmental regulation has yet not been enacted. Regardless of the likelihood of enactment, Manufacturer does not recognize an ARO because there is no ‘present obligation’ until the regulation is enacted.

Scenario 3: Net zero by 2050 with signed memoranda of understanding

Manufacturer has committed to be net zero by 2050 and has a strategy in place for achieving that goal. As part of that commitment, and to demonstrate its sustainability leadership, Manufacturer has signed memoranda of understanding with state and other local government officials in a number of jurisdictions.

These memoranda indicate that Manufacturer has committed to decommission its manufacturing plant in a certain way at the end of the plant's useful life.

Manufacturer consults with internal and external legal advisors to evaluate whether it has legal obligations – as a result of the doctrine of promissory estoppel – to perform asset retirement activities in each of the locations for which it has signed a memorandum.

As a result of that analysis, Manufacturer concludes that it has a legal obligation in nine of the ten locations, and therefore recognizes an ARO for the related PP&E decommissioning costs in those nine locations.

Scenario 4: Net zero by 2050 with public statements made

Unlike in Scenario 3, Manufacturer has not made any commitments, or entered into any agreements, related to the decommissioning of PP&E. However, it has spoken about its plans in press releases and in press conferences by executives.

Manufacturer consults with internal and external legal advisors to evaluate whether it has any legal obligations under the doctrine of promissory estoppel to perform asset retirement activities.

As a result of that analysis, Manufacturer concludes that it does not have a legal obligation in any of the jurisdictions in which it operates, and therefore it does not recognize an ARO.

3.5 Conversion and upgrade costs

In response to climate risk, entities may be evaluating their current operations and the impact they have on emissions or the current susceptibility of those assets to climate risk. Often additional expenditures, which may be significant, are required to modify an existing operation to align with internally or externally driven sustainability requirements.

Property, plant and equipment

PP&E is initially recorded at cost, including the acquisition cost and all costs necessarily incurred to bring the asset to the location and working condition necessary for its intended use. Examples include site preparation costs, delivery and handling costs, installation costs, and related professional fees for architects and engineers. The costs incurred need not be external or incremental. Further, interest that is directly attributable to the acquisition, construction or production of a qualifying asset forms part of the cost of that asset. [360-10-30-1 – 30-2, 835-20-15-5 – 15-6]

Subsequent expenditure (including costs incurred to convert or upgrade PP&E) is capitalized following these same parameters to the extent that it increases the service potential of the PP&E. Routine repairs and maintenance costs are expensed as incurred. [360-10-30-1, TQA 2210.15]

Internal-use software

As entities commit to reducing emissions, many of the solutions being introduced rely heavily on new technology. To that end, considerations around the accounting for internal-use software and cloud computing arrangements may be relevant.

The accounting for (1) the acquisition (including licensing) and development of internal-use software and (2) cloud computing arrangements (CCAs) is explained in-depth in KPMG Handbook, Software and website costs, and the references below are to that Handbook.

The following are key points (not exhaustive).

- Acquired internal-use software licenses are recognized as intangible assets; however, the costs of software acquired for R&D purposes (e.g. to develop or test new 'green' technology) that does not have an alternative use are expensed as incurred. See section 3.3 of the Handbook.
- Entities are required to recognize as a liability any unpaid internal-use software license fees – e.g. term license fees that will be paid quarterly over a three-year license period. See section 3.3 of the Handbook.
- CCAs are service contracts, which means the hosting service (i.e. subscription) fees are generally recognized over the subscription period without recognizing any software asset or fees liability, other than for the effects of accrual accounting. See section 3.4 of the Handbook.
- Direct costs to implement internal-use software or a CCA (e.g. configuration and testing costs) are generally capitalized and amortized over the useful life of the software or the 'term of the hosting arrangement' for CCA implementation costs. However, data conversion/migration and training costs, often part of a software or CCA implementation, are expensed as incurred. See sections 3.2 (capitalization) and 6.2.20 (amortization) of the Handbook.
- Capitalized internal-use software and CCA implementation costs are subject to the abandonment and impairment guidance in Topic 360. See sections 6.2.30 and 6.2.40 of the Handbook.

Example 3.5
Upgrade of PP&E and purchase of software to achieve energy efficiency targets

Retailer installs LED lighting and high-efficiency HVAC systems throughout its stores. The upgrade is intended to help it meet emissions reduction targets, and will reduce store energy costs by an estimated 60%.

As part of the upgrade, Retailer licenses energy management software from Vendor for a term of three years.

Retailer incurs the following costs to purchase and implement the hardware and the software license.

Hardware (lighting fixtures and HVAC equipment), including installation	$27,000
Software installation, configuration and testing	4,000
Training	500
Software interfacing application development stage costs	1,500
License fees (per year, prepaid annually)	10,000

Retailer accounts for the costs as follows.

Item	Amount	Calculation
Liability for unpaid software license fees	$18,080	Present value of two remaining annual $10,000 payments, discounted at 7% (assumed to arrive at fair value).
PP&E: hardware (including installation)	27,000	From table
Internal-use software license asset: software license, installation, configuration and testing	32,080	License fees paid of $10,000 + liability for unpaid fees of $18,080 + software installation, configuration and testing of $4,000.
Internal-use software asset: software interfacing	1,500	From table
Expensed as incurred: training costs	500	From table

4. Leases

Detailed contents

New item added in this edition **

♦ Section inserted and subsequent sections renumbered.

4.1 Questions to ask

To align with its climate-related sustainability objectives, a lessee may be incentivized to modify or terminate existing lease agreements or otherwise make decisions that cause it to reassess the accounting. And lessors may themselves be initiating changes that credentialize their products as sustainable.

In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Is an asset used for multiple purposes?	Understand how consideration of the asset's primary use may affect whether there is an identified asset. Section 4.2 ▶
Do leases contain rights that allow the lessor to substitute the asset?	Understand the limited circumstances in which substitution rights lead to a conclusion that there is no lease. Section 4.3 ▶
Does the customer control the use of the identified asset?	Understand when a customer has the right to direct the use of an identified asset, leading to a conclusion that there is a lease. Section 4.4 ▶
Has the company entered into a battery energy storage system (BESS) usage arrangement?	Understand the terms of the arrangement as a starting point to identifying whether there is a lease and, if so, whether it comprises a single or multiple separate lease components. Section 4.5 ▶
Lessee: Is the exercise (or non-exercise) of renewal options in leases being reconsidered?	Understand how a business decision can trigger the need to reassess or remeasure the lease term or the lease payments. Section 4.6 ▶
Lessee: Will modifications be negotiated with the lessor?	Understand when a modification results in the remeasurement of the lease liability and right-of-use asset versus a separate contract. Section 4.6 ▶
Lessee: Will leases be terminated?	Understand the accounting for termination payments. Section 4.6 ▶
Lessor: Will leases be modified?	Understand the accounting from the lessor's perspective, which is not aligned (conceptually or mechanically) with the lessee's accounting. Section 4.7 ▶

Lease accounting under Topic 842 is explained in-depth in KPMG Handbook, Leases.

4.2 Definition of a lease: primary use of an asset

The definition of a lease is discussed in chapter 3 of KPMG Handbook, Leases. One of the tests in determining whether a contract is or contains a lease is whether there is an 'identified' asset, and a question arises about whether an asset's primary use affects whether there is an identified asset.

Entities frequently permit other entities to share use of their property, plant and equipment. For example, a utility company may permit another entity to attach its equipment to the utility company's pole or antenna. The utility may conclude that the primary use of the asset is as a means for it to provide its core service and that the asset's ability for other entities to attach their equipment is a secondary use and that therefore there is no lease (no identified asset).

Although not determinative, we believe consideration of an asset's primary use may be relevant in some cases when identifying the asset (i.e. the item or portion of property, plant or equipment) that should be evaluated. Question 3.2.40 of KPMG Handbook, Leases, discusses how an asset's primary use may affect whether a lease exists in depth; the following example, reproduced from the Leases Handbook, illustrates application of that Question.

Example 4.2
Rooftop space for solar installation

The conclusions reached in these scenarios (not exhaustive) are based on the totality of the facts and circumstances; no single fact or circumstance should be taken as individually determinative.

Scenario 1: Rooftop supplier is solar power offtaker

Retailer operates retail stores across the US. To support those operations, it also owns a number of distribution centers, one of which is located in the Southwest (the Center).

Retailer enters into a PPA with Solar Supplier under which Solar Supplier will install, maintain and operate a solar power generating system at the Center from which Retailer will purchase all of the electricity generated. The PPA includes a specific clause that permits Solar Supplier to install the solar system equipment on a portion of the Center's rooftop space and access that space as necessary to operate and maintain the equipment for the 15-year term of the PPA.

In applying Topic 842, Retailer and Solar Supplier each conclude that Retailer is *not* leasing the solar system equipment from Solar Supplier.

Next, each party evaluates whether Solar Supplier's right to use the Center rooftop space constitutes a lease of that space from Retailer to Solar Supplier – i.e. to permit Solar Supplier to provide its electricity supply service. In this evaluation, Retailer and Solar Supplier principally consider the following points.

- Retailer's primary business is its retail operations, for which the Center is key. Retailer is not in the business of acquiring and developing real estate properties for rental income or investment return.
- Retailer's primary use of the Center is to support retail operations, and the Center's roof is integral to protecting Retailer's equipment, inventory, personnel and continuity of distribution center operations.
- Retailer uses significant amounts of electricity to operate the Center; the PPA will (1) supply needed electricity, (2) further Retailer's carbon commitments and (3) comply with renewable energy usage regulations of the Southwest jurisdiction in which the Center resides.
- Retailer is purchasing all of the output generated by the solar system equipment; none of that output is being provided to other parties.

In this scenario, Retailer and Solar Supplier each conclude that there is *not* a lease of the rooftop space. Each concludes that the rooftop is *not*, in effect, a leasable space (i.e. like a second floor of the Center) on the basis that Retailer is not in the business of leasing or otherwise monetizing its real estate property. The primary purpose and function of the Center's roof is, as an integral component of the Center, to protect the Center's equipment, inventory, personnel and operations.

Consequently, each party determines that it is reasonable to conclude that the rooftop space where the solar system equipment will be installed is not a separately identifiable asset under Topic 842 from the roof as a whole, the entirety of which is necessary to fulfill its defined primary purpose.

Because Solar Supplier does not obtain substantially all of the economic benefits from use of the identified roof as a whole – i.e. Retailer obtains substantial economic benefits from the roof's fulfillment of its primary purpose – the roof is not being leased to Solar Supplier.

Scenario 2: Rooftop supplier is a real estate owner and lessor not taking the solar power

Real Estate Developer (RED) owns numerous office and industrial buildings. It owns those buildings as investment property and leases space to tenants for rental income.

RED enters into a 15-year 'Lease Agreement' with Solar Supplier that permits Solar Supplier to install, operate, monitor and maintain solar power generating equipment on the rooftop of one of RED's buildings. RED will receive a fixed payment each year for these rights under the agreement. RED has no rights to require Solar Supplier to relocate the equipment during the 15-year agreement term.

The Lease Agreement refers to a PPA between Solar Supplier and a third-party utility company unrelated to either RED or Solar Supplier. RED is not a party to this PPA. RED will take none of the electricity generated by the solar equipment installed on its building roof; the utility company will take and resell all of the electricity generated to its customers. RED's tenants in the building are not parties to the Lease Agreement or the PPA.

Because RED is taking none of the output from the solar equipment installed on its roof, RED is not leasing the solar system equipment from Solar Supplier – i.e. RED does not have the right to obtain substantially all of the equipment's economic benefits from use. Therefore, each party then evaluates whether Solar Supplier's right to use the building rooftop space to place Solar Supplier's solar system equipment constitutes a lease of that space from RED to Solar Supplier.

In making this evaluation, RED and Solar Supplier each consider that RED's primary business is that of a real estate owner and lessor. As observable from its publicly available promotional, marketing and informational material, RED acquires investment property like the building in this arrangement for the primary purpose of earning a return on that property, inclusive of property appreciation and rental income over the time period it owns the property. RED earns rental income from all available sources at each of its properties, including interior and exterior space.

Because RED's primary use of the building is as a tenanted rental property, earning rental income from all leasable space, the rooftop space that will be occupied by Solar Supplier's equipment in this scenario *is*, in contrast to Scenario 1, a leasable space (i.e. like a top floor of the building and the interior space within the building). And because RED has no substitution rights (see section 4.3), that space is an identified asset.

RED and Solar Supplier each further conclude that Solar Supplier controls the use of the identified rooftop space throughout the period of use, and therefore that a lease exists. This is because:

- Solar Supplier has exclusive use of the identified rooftop space; that is, no other entity can place equipment or make substantive use of that space for economic benefit while Solar Supplier's equipment occupies it.
- Solar Supplier has the right to direct the use of the rooftop space. All of the how and for what purpose decisions about the use of the space are effectively pre-determined by the agreement – i.e. that it will be used solely for the placement of Solar Supplier's solar system equipment. However, Solar Supplier is deemed to operate the space because it will solely install, maintain and (if necessary) replace the solar system equipment that will occupy the space.

Although RED is not an offtaker of the solar power generated by the solar system equipment installed on its roof in this scenario, the conclusion that it is leasing the rooftop space on which the equipment is installed to Solar Supplier does not depend on that fact.

4.3 Definition of a lease: substitution rights

The definition of a lease is discussed in chapter 3 of KPMG Handbook, Leases. One of the tests in determining whether a contract is or contains a lease is whether there is an 'identified' asset. An asset is not identified, and is not

subject to a lease, if the supplier has the substantive right to substitute the asset throughout the 'period of use'.

The issue of supplier substitution rights may frequently arise in certain types of arrangements as suppliers seek flexibility to facilitate their strategies, and efforts to achieve net zero (for them and their customers). For example, an energy management service provider may have the contractual right to substitute certain assets used in providing its services to achieve greater energy efficiency.

When assessing whether an asset substitution right is substantive in the context of a 'green' strategy, it is important to recall that a substitution right is substantive, and the asset subject to that right not identified, only when the supplier: [842-10-15-10]

- has the practical ability to substitute alternative assets throughout the period of use; and
- would benefit economically from the exercise of its substitution right – i.e. the economic benefits that would be derived from substituting the asset exceed the costs of the substitution.

When considering these requirements in this context, it may be particularly important to recall the following. [842-10-15-10(b), 15-11, 15-14 – 15-15]

- The entity (customer or supplier) evaluates whether a supplier substitution right is substantive based only on the facts and circumstances at contract inception. This evaluation excludes consideration of future events that, at inception, are not 'likely to occur', including the future introduction of new technology.
- A supplier right or obligation to substitute an asset only for reasons of repair or maintenance, because the asset is not operating properly or because a technical upgrade becomes available is not substantive.
- Economic benefits from substitution do not include purely reputational (or 'goodwill') benefits such as may arise from a supplier's ability to advertise itself as 'green' or having achieved a net-zero or other carbon emission target. The economic benefits must be quantifiable to assert that they exceed the costs of the substitution.
- A customer that cannot readily determine whether a supplier substitution right is substantive – e.g. because it does not have information about the supplier's economic costs of, and benefits from, substitution – should presume that it is not.

Section 3.2.3 of KPMG Handbook, Leases, discusses supplier substitution rights in detail, including all of the points above.

Example 4.3
Substitution rights

As part of its net-zero strategy, Producer has entered into a contract for the right to use a specified (by address) eco-friendly cold storage warehouse owned by Supplier.

Supplier continues to evolve its cold storage products, and it has the right in its contract with Producer to substitute the specified warehouse for another of similar capacity if and when it develops and deploys its next generation of cold storage warehouses with even better sustainability credentials.

The expected economic benefits for Supplier from making the substitution would be the ability to reduce its costs of operating the warehouse (i.e. from more energy efficient cold storage technology). Supplier expects these cost savings to exceed the costs it would incur to relocate Producer. Supplier also expects to benefit from deploying and substituting its existing warehouses with these next generation facilities that it will be able to claim meet the highest sustainability standards. However, that benefit (e.g. reputational and in terms of sustainability ratings) is not quantifiable so would not factor into the substitution right analysis.

Despite estimating that Supplier's energy cost savings would exceed its costs of relocating Producer, Supplier's substitution right is determined not to be substantive, and therefore does not preclude the initial warehouse provided for Producer's use under the arrangement being an 'identified' asset.

This is because:

- Supplier only has the right to substitute the warehouse when and if its next generation of warehouses becomes operational and available, meaning its right does not exist 'throughout the period of use' (see Question 3.2.55 in KPMG Handbook, Leases); and
- Supplier's expectation of economic benefits from substitution that will exceed the costs thereof depends on a future event – i.e. Supplier's successful introduction of next generation warehouses of a particular energy efficiency – that, at contract inception, is not 'likely to occur' (see paragraph 3.2.130 in KPMG Handbook, Leases).

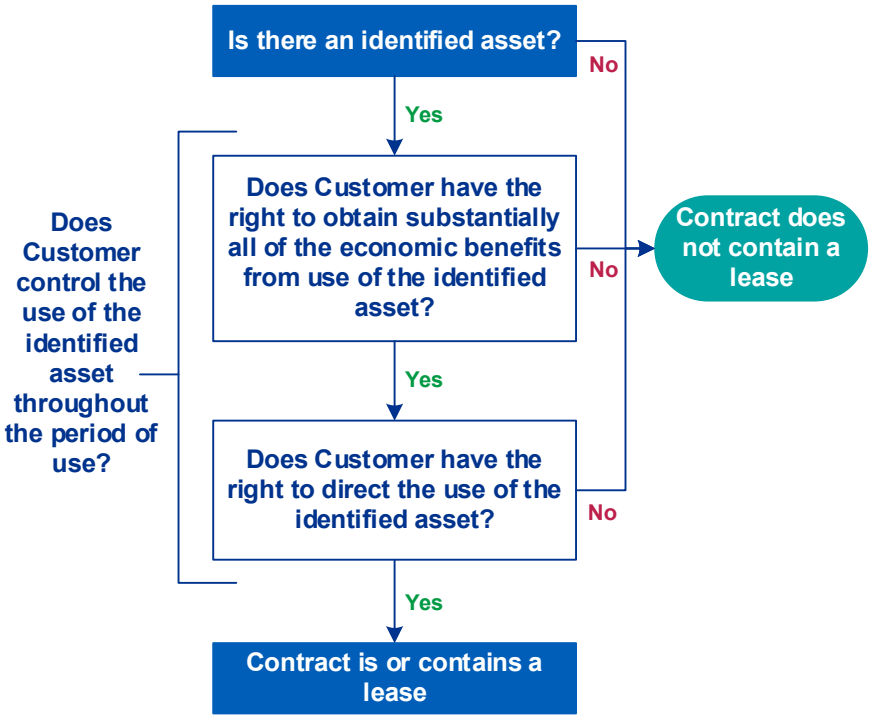
4.4 Definition of a lease: right to control the use**

The definition of a lease is discussed in chapter 3 of KPMG Handbook, Leases. If an entity determines that a contract depends on the use of an identified asset, it then evaluates whether the customer has the right to control the use of that asset for a period of time. This occurs when the customer has the right, throughout the period of use, to: [842-10-15-4]

- obtain substantially all of the economic benefits from the use of the identified asset; and
- direct the use of the identified asset.

A customer has the right to direct the use of an identified asset when it has the right to direct (and change) how and for what purpose the asset is used throughout the period of use; for example, the ability to decide how leased space in a green-certified office building is used, or where and when an electric vehicle is used and what passengers or goods it transports, because those 'relevant decisions' are those that most significantly affect the economic benefits to be derived from use of the asset.

The following are the key elements of the definition.



Example 4.4.1**
Carbon sequestration rights

Background

ABC Corp. enters into an easement agreement with Landowner, granting it the right to use a specific, cavernous subsurface area with geological properties suitable for the storage of carbon dioxide. The following additional facts are relevant.

- The easement agreement grants ABC exclusive use of an explicitly specified (e.g. by drawings, coordinates and depths) subsurface 'carbon sequestration area'.

- The easement agreement also grants ABC the right to exclusively use a specified surface 'facilities area' of the land to construct facilities necessary for pumping carbon into the subsurface area.
- Landowner retains the right to use other surface and subsurface portions of the larger property for other purposes.
- Landowner cannot substitute the carbon sequestration area or the facilities area specified in the contract.

Is there an identified asset?

Yes. The easement agreement grants explicit rights to use both the surface of the identified land (facilities area) and the defined subsurface space (carbon sequestration area) and therefore includes two units of account.

The facilities area is a physically distinct, explicitly specified portion of the property's surface land for which Landowner does not have substitution rights.

The carbon sequestration area is an underground geological formation into which carbon can be injected and stored long-term; it is physically distinct and explicitly specified in the agreement. The subsurface carbon sequestration area is comparable to an above-ground storage tank or a warehouse, meaning the rights granted to use the area are not analogous to air rights. Consequently, the carbon sequestration area is an identified asset that can be leased (consistent with View 1 in Question 3.3.90 in KPMG Handbook, Leases).

Does ABC control the use of the identified assets?

Yes. ABC has exclusive rights to use both the facilities area and the carbon sequestration area. The Landowner's rights of use pertain to other areas of the property and, as such, do not limit ABC's rights to obtain substantially all of the economic benefits from the use of either the facilities area or the carbon sequestration area.

Additionally, ABC has the right to direct the use of both areas by virtue of being able to decide with whom to enter into carbon storage arrangements and when, whether and how much carbon to inject into the carbon sequestration area.

ABC concludes that both the facilities area and the carbon sequestration area are lease components because they are identified assets and ABC has control over their use.

Example 4.4.2**
Energy assets

Scenario 1: Customer has exclusive use

Customer enters into an energy conservation contract with Supplier. The contract requires Supplier to install multiple energy assets on Customer's property to upgrade heating and cooling infrastructure, thereby improving efficiency and reducing Customer's energy consumption. The following additional facts are relevant.

- Supplier is responsible for the design, installation, operation and maintenance of the energy assets installed on Customer's property.
- The energy assets are explicitly specified in the contract and designed to transfer energy necessary for heating and cooling the air inside Customer's property at optimum efficiency.
- Supplier has the contractual right to substitute the energy assets at any time, provided Customer's energy needs are not interrupted.
- The energy assets are dedicated to the exclusive use of Customer; Supplier does not have any rights to any excess capacity.

Is there an identified asset?

Yes. The energy assets are each physically distinct and explicitly specified in the contract. Supplier does not have a substantive substitution right. While Supplier has the enforceable right to substitute assets, the costs associated with substitution are expected to make substitution other than for reasons of necessary maintenance or replacement not economically beneficial to Supplier.

Does Customer have the right to obtain substantially all of the economic benefits from use of the energy assets throughout the period of use?

Yes. Customer has exclusive use of the energy assets and therefore the right to obtain substantially all of the economic benefits from their use throughout the period of use. The economic benefits from the use of the energy assets are the energy transfer capabilities that can be generated through hot and chilled water produced by the assets, and no other party has the right to use these capabilities during the period of use.

Does Customer have the right to direct the use of the energy assets?

Yes. Customer has the right to direct how and for what purpose the energy assets are used throughout the period of use. The type of output the assets produce (i.e. hot and chilled water/air) and the location where the output is produced cannot be changed. Consequently, the decisions about when, whether and how much output the energy assets produce are the relevant decisions that most significantly affect the economic benefits to be derived from their use. Customer has the right to make these decisions by adjusting temperature settings (or specifying a temperature range) for cooling and warming rooms throughout the property. This includes determining which areas of the property are used, at what times, for what duration and for what purpose, all of which affect energy needs from the identified energy assets.

Therefore, having met all three lease identification criteria, the energy conservation contract contains a lease.

Scenario 2: Supplier has rights to a portion of the energy assets' capacity

Assume the same facts as Scenario 1, except the energy assets are not dedicated exclusively to Customer's use. Instead, Supplier has the substantive right to 15% of the capacity of the energy assets throughout the term of the contract. These rights are substantive (see Question 3.3.30 in KPMG Handbook, Leases) because there are adjacent properties that can benefit from

this portion of the energy assets' capacity, and it is both economically and practically feasible for Supplier to enter into offtake arrangements with the third parties that own those properties.

By virtue of Supplier's substantive rights to 15% of the assets' capacity, Customer does not have the right to obtain at least substantially all (i.e. 90% or more – see Question 3.3.60 in KPMG Handbook, Leases) of the economic benefits from the use of the energy assets throughout the period of use. Therefore, the energy conservation contract does not contain a lease.

Scenario 3: Sale of excess capacity from owned assets

Company A has existing, installed energy assets in its facilities that produce chilled water and steam, which are used to meet its business operational heating and cooling needs. These assets can produce excess capacity beyond Company A's current and foreseeable future needs.

Company A enters into a contract with Company B that includes the following relevant provisions.

- The energy assets remain at Company A's premises and Company A retains ownership and title to the energy assets.
- Company B has the right to use the energy assets to provide thermal services to third parties but is required to supply all of Company A's energy needs before selling any excess capacity to third party offtakers.
- Company A retains the right to as much of the capacity of the energy assets as it needs. Based on the operational requirements of Company A's facilities and its historical usage of the energy assets, the excess capacity to which Company B will have the right is not expected to exceed +/- 40% of the total energy output of the assets.
- Company B will operate, maintain and improve (as necessary to meet the energy requirements of Company A) the energy assets for the contract term.

In this scenario, Company B does not have the right to obtain substantially all of the economic benefits from the use of the energy assets. This is because Company A has retained substantive rights to more than an insignificant portion (i.e. greater than 10%) of the total capacity (i.e. the economic benefits from use) of the energy assets. The requirement to supply Company A's energy needs before selling any output to other offtakers limits Company B's right and ability to obtain the energy assets' economic benefits from use. Therefore, the arrangement does not contain a lease.

4.5 BESS usage arrangements

As entities continue to invest in and transition to renewable energy sources, they are also looking for ways to address the intermittent production of renewable energy (e.g. wind, solar) generation facilities. Increasingly, Battery

Energy Storage Systems (BESS) are being constructed and used to better match renewable energy production to demand, and utilities and other power supplier are frequently entering into contracts to use storage systems they did not construct and/or do not own.

A BESS typically comprises a multitude of equipment necessary to charge, store and subsequently deliver electricity from the storage facility – e.g. battery packs, battery cells, the battery system controller (software), inverters, transformers, thermal management system. Over the operating life of a BESS, the storage capacity of individual battery cells will degrade; therefore, the BESS will generally require significant battery additions to maintain its storage capacity; a process referred to as 'augmentation'.

Emerging BESS usage arrangements are leading to accounting questions, principally about whether the arrangements give rise to a lease of the BESS by the utility or other power supplier and, if so, whether the BESS comprises a single lease component or multiple separate lease components – e.g. the dispatching equipment and the battery packs or cells.

The specific facts and circumstances of the arrangement and the BESS may influence these conclusions. In particular, the level of integration and interdependency between the assets that comprise the BESS will likely drive whether the right to use the BESS comprises only a single lease component.

These accounting questions gain an added layer of complexity if the BESS arrangement is executed together with, or as part of, a PPA (see chapter 8). In that case, an issue arises as to whether the generation facility (e.g. the wind or solar farm) and the BESS are a single identified asset under Topic 842. Again, the level of integration and interdependency between the generation facility and the BESS will likely affect this conclusion and can differ from one arrangement to the next.

This is an emerging area; new assets (e.g. with different engineering) and new arrangement structures continue to appear. Therefore, an accounting conclusion reached for one arrangement may not be appropriate for another, and consultation with your auditors or other accounting advisors may be advisable.

The following example illustrates the identification of separate lease components of a BESS.

Example 4.5.1**
Identifying the separate lease components – BESS

Background

Lessee LE enters into an Energy Storage Agreement (ESA) with Lessor LR to obtain energy storage services (e.g. the charging, storage and dispatch of energy from LR's energy storage facility). The battery cells, battery system controller (software), inverters, transformers, thermal management systems and

other equipment necessary to charge, store and subsequently deliver electricity from storage are collectively referred to as the BESS.

Concurrent with entering into the ESA, LE enters into a PPA with LR for the output of a co-located LR-owned solar generating plant. The ESA and PPA together represent a hybrid storage project – an electric generation facility connected to a BESS.

This example focuses on identifying the separate lease components of the BESS. It therefore assumes the ESA gives rise to a lease of the BESS. This example does not assess either (1) whether the PPA gives rise to a lease or (2) if so, whether a lease of the solar generation facility, if one exists, gives rise to a lease component that is separate from the right to use the BESS.

Lease component analysis

LE and LR assess whether the BESS (whose elements are described in the Background) reflects a single lease component or multiple lease components. Principally, they each assess whether the battery cells are separate lease components from the remainder of the BESS on the basis that the batteries are separately removable from the system and new batteries will be added to the BESS over the course of the ESA as existing placed batteries degrade from optimal performance over time.

LE and LR both conclude that all of the BESS equipment elements identified in the Background, including the battery cells, are significantly integrated with each other such that the rights to use all of them are highly interrelated (as that concept is described in paragraph 842-10-15-28(b)). Along with significant physical integration of many of the elements (see Question 3.2.10 in KPMG Handbook, Leases), significant operational integration exists for all the elements, including the battery cells, because they are all controlled and coordinated by the battery system controller software, which is specialized such that it cannot operate another BESS type.

- The software directs the energy flow into/out of the batteries in a manner that results in their simultaneous charge and discharge, using all the component assets of the BESS as described above.
- The software is necessary to ensure no individual battery cells get overcharged (which would damage them and/or accelerate their natural degradation).
- Without the software, energy from the grid would not be dispersed evenly to the system such that a different system configuration would be necessary.

In the context of the ESA, which establishes specified capacity and performance requirements of the BESS, the battery system controller software creates a level of integration and interaction between all the BESS assets (inclusive of the battery cells) that is significant to the functionality and intended performance of the BESS.

In addition to the significant integration of the BESS assets, the nature of the BESS as a single lease component in the context of the ESA is further supported by the fact that the ESA does not speak to the use of any of the

individual BESS assets. Instead, the ESA speaks only to the 'system' and its capabilities, defining the system's capabilities as a 'unit' and setting only system-level performance guarantees.

Based on these facts and analysis, LE and LR each conclude that the right to use the BESS in this arrangement, inclusive of all its equipment elements, including the battery cells, constitutes a single lease component.

4.6 Lease accounting (lessee)

From a lessee's perspective, a lease reassessment or modification (that is not accounted for as a separate contract) will often result in the remeasurement of the lease liability and the right-of-use asset.

Reassessments

Lease reassessments from the lessee's perspective are discussed in section 6.6 of KPMG Handbook, Leases. The following discussion touches on some of the points that are relevant in determining whether the lessee should reassess the lease term or a purchase option.

A lessee may be required to reassess and/or remeasure the lease term or the lease payments for one or more of its leases in the following situations. [842-10-35-1, 35-4, 55-28]

- Economic events such as those arising from climate events (e.g. flooding) may trigger a contingency in the lease contract – e.g. a minimum payment clause or a termination right for example. [842-10-35-1(b)]
- The expected residual value of an underlying asset may be affected by the economic circumstances, requiring reassessment of the amount it is probable that the lessee will owe under a residual value guarantee. [842-10-35-4(c)(3)]

In addition, one or more actions a lessee takes in response to climate risk may trigger a requirement to reassess the term of the lease, or an option to purchase the underlying asset. A triggering event is a significant event or significant change in circumstances that both: [842-10-35-1(a), ASU 2016-02.BC232]

- is within the lessee's control; and
- directly affects the assessment of whether the lessee is reasonably certain to exercise an option.

Making a business decision directly relevant to an option exercise is one example of a triggering event. However, we believe that for a lessee business decision (e.g. to renew or to terminate a lease) to trigger a lease term or purchase option reassessment, that decision must not be reversible without substantive economic cost (or consequence) to the lessee. See Question 6.6.05 in KPMG Handbook, Leases. [842-10-55-28(c), ASU 2016-02.BC193]

Changes in market-based factors (including climate risk factors or changes in the real estate market) do not, in isolation, trigger the reassessment of a lessee option because they are generally not within the lessee's control. [842-10-55-29, ASU 2016-02.BC232]

Example 4.6.1
Lessee – business decision reassessment triggering events

As part of its net-zero commitment, Transport Co expects to transition its entire leased fleet of internal combustion engine (ICE) vehicles to electric vehicles within the next three years.

For each leased ICE vehicle, the original lease term was for a period of five years (with four years remaining presently), with the option for Transport Co to terminate the lease at the end of Years 3 and 4. If Transport Co terminates a lease, it must pay a termination fee to the lessor. The fee is higher if Transport Co terminates in Year 3 versus Year 4. Transport Co must give six months' notice of its exercise of either termination option.

At commencement, it was reasonably certain (see section 5.2 of KPMG Handbook, Leases) Transport Co would not exercise either termination option – i.e. it was reasonably certain Transport Co would continue the lease for the full five years. Consequently, the ICE vehicle right-of-use assets are being amortized over five years.

Assessing whether a triggering event has occurred

The following table includes scenarios of example actions Transport Co could take in connection with its intention to transition its vehicle fleet to electric vehicles, and evaluates whether each one constitutes a reassessment triggering event for the ICE vehicle leases.

Scenario	Triggering event?	Commentary
1. Transport Co provides legal notification to Lessor that it will terminate the leases.	Yes	Transport Co's termination notification is legally enforceable. Lessor can now enter into a contract with a replacement lessee for periods after the termination date, and Transport Co cannot reverse its decision without Lessor's agreement.
2. The CEO of Transport Co communicates internally that the entity has decided to terminate the leases as part of its electric vehicle fleet migration, but it will not notify Lessor until six months before the termination date.	No	Absent any other actions, the CEO's decision and internal communication about the leases can be reversed without economic cost or consequence to Transport Co.

Scenario	Triggering event?	Commentary
3. Transport Co publicly communicates (via press release) its intent to migrate to electric fleet vehicles as part of its net-zero commitment.	No	Absent any other actions, the public announcement does not create an economic cost or consequence for Transport Co if it changes its net-zero plan in a manner that no longer involves terminating the ICE vehicle leases.
4. Transport Co enters into a contract to partner with Car Co to obtain electric vehicles for its fleet. The contract is binding and the first vehicles are scheduled to be delivered within two years.	Yes	Transport Co's contract with Car Co is non-cancellable. Therefore, if Transport Co reverses its decision to terminate the ICE vehicle leases, it would either: • be required to negotiate an amendment of the contract with Car Co; or • incur redundant ICE vehicle lease costs – i.e. redundant to the costs it has incurred for the new electric vehicles.

Other accounting implications

Regardless of whether a triggering event has occurred, Transport Co accounts for its existing right-of-use assets following the requirements for long-lived assets (see chapter 3).

Modifications

Lease modifications from the lessee's perspective are discussed in section 6.7 of KPMG Handbook, Leases. The following discussion touches on some of the points that are relevant in determining whether the lessee has modified a lease.

A lease modification is a change to the terms and conditions of a contract that results in a change in the scope of or the consideration for a lease. For example, a change to the terms and conditions of the contract that adds or terminates the right to use one or more underlying assets or extends or shortens the contractual lease term is a lease modification. [842 Glossary]

Depending on the rights and obligations affected by the modification, the lessee either adjusts the measurement of the lease liability and right-of-use asset, or accounts for it as a separate contract. [842-10-25-8 – 25-14]

A modification, which can be oral or implied, is treated as a separate contract when: [842-10-25-8]

- it grants the lessee an additional right of use that was not included in the original lease – e.g. a right to use an additional asset; and

- the lease payments increase commensurate with the stand-alone price of the additional right of use, as adjusted for the circumstances of the contract.

Example 4.6.2
Lessee – lease modifications

The following are examples of lease modifications. In all scenarios, the lessee accounts for the modification by adjusting the lease liability and recording an equal and offsetting change to the right-of-use asset(s).

Scenario 1: Building upgrade – lessor builds

As part of its net-zero commitment, Retailer aims to upgrade the heating and ventilation systems in its head office building that is leased from Lessor.

Retailer negotiates with Lessor, who agrees to modify the systems in the building (underlying asset), which will significantly enhance the building's energy efficiency. In return, the lease term is extended and the lease payments are increased.

Scenario 2: Building upgrade – lessee builds

In contrast to Scenario 1, Retailer undertakes the building upgrades itself. Based on the facts and circumstances, these structural upgrades to Lessor's building are determined to be lessor-owned improvements; see Question 5.4.80 in KPMG Handbook, Leases.

Retailer's payment for Lessor-owned assets changes the consideration in the contract, and therefore, gives rise to a lease modification; see Question 5.4.85 in KPMG Handbook, Leases.

Scenario 3: Change in leased vehicle fleet composition

Telco leases a fleet of service vehicles that are a combination of internal combustion engine (ICE), electric and hybrid vehicles.

Without changing the size of the fleet (i.e. the number of vehicles), Telco negotiates with Lessor for the composition of the fleet to comprise fewer ICE and more electric vehicles. That is, the underlying assets subject to the fleet lease will be changed.

Terminations

A termination penalty paid or received upon termination that was not already included in the lease payments is generally included in the gain or loss on termination. [842-10-30-5(d), 842-20-40-1]

This contrasts with a termination penalty added to the lease payments as a result of a reassessment or modification shortening the lease term. In either of those cases, the termination penalty factors into the changed lease payments

and is taken through lease cost over the remaining lease term; see Questions 6.6.115 and 6.7.15 in KPMG Handbook, Leases.

Example 4.6.3
Lessee – lease termination

Bank decides to terminate a building lease because the ventilation system cannot be upgraded to its satisfaction under its net-zero commitment.

There was no termination option in the lease agreement; therefore, Bank agrees to pay Lessor a termination fee of $5,000 to early terminate the lease six months from now, which was not previously included in the lease payments. Bank negotiates a six-month transition period to permit it to relocate employees, and ready a new, energy efficient building (e.g. install necessary leasehold improvements).

At the effective date of the modification (i.e. the date the modification is agreed between Bank and Lessor), Bank remeasures the lease liability and right-of-use asset to reflect the now-remaining lease term of only six months; this is based on the remaining lease payments due over that term, including the $5,000 termination penalty.

Post-modification, Bank accounts for the lease in the same manner as any other lease with a six-month remaining lease term. This includes recognizing the $5,000 termination fee through lease cost over the remaining six-month lease term instead of immediately.

4.7 Lease accounting (lessor modifications)

Identifying a modification from the perspective of a lessor, and determining whether it should be accounted for as a separate contract, follows the same guidance as for a lessee (see section 4.6).

However, for a modification that does not result in a separate contract, the accounting is not aligned (conceptually or mechanically) with the lessee guidance and differs depending on the nature of the lease. The lessor reassesses the classification of the lease as of the effective date of the modification, based on the modified terms and conditions and the facts and circumstances as of that date – e.g. the fair value and remaining economic life of the underlying asset at that date. The accounting for lease modifications not treated as a separate contract depends on the classification of the modified lease. [842-10-25-9]

When a lessee exercises an option to extend a lease (including by electing not to exercise a termination option) or to purchase the underlying asset that the lessor previously determined the lessee was not reasonably certain to exercise, the lessor accounts for the exercise of that option as a lease modification. Likewise, if a lessee does not exercise an option the lessor previously

determined the lessee was reasonably certain to exercise, the non-exercise of the option is accounted for as a lease modification. [842-10-35-3]

A modification that results from the exercise of a termination option or a purchase option is effectively one that terminates the lease. That is, a lease no longer exists once the lessee has either terminated the lease or has purchased the underlying asset.

Section 7.6 of KPMG Handbook, Leases, includes more in-depth discussion of lessor lease modification accounting.

5. Research and development

Detailed contents

Item significantly updated in this edition **#**

5.1 Questions to ask

Turning to new technologies and innovation to mitigate climate risk has become critical to a net-zero strategy for many entities, and it is not uncommon for an entity to reference R&D in its sustainability report or other communications.

Although in general R&D expenditure is recognized immediately in the income statement, the accounting is more nuanced when the specific requirements are considered. In addition to the general questions in section 2.4, the following are example questions specific to some of the concepts behind R&D accounting (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Has the company communicated R&D activities as part of its net-zero strategy?	Understand whether the communicated activities are R&D within the scope of Subtopic 730-10. Section 5.2 ▶
Will costs be incurred?	Understand the types of expenditure that will be incurred, and the assets (tangible or intangible) that will be developed or acquired. This is a starting point to analyzing which costs should be capitalized (and the subsequent timing of recognition in profit or loss) versus expensed immediately. Section 5.3 ▶
Has the company received funding for R&D activities, or is it funding R&D activities?	Understand the terms and conditions of the R&D funding arrangement to determine whether it is a borrowing or an obligation to perform services. Section 5.4 ▶

5.2 R&D activities

R&D activities develop or significantly improve a product or service, or a process or technique, whether intended for sale or use. Research and development is defined as follows. [730-10 Glossary]

Research	Development
The planned search or critical investigation aimed at discovery of new knowledge with the hope that such knowledge will be useful in developing or significantly improving a product or process, and the translation of that knowledge into a plan or design for a new product or process or improvements to an existing product or process.	The translation of research findings or other knowledge into a plan or design for a new product or process or for a significant improvement to an existing product or process, whether intended for sale or use. It includes the conceptual formulation, design, and testing of product alternatives, construction of prototypes, and operation of pilot plans.
Example: Laboratory research aimed at discovering new knowledge	**Example:** Design, construction and testing of preproduction models

The following are some of the exceptions from the scope of Subtopic 730-10, which are discussed more fully in section 2.2.20 of KPMG Handbook, Research and development: [730-10-15-4 – 15-5]

- activities unique to entities in the extractive industries;
- routine or periodic alterations to existing products, production lines, manufacturing processes and other ongoing operations even though those alterations may represent improvements;
- marketing research or testing; and
- certain software development costs.

5.3 R&D costs#

R&D costs comprise: [730-10-25-2]

- direct costs, such as the cost of personnel performing R&D, the cost of acquired assets to be used in R&D activities and the cost of services received from a contractor; and
- indirect costs allocated to R&D activities.

For an R&D activity in the scope of Subtopic 730-10, the entity identifies the costs related to that activity and expenses them as incurred except for the cost of certain acquired assets. [730-10-25-1]

The cost of acquired assets (tangible or intangible) to be used in R&D activities is capitalized in certain circumstances.

Business combination/acquisition by an NFP entity/JV formation#

- Tangible assets to be used in R&D that are acquired in a business combination/acquisition by a not-for-profit (NFP) entity/joint venture (JV) formation are recognized and measured at fair value under Subtopic 805-20.
- In process R&D (IPR&D) assets acquired in a business combination/acquisition by an NFP entity/JV formation are not in the scope of Subtopic 730-10. Subtopic 805-20 requires IPR&D assets acquired in a business combination/acquisition by an NFP entity/JV formation to be initially recognized and measured at fair value and accounted for as indefinite-lived intangible assets until completion or abandonment of the related R&D efforts. Those assets are tested for impairment on an annual basis in accordance with Topic 350.

Asset acquisition or internally constructed

- If a tangible asset to be used in R&D is constructed or acquired by the entity, the cost is expensed as incurred unless the asset has an alternative future use. If an alternative future use exists, the cost is accounted for under other US GAAP such as Topic 360 (PP&E). However, the cost of internally developing software for use in R&D activities is always expensed as incurred. [730-10-25-2(a), 25-3 – 25-4]
- If the entity acquires IPR&D in an asset acquisition, the acquisition costs are allocated to the assets on a relative fair value basis. Any costs allocated to an IPR&D asset are expensed as incurred unless the asset has an alternative future use. [730-10-25-2(c)]

When capitalized assets are subsequently consumed or used in R&D activities, the asset or related depreciation or amortization is charged to R&D expense. [730-10-25-2(a), 25-2(c)]

The accounting for various R&D costs is discussed in section 2.3 of KPMG Handbook, Research and development.

Example 5.3
Materials and equipment used in R&D

Manufacturer is developing a new product that it believes will make it a market leader in supplying certain low-carbon concrete admixtures for use in commercial construction.

To develop its product, Manufacturer:

- produces prototype admixtures for use in a pilot program – the admixtures cannot be used outside of the pilot program;

- purchases computer equipment to be used in testing the product – the equipment is not unique to R&D activities and has an alternative use outside of the current R&D project; and
- purchases unique testing equipment in an asset acquisition that is highly customized for the project – the nature of the customization makes it uneconomical to use the testing equipment for another R&D project.

Manufacturer evaluates each of the tangible assets purchased or produced to determine whether they have an alternative future use.

Prototype admixtures

Manufacturer expenses as incurred the costs associated with producing the prototype admixtures because they have no future alternative use outside the pilot program.

Computer equipment

Manufacturer capitalizes the cost of the computer equipment and subsequently accounts for it under Topic 360. It classifies the depreciation as an R&D expense during the periods it uses the asset in R&D activities.

Testing equipment

Manufacturer reasonably expects that it will only use the testing equipment for the R&D project because of the significant customization – i.e. there is no alternative use. Therefore, it recognizes the cost of the equipment, less any salvage value, as R&D expense as it is incurred.

5.4 R&D funding#

In accounting for R&D funding, the objective is to determine if the substance of the arrangement is an obligation to repay others (i.e. a borrowing) or an obligation to perform R&D for others. [730-20-25-3, 25-8]

An entity receiving funding incurs an obligation to repay others (i.e. a borrowing) when the transfer of financial risk associated with the R&D is not substantive and genuine. When the entity receiving the funding is committed to repay the funds regardless of the outcome of R&D, all or part of the risk has not been transferred. [730-20-25-4]

Similarly, the funding party accounts for the arrangement based on whether repayment depends solely on there being a future economic benefit of the R&D results – e.g. that the entity that receives the funding is committed or obligated to repay regardless of the outcome. [730-20-25-11]

- **Not solely dependent.** The funding party accounts for the funding as an asset – e.g. a loan or advance.
- **Solely dependent.** The funding party accounts for the funding as R&D costs unless it can identify the payment as relating to another activity – e.g. marketing or advertising.

Subtopic 730-20 is not the only relevant guidance; other US GAAP on debt or financial liabilities, such as derivatives, may take precedence. Entities should consider the substance of each arrangement to determine the appropriate accounting, especially when concluding that the arrangement is not debt or another financial liability. Chapter 2 of KPMG Handbook, Debt and equity financing, provides a roadmap to understanding whether a debt instrument was issued.

R&D funding arrangements are discussed in chapter 3 of KPMG Handbook, Research and development.

Example 5.4.1
Entity receives R&D funding

Start-Up is developing a process to recycle certain plastics for use in residential construction. It out-licenses the rights to a process in development to a Newco formed by a consortium of companies in the construction industry, all of which are unrelated to Start-Up.

The consortium funds the development of the process, the success of which depends on a positive recommendation by a group of scientists approved by all parties. At contract inception, a positive recommendation is not considered probable.

It is assumed that this example is in the scope of Subtopic 730-20 (R&D funding) and not Topic 815 (derivatives and hedging) or Subtopic 470-10 (sales of future revenue).

Scenario 1: Entity not committed to repay

If a positive recommendation is obtained, Start-Up has the option (but not the obligation) to acquire the results of the R&D. If Start-Up does not exercise its option, the consortium can commercialize the process. There are no other conditions indicating it is probable Start-Up would purchase the results of the R&D regardless of the outcome.

Start-Up concludes that it has transferred the R&D risk to the consortium because it is not committed to repay the consortium for the funding and repayment depends solely on the results of the R&D having future benefit.

Therefore, Start-Up accounts for the arrangement as an obligation to perform R&D activities for others under Subtopic 730-20.

Scenario 2: Entity committed to repay

Assume the same facts as Scenario 1 except that if the R&D is not successful, the consortium has the option to put the results of the R&D back to Start-Up for an amount equal to the funding it provided.

While there is no unconditional obligation to repay the consortium for the funding, the consortium can require Start-Up to reacquire the results of the R&D

even if the R&D is not successful. Therefore, Start-Up is committed to repay the consortium and recognizes a liability for that obligation (i.e. a borrowing).

Example 5.4.2
R&D funding provided

Manufacturer enters into a contract to purchase a new type of low-carbon raw material from an established creditworthy supplier. At contract inception, Supplier is still developing the material that meets Manufacturer's specifications. Manufacturer is not involved in Supplier's development and does not have rights to Supplier's intellectual property.

Manufacturer makes an advance payment to Supplier to fund the development activities. If Supplier is unsuccessful, Manufacturer will be refunded the advance payment. If Supplier is successful, it will deliver the raw materials to Manufacturer and Manufacturer will capitalize the related cost as inventory under Topic 330.

Manufacturer recognizes the advance payment as an asset because it is entitled to repayment regardless of Supplier's development outcome, either in cash (if unsuccessful) or the delivery of raw materials (if successful).

Manufacturer evaluates the asset for impairment under the inventory purchases guidance in Topic 330 unless and until Supplier is unsuccessful, at which time it should evaluate the asset for impairment under the credit impairment model (Topic 326). See Question 2.2.80 in KPMG Handbook, Credit impairment, for the applicability of Topic 326 on supplier advances.

6. Impairment of nonfinancial assets

Detailed contents

6.1 Questions to ask

Impairment testing is one of the most cited examples of the potential effect of climate risk on the financial statements. There are a myriad of circumstances that can affect the extent to which an entity will recover the carrying amount of its assets, and many balance sheets carry significant goodwill balances from previous acquisitions. It is therefore important to understand the pressure points – both external and internal – that are created or exacerbated by climate risk.

In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Are industry and market conditions changing?	• Understand the external and internal pressure points that affect the recoverability of assets. • Set up a process for monitoring events that might trigger the impairment testing of groups of assets or of goodwill more broadly. • Understand the ripple effect of extreme weather events on all aspects of the entity's value chain as one of the pressure points on the entity. • Sections 6.2 and 6.3 ▶
Is the legal or regulatory environment changing?	
Are new competitors emerging?	
Are costs increasing?	
Is financial performance deteriorating?	
Are projects essential to the company's future strategy struggling to produce results?	
Are operations exposed to areas that are becoming high risk for extreme weather events?	
Are operations being reorganized, either physically or in terms of reporting?	Consider whether there is a change in how goodwill or long-lived assets should be grouped for impairment testing, which may lead to a need for immediate testing. Section 6.4 ▶

6.2 Goodwill

Goodwill is tested for impairment: [350-20-35-28, 35-30]

- annually, in which case an optional qualitative assessment may be applied as a screening test; or
- more frequently when one or more events or circumstances indicate that it is more likely than not that its carrying amount is impaired (i.e. trigger-based testing). There is some relief from this trigger-based testing for private and not-for-profit entities.

Any impairment loss is measured as the amount by which the carrying amount of the goodwill (reporting unit) exceeds its fair value (see chapter 15). Once recognized, an impairment loss cannot be reversed. [350-20-35-12 – 35-13]

Goodwill impairment testing is explained in-depth in KPMG Handbook, Impairment of nonfinancial assets.

Example 6.2
Goodwill – indicators of impairment

The following are examples (not exhaustive) of events or circumstances related to climate risk that may suggest a possible impairment trigger for goodwill.

Industry and market considerations	• Increased competition from new entrants into the marketplace with the next generation of low-carbon products. • Climate-based regulation in advanced stages of discussion in key markets, which is already affecting market sentiment toward classes of products.
Cost factors	• General increases in raw materials and transportation costs following extreme weather events in multiple locations. • Rising expenditures associated with converting, upgrading or replacing assets to lower-carbon alternatives.
Financial performance	Increasing costs of complying with environmental regulations and pressure from changing consumer preferences, which is causing pressure on operating profit, and that pressure looks set to accelerate.
Entity-specific events	R&D projects on the next generation of low-carbon products or adoption of more sustainable operating alternatives – which have been assessed as key to the entity maintaining its market share and positive customer sentiment – running behind schedule.
Events affecting an entity or reporting unit	• A more-likely-than-not expectation of selling or disposing of all, or a portion, of a reporting unit that presents a challenge to the entity's net-zero commitment. • The testing for recoverability of a significant asset group within a reporting unit (see section 6.3).

Share price	The share price trending downward following sustained concerns about the entity's ability to adjust its strategy for a low-carbon future.

6.3 Long-lived assets

Long-lived assets are tested for impairment when one or more events or circumstances indicate that their carrying amounts may not be recoverable (i.e. trigger-based testing). [360-10-35-21]

In that case, testing is carried out in two steps. [360-10-35-16 – 35-17, 35-29]

- **Step 1.** Does the carrying amount of the asset (asset group) exceed the sum of the estimated undiscounted future cash flows from the use and eventual disposition of the asset group?
  - If no, the asset (asset group) is not impaired; nothing further is required.
  - If yes, proceed to Step 2.
- **Step 2.** Measure the impairment loss as the amount by which the carrying amount of the asset (asset group) exceeds its fair value.

The Step 1 recoverability test is based on entity-specific cash flow forecasts and includes a number of specific requirements about the cash flows to be included in the forecasts; the Step 2 fair value test is based on market values and market-participant assumptions. Projected financial information and fair values are discussed in chapter 15. [360-10-35-29 – 35-35]

Impairment testing of nonfinancial assets is explained in-depth in KPMG Handbook, Impairment of nonfinancial assets.

Example 6.3
PP&E – indicators of impairment

The following are examples (not exhaustive) of events or circumstances related to climate risk that may suggest a possible impairment trigger for long-lived assets.

Market price	A significant decrease in the market price of an emissions intensive asset due to climate-related legislation enacted into law in the jurisdiction where the asset resides.
Change in asset use	Following consumer pressure, a significant change in the extent or manner in which an emissions intensive asset (asset group) is being used.
Change in legal factors / business climate	An adverse action or assessment by an environmental agency or regulator.

Cost factors	An accumulation of incremental costs significantly in excess of the amount originally expected for the acquisition or construction of a long-lived asset (asset group) to meet regulatorily required or entity-imposed emissions targets.
Financial performance	Following changes in consumer preferences in favor of low-carbon products, a current-period operating or cash flow loss combined with a history of operating or cash flow losses or a projection or forecast that demonstrates continuing losses associated with the use of a long-lived asset (asset group).
Events affecting an asset's use	• Repeated flooding of a manufacturing facility in a high-risk coastal area such that production capacity at that location has been curtailed while new facilities are being built. • Destruction of a distribution center by a hurricane, with the center being written off as an involuntary conversion (see section 3.3). This has significantly increased operating costs of the related asset group until a new center can be built.

6.4 Changes in the unit of account

In response to climate risk, an entity may undergo changes to its overall organization to align with sustainability or net-zero targets, which may include realignments of operations, closures of existing facilities or creation of new facilities or operations. As a result, an entity should remain alert for significant changes in the economic environment as well as any changes in its structure.

Goodwill: change in reporting unit

Goodwill is subject to impairment testing at the reporting unit level. The reporting unit is the level of internal reporting that reflects the way in which an entity manages its business or operations and to which goodwill would naturally be associated. It is either an operating segment (see section 16.3) or a component of an operating segment. [350-20-35-34, 35-36]

A component of an operating segment is one that meets the following criteria. [350-20-35-34]

- It is a 'business' for which 'discrete financial information' is available.
- Its operating results are reviewed regularly by 'segment management'.
- Its 'economic characteristics' are different from the economic characteristics of the other components of the operating segment.

A change in reporting units that results from changes in facts and circumstances is a change in estimate. Therefore, the change is accounted for prospectively and previously issued financial statements are not revisited. [250-10-45-17]

The unit of account for goodwill impairment testing is explained in-depth in section 3.4 of KPMG Handbook, Impairment of nonfinancial assets.

Example 6.4
Change in reporting units following resegmentation as part of implementing net-zero strategy

O&G Co's historical business model has been to operate under two separate divisions: upstream and downstream. Following the hiring of a new CEO to guide its net-zero strategy, O&G Co makes a strategic shift to focus on products that support a low-carbon economy and that it believes will be key to its future success.

These changes resulted in O&G Co reorganizing its reporting structure with a consequential change in operating segments (see Example 16.3).

The change in operating segments necessitates a review of reporting units for goodwill impairment testing. As a result of its review, O&G Co concludes that certain reporting units have changed.

In addition, O&G Co concludes that the reorganization (driven by a change in business model) represents an indicator of impairment that requires impairment testing. To demonstrate that the reorganization does not mask a goodwill impairment loss, O&G Co performs the test immediately before and after the reorganization.

Long-lived assets: change in asset group

Assets held-and-used are tested for impairment in asset groups, and there is only one criterion for determining the appropriate groupings. Specifically, long-lived assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. Applying this criterion to determine the composition of a long-lived asset group requires significant judgment based on the specific facts and circumstances. [360-10-35-23]

A change in asset groups that results from changes in facts and circumstances is a change in estimate. Therefore, the change is accounted for prospectively and previously issued financial statements are not revisited. [250-10-45-17]

The unit of account for testing long-lived assets for impairment is explained in-depth in section 3.3 of KPMG Handbook, Impairment of nonfinancial assets.

Assets held-for-sale are discussed in section 14.4.

7. Financial instruments

Detailed contents

New item added in this edition **

7.1 Questions to ask

Climate risk can have both a direct and indirect effect on the accounting for financial instruments.

- A direct impact can be seen through financial innovation, such as the growing prominence of sustainability-linked bonds in the credit market.
- An indirect impact may result when a financial institution extends credit to a borrower, and the borrower's financial circumstances subsequently change due to climate risk.

In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive). Issues related to power purchase agreements are discussed in chapter 8.

QUESTION	ACTIONS IF 'YES'
Will debt instruments containing a sustainability feature be issued (e.g. a sustainability-linked bond)?	Evaluate whether the sustainability feature represents an embedded derivative and, if so, whether it needs to be separated from the host contract. Section 7.2 ▶
Does the company provide financing to entities in industries that are susceptible to climate risk?	Climate risk may introduce idiosyncratic risk to a borrower or industry, requiring the lender to evaluate its expected credit loss methodology. Section 7.3 ▶
Do the company's climate-related commitments require changes to the measurement or classification of available-for-sale or held-to-maturity debt securities?	• Review the measurement and classification of available-for-sale and held-to-maturity debt securities. • Available-for-sale: assess whether there has been a change in the intent to sell or whether it is more likely than not required to sell certain debt securities classified as available-for-sale. Section 7.4 ▶ • Held-to-maturity: assess whether the intent and ability to hold securities that remain in the held-to-maturity category to maturity is in doubt. Section 7.5 ▶
Have the underlying investees associated with equity securities without readily determinable fair values or equity method investments experienced losses due to extreme weather events?	Consider whether investee operating losses may have impaired the value of investments. Sections 7.6 and 7.7 ▶

QUESTION	ACTIONS IF 'YES'
Has the company provided guarantees to parties that are susceptible to climate risk?	Consider whether performance under guarantees is more likely or expected losses greater. Section 7.8 ▶
Has climate affected the probability of forecasted transactions occurring?	Review hedging relationships to determine if they should be discontinued. Section 7.9 ▶
Does the company hold over-the-counter derivative instruments in which the counterparty is in an industry susceptible to climate risk?	

7.2 Sustainability-linked bonds

Recently, there has been an increase in financial innovation linked to factors designed to help entities achieve their sustainability goals. One such innovation is the sustainability-linked bond.

A sustainability-linked bond's proceeds are not restricted for a sustainable purpose. Instead, these instruments incentivize companies to make a positive impact through an interest rate adjustment. Borrowers and underwriters select Sustainability Performance Targets (SPTs) that are measured by key performance indicators (KPIs) for the issuer to achieve.

Example SPTs and KPIs include a reduction in carbon emissions. A sustainability-linked bond typically features a coupon step-up (often 25 bps) at a pre-determined date unless the issuer has met the SPTs.

Is bond measured at fair value with changes therein reported in earnings?

If the sustainability-linked bond is measured at fair value with changes in fair value reported in earnings as they occur under otherwise applicable US GAAP (e.g. the entity elected the fair value option), the sustainability feature is not separated from the host contract and accounted for as a derivative instrument. [815-15-25-1b]

If a sustainability-linked bond is not measured at fair value with changes in fair value reported in earnings as they occur, the entity continues its assessment of whether the sustainability feature should be separated from the host contract.

Does bond contain an embedded derivative?

Given the unique features contained in sustainability-linked bonds, an entity will need to evaluate the facts and circumstances of the bond issuance to determine whether it contains an embedded derivative. An entity also needs to consider whether any scope exceptions apply to the embedded feature. [815-10-15]

A derivative instrument is a financial instrument or nonfinancial contract that has all of the following characteristics. [815-10-15-83]

- Underlying + notional amount or payment provision. The financial instrument or other contract has both:
  - one or more underlyings; and
  - one or more notional amounts or payment provisions (or both).
- Initial net investment. The financial instrument or other contract requires no, or a small, investment at inception of the contract – i.e. the initial net investment is zero, or smaller than would be required for other types of contracts expected to have similar responses to changes in market factors.
- Net settlement. The net settlement characteristic is met if the financial instrument or other contract:
  - requires or permits net settlement;
  - can be readily settled net by a means outside of the contract; or

- provides for delivery of an asset that puts the recipient in a position not substantially different from net settlement.

If the embedded feature contains all of the above characteristics, it is an embedded derivative.

Guidance on how to evaluate an embedded feature for bifurcation is discussed in-depth in chapter 4 of KPMG Handbook, Derivatives and hedging.

If yes, does it need to be bifurcated from the host contract?

Determining whether the identified embedded derivative component should be accounted for separately from the host contract requires judgment. An entity must determine whether the economic characteristics and risks of the embedded derivative component are clearly and closely related to the host contract.

- If they are clearly and closely related, the embedded derivative component is not separated from the host contract.
- However, if they are not, the embedded derivative component is separated from the host contract and accounted for as a derivative instrument.

An embedded derivative is clearly and closely related to its host contract when its underlying economic characteristics and risks (i.e. the factors that cause a derivative to fluctuate in value) are clearly and closely related to the economic characteristics and risks of the host contract. That is, do the attributes of a derivative behave in a manner similar to the attributes of its host contract?

For example, if an embedded component in a debt instrument pays a rate of return tied to the Nasdaq-100 Index, the economic characteristics and risks of the embedded derivative (e.g. equity-price risk) do not behave in a manner similar to the attributes of the debt instrument (i.e. interest rate risk and issuer credit risk). Therefore, an embedded feature tied to equity-price risk would not be clearly and closely related to the debt host contract.

Example 7.2
Sustainability-linked bond

Fact pattern

Issuer issued a $1.5 billion sustainability-linked bond that includes a pledge to reduce GHG emissions by 75% by 2027. The bonds mature in 2030 and pay 2.65% interest.

If Issuer fails to meet its pledge to reduce GHG emissions by 75% by 2027, its interest payments will rise 25 bps to 2.9% effective September 2028.

Issuer does not measure the bond at fair value with changes in fair value reported in earnings as they occur under otherwise applicable US GAAP.

Analysis

Because the sustainability-linked bond is not measured at fair value with changes therein reported in earnings as they occur, Issuer determines whether the bond contains an embedded derivative.

In performing this evaluation, Issuer determines whether the embedded component contains all of the following characteristics: (1) an underlying, (2) a notional amount or payment provision, (3) an initial net investment of zero or an amount smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors, and (4) a net settlement provision. [815-10-15]

Characteristic of a derivative	Evaluation of bond
Underlying	The occurrence (or nonoccurrence) of the reduction in GHG emissions by 2027
Notional amount or payment provision	$1.5 billion × 25 bps step-up
No, or a small, initial net investment	No initial investment
Net settlement	Contractual net settlement

As a result, Issuer determines that the sustainability-linked bond contains an embedded derivative. For purposes of this example, it is assumed that a scope exception does not apply.

Next, Issuer evaluates whether the embedded derivative component should be separated from the host contract and accounted for as a stand-alone derivative instrument. Issuer evaluates whether the economic characteristics and risks of the embedded derivative component (i.e. the occurrence (or nonoccurrence) of the reduction in GHG emissions) are clearly and closely related to the economic characteristics and risks of the host contract.

Issuer concludes that the 'clearly and closely related' test is not met because the economic characteristics and risks most associated with a debt host contract are interest rate and issuer credit risk – not emissions.

Therefore, Issuer bifurcates the embedded derivative component from the host contract and records the derivative at fair value with changes in fair value recognized in earnings immediately.

Forthcoming requirements**

In September 2025, the FASB issued a final standard that refines the scope of Topic 815 by creating a new derivative scope exception.

The ASU creates a derivative scope exception for contracts that are (1) not exchange traded and (2) have underlyings based on operations or activities specific to one of the parties to the contract. However, contracts based on certain underlyings would not qualify for the scope exception.

This ASU is expected to result in excluding more contracts and embedded features from the scope of Topic 815 – e.g. bonds in which interest payments may vary based on sustainability-linked targets. As a result, entities would need to determine how to account for such contracts.

The ASU is effective in interim and annual periods for fiscal years beginning after December 15, 2026 and may be applied either on a prospective or modified retrospective basis. Early adoption is permitted for financial statements that have not yet been issued (or made available for issuance). See KPMG Defining Issues, FASB issues ASU on derivative scope refinements.

7.3 Expected credit losses

Estimating credit losses on financial assets is explained in-depth in KPMG Handbook, Credit impairment.

The guidance in Topic 326 on estimating lifetime credit losses applies to financial assets measured at amortized cost, including (but not limited to) trade receivables, loans and held-to-maturity debt securities. It also applies to contract assets recognized under Topic 606 (revenue) and off-balance sheet credit exposures such as letters of credit, unused lines of credit and guarantees. [326-20-15-2]

Estimating lifetime credit losses incorporates a number of assumptions, including, in many cases, an estimate of the effect of current economic conditions and reasonable and supportable forecasts of future economic conditions on the collectibility of the reported amounts. [326-20-30]

As climate risk increases, the reasonable and supportable forecast incorporated into an entity's estimate of expected credit losses may become more challenging as the entity may have limited experience in determining how physical and transition risk may impact economic variables (e.g. GDP, unemployment).

Estimating expected credit losses involves the use of projected information (i.e. the discounted cash flow method) or the fair value of collateral (e.g. a collateral dependent financial asset). Chapter 15 discusses climate risk on projected financial information and fair value measurements.

Off-balance sheet credit exposures

In addition, entities also need to evaluate the liability for off-balance sheet credit exposures, such as unfunded loan commitments that are not unconditionally cancellable by the issuer and present a contractual obligation to extend credit. Estimating this liability requires assumptions about both the likelihood of funding and the amount of loss that would be expected if funding were to occur. [326-20-30-11]

In a scenario of increasing uncertainty due to climate risk, some borrowers – especially those that may have experienced a recent deterioration in credit quality – may be more likely to exercise loan commitments or draw down on

unfunded lines of credit. As a result, entities may determine that assumptions regarding the likelihood of funding should be revised to reflect changing economic conditions.

Example 7.3
Probability of default adjusted for climate plan

Bank holds a portfolio of loans to US power and utility companies. To measure expected credit losses, Bank uses a probability of default/loss given default method. Bank aggregates the power and utility loans into pools by internal risk rating, size and collateral type.

Following an increase in climate-related risks for power and utility companies, Bank's credit administration has determined that it should adjust its method to determine the internal risk rating to consider the decarbonization strategy of the power and utility companies. The internal risk rating is mapped to probabilities of default. A power and utility company with a weak decarbonization strategy will receive a higher internal risk rating and a higher probability of default.

7.4 Impairment of available-for-sale debt securities

Credit losses on available-for-sale debt securities are recognized through an allowance for credit losses.

However, when an entity has the intent to sell the debt security – or more likely than not will be required to sell the security before recovery of the amortized cost basis – any allowance is written off and the amortized cost basis is written down to the security's fair value; any incremental impairment is reported in earnings. [326-30-35-1 – 35-2, 35-4 – 35-5, 35-10]

As climate risk increases, there may be more circumstances in which an entity may have the intent to sell – or determine that it may be required to sell an available-for-sale debt security in the future.

Example 7.4
Probability of default adjusted for climate plan

Bank holds a large portfolio of debt securities classified as available-for-sale for purposes of asset-liability management. As part of Bank's net-zero commitment, it has announced that it will divest its investments in companies that produce fossil fuels if they don't have a clear decarbonization plan.

Bank determined that a number of these companies have either no stated decarbonization plan or no clear strategy about the need for decarbonization. Following its own strategy, Bank determines that it has the intent to sell the available-for-sale debt securities held in these companies.

Accordingly, Bank writes off any related allowance for credit losses and the investments' amortized cost is written down to fair value at the reporting date; any incremental impairment is recognized in earnings.

7.5 Classification of debt securities

Investments in debt securities are classified as trading, available-for-sale or held-to-maturity. Transfers into and out of trading should be rare and transfers out of held-to-maturity are expected to be infrequent. [320-10-25-1, 35-12]

Except in limited situations, the sale of a held-to-maturity debt security before maturity calls into question an investor's intent and ability to hold securities that remain in the held-to-maturity category to maturity. One such situation is an event that is isolated, nonrecurring and unusual for the investor, which could not have been reasonably anticipated. [320-10-25]

Other than extremely remote disaster scenarios (e.g. a run on a bank or insurance entity), very few events will meet these conditions. [320-10-25-10]

The following changes in circumstances may cause an entity to change its intent to hold a certain security to maturity without calling into question its intent to hold other debt securities to maturity in the future – i.e. the sale or transfer is not considered inconsistent with its original classification as held-to-maturity. [320-10-25-6]

- Evidence of a significant deterioration in the issuer's creditworthiness – e.g. downgrade of an issuer's published credit rating.
- A change in tax law that eliminates or reduces the tax-exempt status of interest on the debt security; but not a change in tax law that revises the marginal tax rates applicable to interest income.
- A major business combination or major disposition (see chapter 14) that necessitates the sale or transfer of held-to-maturity securities to maintain the entity's' existing interest rate risk position or credit risk policy.
- A change in statutory or regulatory requirements that significantly modify either what constitutes a permissible investment or the maximum level of investments in certain kinds of securities, thereby causing an entity to dispose of a held-to maturity security.
- A significant increase by the regulator in the industry's capital requirements that causes the entity to downsize by selling held-to-maturity securities
- A significant increase in the risk weights of debt securities used for regulatory risk-based capital purposes.

The classification of debt securities is explained in-depth in section 4.2 of KPMG Handbook, Investments.

Example 7.5
Transfer of held-to-maturity debt securities due to climate risk (regulatory)

There has been growing pressure from advocacy groups for bank regulators to increase the risk weights in the risk-based capital framework for assets exposed to fossil fuel, so banks have to fund these exposures with more loss-absorbing equity capital and less debt.

If bank regulators significantly increase the risk weights used for regulatory risk-based capital purposes for debt securities, a bank may change its intent to hold certain securities to maturity without calling into question its intent to hold other debt securities to maturity in the future.

7.6 Equity securities without a readily determinable fair value

Equity securities without a readily determinable fair value are discussed in-depth in chapter 5 of KPMG Handbook, Investments.

Subsequent to initial recognition, an equity security without a readily determinable fair value may be measured using the 'measurement alternative': [321-10-35-2 – 35-4]

- cost less any impairment;

plus or minus

- changes in fair value when there are observable price changes in orderly transactions for the identical or a similar security of the same issuer. When an observable price is identified, the security is remeasured to fair value with changes in fair value recognized in earnings.

An entity makes a qualitative assessment considering impairment indicators to evaluate whether the fair value of the investment is less than its carrying amount. These impairment indicators include, but are not limited to, a significant adverse change in: [321-10-35-3]

- the economic environment of the investee; or
- the general market condition of either the geographical area or the industry in which the investee operates.

Climate risk may increase the potential for the impairment of equity securities without a readily determinable fair value. Example 6.2 provides some indicators of how climate risk may impact an entity's operating performance. While this example is in the context of a goodwill impairment assessment, some of those indicators may also be relevant to the analysis of whether equity securities are impaired.

When the qualitative assessment indicates that impairment exists or the entity cannot determine qualitatively that the fair value is less than its carrying amount, the entity measures the fair value of the investment (see chapter 15). If the fair value of the investment is determined to be less than its carrying amount, the entity writes down the investment to its fair value and recognizes the writedown in earnings.

Example 7.6
Impairment of equity security without a readily determinable fair value

Manufacturer, a global food company, holds an equity investment in a private company (Investee) that operates coffee farms and roasts coffee beans. Manufacturer measures its investment in Investee using the measurement alternative.

Investee announces that certain of its coffee farms, primarily those in low latitude and low altitude regions, will close operations within five years because of the impact of climate risk. These operations make up approximately 50% of both the assets and revenue of Investee.

Manufacturer evaluates this announcement as part of its qualitative assessment of potential impairment indicators related to its investment in Investee and concludes that its investment is impaired. The announcement signals a significant deterioration in earnings performance of Investee.

As a result, Manufacturer writes down its investment in Investee to fair value and recognizes an impairment loss.

7.7 Other-than-temporary impairment of equity method investments

The impairment model for equity method investments is explained in-depth in section 5.5 of KPMG Handbook, Equity method of accounting.

An equity method investment is impaired if its fair value is less than its carrying amount. In that case, the investor determines whether the impairment is temporary or other-than-temporary. If it is other-than-temporary, the investor reduces the carrying amount of the investment to its fair value by recognizing a charge to the income statement. [323-10-35-31]

Other-than-temporary impairment does not mean ‘permanent’ and evaluating whether an impairment is temporary requires judgment. Climate risk, including customer preferences, regulatory change and the impact of stranded assets, may result in a decline in value but create uncertainty about the durations of such declines for specific industries and entities. [323-10-35-32]

Example 7.7
Impairment of equity method investments

Investor, a restaurant holding company, has an equity method investment in a company (Investee) that owns and operates vineyards in Region. Investee experiences significant losses following wildfires that impacted several of its vineyards.

Although the immediate damage from the wildfires will be repaired, based on the concentration of Investee's business and the general outlook in Region, Investor concludes that its investment in Investee is impaired on an other-than-temporary basis.

7.8 Financial guarantees

The issuer of a financial guarantee estimates losses associated with the guarantee under Topic 326 and Topic 460, as applicable. Financial guarantees are discussed in-depth in chapter 14 of KPMG Handbook, Credit impairment.

Estimating the amount of losses typically requires the guarantor to make assumptions about both the likelihood of being required to perform under the guarantee and the amount of loss expected if such performance were required.

As climate risk increases, a guarantor might conclude that its performance under the guarantee is more likely, or that its loss upon performance is likely to be greater.

7.9 Hedging

Hedge accounting is explained in-depth in KPMG Handbook, Derivatives and hedging.

An entity may designate a derivative instrument as hedging the exposure to variability in expected future cash flows that is attributable to a particular risk. That exposure may be associated with a forecasted transaction (e.g. a forecasted purchase or sale). A forecasted transaction is eligible for designation as a hedged transaction in a cash flow hedge if the occurrence of the forecasted transaction is probable. [815-20-25-15]

Due to climate risk, an entity may need to reevaluate the probability of certain forecasted transactions occurring. If it is no longer probable that the forecasted transaction will occur, the hedging relationship is discontinued. If it is probable that the forecasted transaction will not occur by the end of the originally specified time period or within two months thereafter, the amounts in accumulated other comprehensive income (OCI) are reclassified to profit or loss. [815-30-40-4]

Example 7.9
Effect of climate-related transition risk on cash flow hedging relationship

Manufacturer has a calendar year-end and makes specialty products for power generation. It hedged the foreign currency risk associated with the sale of a custom-made piece of equipment being developed for an energy producer in Country that was forecasted to occur on March 31, Year 2 and applied hedge accounting.

In September Year 1, before Manufacturer had finished the equipment, Country implemented new climate laws to meet its nationally determined contributions under the Paris agreement. As a result, Manufacturer believes it is probable that the transaction will not occur, and it discontinues hedge accounting.

Therefore, Manufacturer reclassifies amounts related to the hedging relationship from accumulated OCI to earnings as of September Year 1.

Counterparty credit (and own nonperformance) risk

Climate risk may result in increased credit risk. Entities should consider the effects that changes in counterparty credit and their own nonperformance risk have on hedging relationships.

The likelihood of a hedging relationship being significantly affected may differ between entities that have derivative hedging instruments that are exchange-traded or centrally cleared, and those that do not. Derivative instruments that are centrally cleared or exchange-traded are typically considered to have minimal credit (and nonperformance) risk because they generally have variation margin posted daily.

The following are key aspects of hedging relationships that may be affected.

Fair value hedging relationships

Changes in counterparty credit and own nonperformance risk on a derivative instrument's fair value are not likely to have an offsetting effect on the change in fair value of the hedged item attributable to the hedged risk. As a result, an entity's assessment of a hedging relationship's effectiveness may be affected. Also, the extent to which these changes do not perfectly offset is recognized in the income statement. [815-20-35-16]

When the shortcut method is used to assess effectiveness, potential differences in credit risk between the derivative instrument and hedged item are generally ignored unless non-default by either party is no longer probable. When non-default is no longer probable, the company discontinues hedge accounting. [815-20-25-103]

Cash flow hedging relationships

Counterparty credit risk or an entity's own nonperformance risk are considered for both the derivative hedging instrument and the forecasted transaction. Changes in fair value of the derivative instrument are recognized in OCI unless a hedging relationship is discontinued. [815-20-25-16(a)]

- **Derivative hedging instrument.** If it is no longer probable that the derivative counterparty or the entity itself will not default, the entity discontinues hedge accounting. Otherwise, changes in counterparty credit risk and an entity's own nonperformance risk are ignored when assessing effectiveness.
- **Forecasted transaction.** An entity also considers whether changes in counterparty credit or its own nonperformance risk indicate a hedged forecasted transaction is no longer probable. When a hedged forecasted transaction is no longer probable, the entity discontinues hedge accounting.

8. Power purchase agreements

Detailed contents

8.1 Questions to ask

Power purchase agreements (PPAs) are not new, but their prevalence – and the variety of underlying terms and conditions – is growing as entities seek to purchase renewable energy and related renewable energy credits (RECs) to reduce and/or offset their emissions.

There are a number of standards relevant to the accounting for PPAs, including Topic 810 (consolidation), Topic 842 (leases) and Topic 815 (derivatives and hedging).

This chapter outlines some of the broad considerations relevant to an entity determining the appropriate accounting for a PPA upon execution. The accounting for carbon credits acquired to offset emissions on a voluntary basis is discussed in chapter 13.

In addition to the general questions in section 2.4, the following are example questions specific to the accounting for PPAs (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Did the company execute a PPA?	Understand the terms and conditions of the PPA that affect the determination of the appropriate accounting, which may be different for a physical versus a virtual PPA. Section 8.2 ▶
Does the PPA represent or contain a variable interest in the energy producer?	Evaluate whether the entity holds a variable interest in the power producer, and if so determine if consolidation is required. Section 8.3 ▶
Is the PPA a lease or does it contain a lease?	Consider whether the PPA conveys the right to control the use of an identified asset for a period of time in exchange for consideration. Section 8.4 ▶
Is the PPA a derivative or does it contain embedded derivatives?	If the PPA is not a lease, consider whether it contains the characteristics of a derivative. Section 8.5 ▶

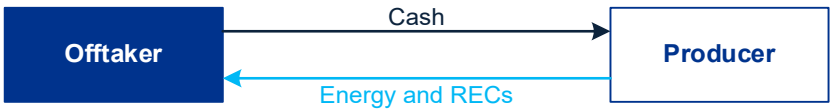
8.2 Types of PPAs

Two main types of PPA are prevalent in the renewable energy marketplace: physical PPAs and virtual PPAs.

Physical PPA

A physical PPA is an agreement for the purchase and sale of energy between a consumer buyer (also known as an 'offtaker') and energy generator (also known as a 'producer'). In renewable energy, PPAs typically have either fixed or variable per-unit pricing, where variable prices are linked to an underlying energy index. Contract quantities may be equal to all or a portion of the energy generated by the renewable energy project. RECs corresponding to generation of the qualifying renewable energy may or may not be transferred as part of a bundled sale.

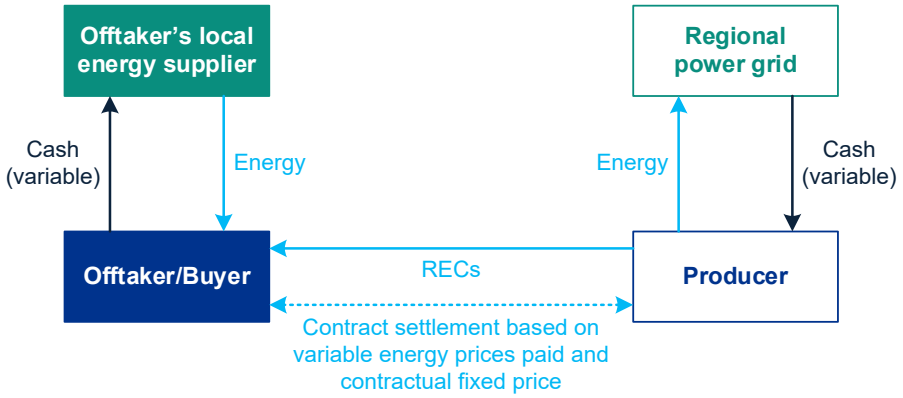
A renewable energy project may be located on or off the offtaker's premises. The producer may deliver energy directly to the offtaker through transmission lines connected to the offtaker's facilities, or indirectly through the regional power grid.



Virtual PPA

A virtual PPA (also known as a financial PPA), is an arrangement between a producer and a buyer in which the buyer pays a fixed price per unit of generated energy in exchange for a floating (market) price. The contract is periodically settled net in cash and energy is not physically delivered to the buyer.

Most virtual PPAs result in the transfer of the corresponding RECs to the buyer at settlement. Virtual PPAs create an opportunity for the buyer to receive the corresponding RECs without committing to take delivery of physical power.



8.3 Variable interests in a PPA

A PPA may be a variable interest in the legal entity that holds the renewable energy project, and therefore trigger a buyer's evaluation of whether consolidation of the legal entity is required or the related disclosures of Topic 810 (consolidation) apply.

In the context of PPAs, the analysis generally involves the following key questions:

1. Does the offtaker/buyer hold a variable interest in the legal entity through the PPA?
2. If yes to (1), is the legal entity (producer) a variable interest entity (VIE)?
3. If yes to (2), is the offtaker/buyer the VIE's primary beneficiary?

If a buyer concludes it is the primary beneficiary, the buyer consolidates the power producer entity.

A 'variable interest' is an interest through which an enterprise involved with a legal entity shares in that entity's economic risks and rewards – i.e. the entity's variability. Variable interests can be contractual, ownership or other pecuniary interests in a VIE. Specifically, a variable interest absorbs some of the legal entity's expected losses, expected residual returns or both. Determining whether a PPA is a variable interest requires judgment and consideration of the specific facts and circumstances. [810-10 Glossary]

The variable interest analysis starts by applying the by-design approach. The buyer identifies the risks the legal entity was designed to create and distribute to its interest holders. Typical risks created by renewable energy projects may include:

- design and construction
- variability in power prices
- operations and maintenance
- ownership (e.g. residual value, decommissioning)
- production (output) risk
- other specific risks created by contract.

PPAs that absorb variability associated with the above risks may be variable interests. Unlike a fossil fuel-fired power plant, renewable energy projects typically do not require fuel inputs, and therefore do not create fuel price risk. Further, the design and technology of many renewable energy projects limit exposure to operations and maintenance risks.

Typically, renewable energy projects are designed to distribute power price risk (i.e. the variability in power prices) to interest holders. The following are relevant considerations for renewable energy project PPAs.

- **Fixed-price PPA.** A PPA to purchase all power generated by a renewable energy project that has limited exposure to other risks would absorb power price risk and therefore be a variable interest.

- **Variable-price PPA.** A PPA indexed to the relevant power market price would typically create commodity price risk – instead of absorbing power price risk – and therefore not be a variable interest.
- **Fixed-price PPA with a production guarantee.** A fixed-price PPA containing terms requiring the renewable energy project to deliver a minimum quantity of power may absorb power price risk but also create production risk. This type of PPA may be a variable interest depending on the level of risk created by the minimum production quantity compared to expected generation capacity of the renewable energy project.

In addition, PPAs may be variable interests if they have an embedded finance lease or an operating lease with off-market terms, residual value guarantees or fixed-price purchase options (see section 8.4). In many cases, if the PPA is a variable interest, the power producer entity will be a VIE because the equity investors lack one or more of the equity-at-risk characteristics.

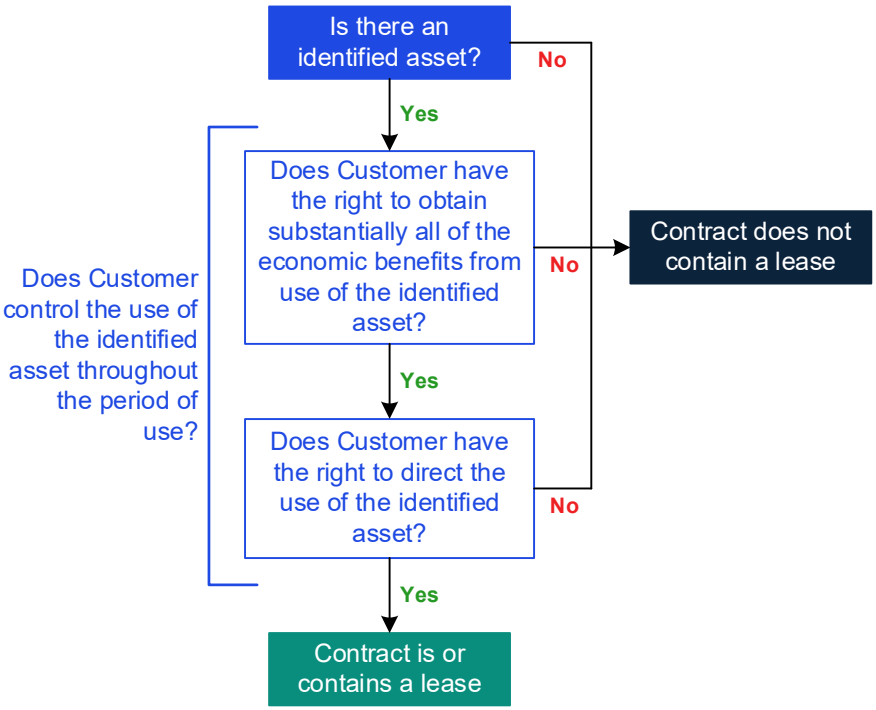
If the power producer entity is a VIE and the buyer's PPA is or contains a variable interest, the buyer evaluates whether it meets the power criterion of a primary beneficiary, which will depend in part on the nature of the producer's assets and operations. A buyer that takes on a majority of the risk of the power producer entity's assets over their remaining economic lives might meet the power criterion. Further, the buyer's involvement in the design of the power producer entity that owns and operates the renewable energy project may be an important factor to consider in evaluating whether the buyer meets the power criterion.

Variable interests and VIE accounting under Topic 810 are explained in-depth in KPMG Handbook, Consolidation.

8.4 PPA that is or contains a lease

An entity assesses at contract inception whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

The following are the key elements of the definition, which is discussed in-depth in chapter 3 of KPMG Handbook, Leases.



In our experience, careful analysis is required to determine whether the customer (offtaker) has the right to direct the use of the identified power generation asset (e.g. the plant or farm). This is because the relevant decisions about 'how and for what purpose' the renewable energy asset will be used may be predetermined – whether by the design of the asset or by the terms of the contract.

In those cases, the determination about whether the customer has the right to direct the asset's use depends on two additional criteria; if either is met, the customer has the right to direct the asset's use:

- The customer operates the asset; or
- The customer designed the asset (or specific aspects of the asset) in a way that predetermined those decisions (the 'design criterion').

For PPAs, all of the relevant how and for what purpose decisions about the asset's use – i.e. what it will produce (electricity); where it is located and will produce power; and when, whether and how much electricity it will produce – are often predetermined by its design. In addition, the power producer typically operates and maintains the plant or farm throughout the 'period of use'. Consequently, the question of whether the customer directs the use of the asset in these scenarios depends on the design criterion.

Often in PPAs, both the offtaker and the power producer have some involvement in the asset's design. Therefore, the judgment to be made in assessing the design criterion is which party controlled – or most significantly influenced, if both parties were involved in a particular design decision – those design aspects that predetermined the relevant how and for what purpose decisions, which in effect predetermine the economic benefits to be derived from the asset's use.

The party (offtaker or producer) that controlled (or most significantly influenced) those design decisions will be the one deemed to have the right to direct the use of the asset when the design criterion is determinative. Design decisions made by a third party (e.g. an engineering firm) should generally be attributed to the party (i.e. offtaker or producer) who engaged it.

Common design aspects of a renewable energy asset that affect the economic benefits that can be derived from its use include (not exhaustive):

- the specific location of the plant or farm;
- the specific generating equipment (e.g. the specific turbines or solar panels) that will be used;
- the technical design of the plant or farm; and
- site layout.

Which design aspects most significantly influence the economic benefits that can be derived from the asset's use will differ for different types of power producing facilities. That is, those design aspects usually are not the same for a solar farm as for a wind farm or a hydroelectric or geothermal plant.

Judgment is likely to be involved in evaluating:

(1) which design aspects are the most significant for a particular asset (or type of asset); and
(2) which party controlled (or most significantly influenced) those design aspects.

Judgment about which design aspects are the most significant to the economic benefits that can be derived from the asset during the period of use may require the involvement of engineers, scientists or other experts outside of an accounting or finance function. When making judgments (1) and (2), it may be relevant to consider:

- whether the offtaker initiated the asset's construction – i.e. the plant or farm subject to the PPA was (or is being) constructed to fulfill the offtaker's specific requirements; and
- if so, the extent to which certain design decisions are, in effect, predetermined by the offtaker's requirements (e.g. location, generating capacity).

If the asset is being constructed to meet specific offtaker requirements, this likely suggests there is, or will be, more offtaker involvement in design. In contrast, if the asset is pre-existing or under construction by the producer on spec, it is likely that most significant design decisions were made by the producer before PPA negotiations with the offtaker began.

If the offtaker's requirements substantively predetermine a key design decision, that decision generally should be attributed to the offtaker. For example, if the offtaker's power generation requirements can only be met by specific generating equipment (a certain type and model), that would typically suggest that the offtaker's decisions about those requirements were more significant to predetermining the economic benefits that can be derived from use of the plant than the producer's actions of identifying and acquiring that generating equipment. This would be the case even if the offtaker did not know that there

was only one generating equipment option that would meet its plant requirements.

8.5 Derivative instruments

A derivative instrument is a financial instrument or contract with the following characteristics: [815-10-15-83]

- one or more underlyings;
- one or more notional amounts or payment provisions (or both);
- no initial net investment or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors; and
- net settlement.

Given the unique features of PPAs, an entity evaluates the specific terms and conditions to determine whether a PPA meets the definition of a derivative.

PPAs generally contain an underlying associated with the price of power, do not require an initial net investment, and meet the characteristic of net settlement. Therefore, the evaluation of whether a PPA meets the definition of a derivative generally focuses on whether the PPA contains a notional amount.

Physical PPAs usually require offtakers to purchase energy in quantities equal to actual generated energy, with no payment provisions involving committed quantities. Similarly, the settlement provisions of virtual PPAs are usually calculated in quantities equal to actual energy generated and not a stated contract quantity. The quantity of actual energy generated is primarily determined by weather (wind and sun) and is not within the control of the parties to the PPA. As a result, PPAs may not contain determinable notional amounts.

Physical and virtual PPAs should be carefully evaluated for provisions that constitute a notional amount. For example, while not common, minimum performance guarantees may trigger a cash payment (or delivery of energy from other sources) from the producer to the offtaker/buyer in the event actual generation falls below stated guaranteed quantities. Such provisions may cause the PPA to contain a notional amount.

The definition of a derivative is discussed in more detail in chapter 3 of KPMG Handbook, Derivatives and hedging.

9. Contingencies and insurance

Detailed contents

Item significantly updated in this edition **#**

9.1 Questions to ask

A contingency arises from an existing condition, situation or set of circumstances involving uncertainty as to possible gain or loss to the entity that will ultimately be resolved when one or more future events occur or fail to occur. [450-10 Glossary]

Climate risk may give rise to both loss contingencies and gain contingencies. This chapter deals with losses related to environmental remediation and other contingencies such as pending or threatened litigation based on the entity's alleged actions during or in the aftermath of an extreme weather event.

Often contingencies and the related business impacts are insured, and this chapter also discusses insurance recoveries and gain contingencies.

In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Are new environmental regulations changing what assets require environmental remediation or the manner in which remediation is done?	Consider whether new environmental remediation liabilities need to be recognized or existing ones remeasured. Section 9.2 ▶
Is there pending or threatened litigation or possible claims related to climate risk?	Consider whether accrual and/or disclosure related to pending or threatened litigation, actual or possible claims or assessments, is required or whether existing accruals need to be remeasured. Section 9.3 ▶
Are operations exposed to areas that are becoming high risk for extreme weather events?	Understand the timing of the different accounting entries, which can be in different reporting periods: loss recognition, loss recovery, additional gains. Sections 9.3 and 9.4 ▶
Is insurance coverage changing?	Understand the implications for financial performance if losses are becoming more likely with shrinking insurance recoveries. Sections 9.2 and 9.3 ▶

9.2 Environmental remediation liabilities

The guidance on environmental remediation liabilities covers pollution arising from past acts. A natural disaster (e.g. a flood, hurricane) may cause environmental contamination (e.g. spillage of hazardous waste), the remediation of which is in scope of Subtopic 410-30. [410-30]

However, the scope of the guidance excludes the following. [410-30-15-3]

- Obligations that both (1) arise from the normal operation of a long-lived asset and (2) are associated with the retirement of that asset. These are AROs, which are discussed in section 3.4.
- Pollution control costs with respect to current operations (a current-period expense) or in accounting for required costs of future site restoration or closure (part of the measurement of an ARO).
- Discretionary actions by management that are not induced by the threat of litigation or of assertion of a claim or an assessment.

The assessment of an entity's environmental remediation liabilities can be complex, and typically involves consultation with internal and external legal advisors.

The liability is measured based on the incremental direct costs of the clean-up, plus directly attributable employee costs. Projected financial information is discussed in chapter 15. [410-30-30-10]

In addition, a separate asset for any insurance recovery (see section 9.4) or recovery from another responsible party is recognized:

- up to the amount of the recognized loss when receipt is probable and estimable; and
- for any remaining amount(s) when final settlement is reached.

In general, however, there is a rebuttable presumption that receipt of a claim that is subject to litigation is not probable. [410-30-35-9]

Example 9.2
Environmental remediation liability linked to flooding

Flooding at one of Manufacturer's plants caused a chemical spillage that requires remediation under environmental remediation liability laws. The risk of future flooding is high, and post-remediation monitoring and check-ups will be required.

Manufacturer estimates the following costs related to the clean-up and ongoing monitoring.

Clean-up costs: direct, incremental [410-30-30-10(a)]	
External fees related to determining the extent of remedial actions required and a remedial investigation-feasibility study	$500
Engineering and consulting fees related to site investigations and developing remedial action plans	300
Contractors performing remedial actions	250
Equipment dedicated to the remedial actions (with no alternative use)	900
Post-remediation assessment by relevant agency	100
Clean-up costs: direct employee costs	
Internal engineers and other personnel directly involved with the remediation effort [410-30-30-10(b)]	275
Internal administration personnel accounting for the costs as part of their routine responsibilities	50
Ongoing monitoring	
Internal engineers and other personnel involved with ongoing monitoring once the remediation effort is complete (per year)	600
Ongoing periodic checks by relevant agency (per check)	100

Manufacturer recognizes a liability for the clean-up costs associated with the remedial effort ($2,325). This excludes the following, which are expensed as incurred.

- Routine administrative accounting costs because they are not directly associated with the remediation effort ($50).
- Ongoing post-remediation costs because they relate to future operations ($600 per year + $100 per check).

Insurance recoveries are discussed in section 9.4.

9.3 Contingent losses

The general accounting for contingent losses applies when a loss does not fall in the scope of other guidance – e.g. the requirements for environmental remediation liabilities discussed in section 9.2.

A loss contingency is recognized when: [450-10-20, 450-20-25-2]

- it is 'probable' (i.e. likely) that a liability has been incurred; and
- the amount is reasonably estimable.

A loss contingency that does not meet both recognition criteria may however need to be disclosed. [450-20-50-3]

Although an obligation may be created by the future actions of an entity, a liability is not recognized until those actions occur and the obligation exists; however, disclosure may be required. We believe that any legal obligations arising from legislation should be recognized only when the legislation is enacted. [450-20-25-2, 55-10, 740-10-25-47]

The contingent liability is measured based on the best estimate of the ultimate settlement amount. If the loss is expected to be within a range and some amount within that range is a better estimate, that amount is recognized. Otherwise, the minimum amount in the range is recognized. [450-20-30-1]

Any expected recovery or reimbursement is recognized separately from the liability (see section 9.4).

For further discussion about accounting for loss contingencies, see KPMG Handbook, Contingencies, commitments and guarantees.

Example 9.3
Contingent loss separate from environmental remediation liability

The following scenarios continue from Example 9.2.

Scenario 1: Contingent loss separate from environmental remediation liability

The local town has made a claim against Manufacturer for a loss of tourism revenue caused by the chemical spillage.

Manufacturer concludes that a liability has been incurred and expects to pay somewhere in the range of $5,000 to $7,500. However, Manufacturer is fully insured and therefore does not expect to incur any loss.

Manufacturer recognizes a liability of $5,000 because no other amount in the range is a better estimate. The expectation of an insurance recovery does not reduce the amount of the liability recognized, but may result in recognition of a separate asset (see section 9.4).

Scenario 2: Cleanup commitment exceeds obligation

In addition to cleaning up the environmental damage to the standard required, Manufacturer holds a series of town halls to listen to local concerns; subsequently, it publicly commits to install a new structural flood mitigation system to limit future damage.

Manufacturer will capitalize the new system as expenditure is incurred (see section 3.5). It does not recognize a liability in advance of incurring expenditure because it does not have an obligation as a result of a past event. Section 16.6 discusses the disclosure of commitments.

9.4 Insurance recoveries#

A recovery of a loss or costs incurred (i.e. up to the amount of the loss or costs incurred) with direct linkage to the insured event is recognized when recovery is 'probable' (i.e. likely) and reasonably estimable.

A probable loss recovery is measured at its reasonably estimable amount but is capped at the amount of costs and losses incurred in the loss event (i.e. recognized in the financial statements). The amount is recognized as a separate asset; the right of offset for an insurance recovery and related liability is usually rare. Settlement of a claim in the subsequent events period may provide evidence that a loss recovery was probable and reasonably estimable at the reporting date, in which case the recovery is recognized at that date – i.e. it is a recognized subsequent event. [855-10-25-3]

If an anticipated recovery is for costs and losses that have not been incurred (e.g. lost revenue) or if it exceeds costs and losses incurred, the recovery (or the excess) is considered a gain contingency. An entity delays recognizing the gain until all contingencies have been resolved (i.e. the claim is settled). Settlement of a claim in the subsequent events period rarely results in the recognition of the gain at the reporting date – i.e. it is a nonrecognized subsequent event that is disclosed. [450-30-25-1, 855-10-25-3]

In many cases, business interruption and similar insurance recoveries are not recognized in the period of the insurable event due to uncertainties about the recovery or the specific losses or costs covered.

For a discussion about the accounting for insurance recoveries, see chapter 6 of KPMG Handbook, Contingencies, commitments and guarantees.

Example 9.4
Recovery of losses from chemical spillage

Continuing Examples 9.2 and 9.3, Manufacturer has the following pollution liability insurance in place (maximum coverage):

- Clean-up, $7,000 (excludes post-remediation costs)
- Third-party damages, $10,000
- Business interruption, $40,000

The following is the timeline of events related to the losses and insurance recoveries.

Year 1	
Environmental remediation liability recognized (Example 9.2)	$ 2,325
Contingent loss for third-party damages recognized (Example 9.3)	5,000

Costs incurred from diverting deliveries to other facilities (Year 1)	2,000
Estimate of lost revenue (Year 1)	12,000
Year 2	
Actual environmental remediation costs incurred	3,500
Settlement of contingent loss	5,200
Costs incurred from diverting deliveries to other facilities (Year 2)	2,500
Estimate of lost revenue (Year 2)	13,000
Settlement of insurance recoveries: • Clean-up • Third-party damages • Business interruption (Years 1 and 2)	 3,500 5,200 29,500

Manufacturer records the following journal entries related to the losses and subsequent recoveries.

$	*Debit*	*Credit*
Income statement[1]	7,325	
Liabilities		7,325
Year 1: To recognize environmental remediation liability and contingent loss.		
Income statement[1]	2,000	
Cash		2,000
Year 1: To recognize incremental operating costs.		
Other asset	9,325	
Income statement[1,2]		9,325
Year 1: To recognize probable recovery up to amount of loss recognized.		
Income statement[1]	1,375	
Liabilities	7,325	
Cash		8,700
Year 2: To recognize environmental remediation costs incurred and settlement of contingent loss.		
Income statement[1]	2,500	
Cash		2,500
Year 2: To recognize incremental operating costs.		
Cash	38,200	
Other asset		9,325
Income statement[2]		28,875
Year 2: To recognize full recovery upon settlement with insurer.		

Notes:

1. This example does not illustrate the income statement presentation of the loss and subsequent recovery. The guidance in Topic 220 should be considered and several presentation approaches may be acceptable.
2. Manufacturer recognizes the expected insurance proceeds up to the amount of the recognized loss when receipt is ‘probable’. This estimation does not require settlement with the insurer.

   Manufacturer recognizes the remaining recovery of $28,875 in Year 2 when the settlement is reached; this is when the gain contingency is realized.

10. Revenue and inventories

Detailed contents

10.1 Questions to ask

As entities seek to reduce emissions throughout their supply chain, sustainability targets (e.g. related to reductions in emissions) may be included in revenue contracts – structured either as an incentive or penalty. A contract may even be cancellable if targets are not met.

In response to climate risk, customers that have entered into long-term contracts with suppliers may seek to adjust terms (or even terminate contracts) to align with their climate-related sustainability objectives.

Climate risk has the potential to impact the valuation of inventory as a result of changes in customer demand and product pricing. Additionally, an entity may experience incremental costs associated with purchase commitments or idled manufacturing capacity.

In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive). Issues related to the accounting for carbon credits are discussed in chapter 13.

QUESTION	ACTIONS IF 'YES'
Do revenue contracts include emissions reduction targets?	Understand the implications for revenue recognition. Section 10.2 ▶
Are customers seeking to negotiate modified (or even terminate) contracts?	Understand when a modification results in an adjustment to revenue recognized under the current contract (current period or prospective) versus a separate contract. Section 10.3 ▶
Is climate risk affecting the selling price of inventories?	Review the net realizable (or market) value of inventories. Section 10.4 ▶
Is climate risk affecting the cost of materials used in production?	
Is climate risk affecting the availability of materials used in production?	Reassess what is considered 'normal' operating capacity in allocating overhead to inventory. Section 10.5 ▶
Are production facilities located in areas that are becoming high risk for extreme weather events?	Understand the accounting for 'normal' versus 'abnormal' inventory costs. Section 10.5 ▶

10.2 Emissions reduction targets in revenue contracts

As entities seek to reduce emissions throughout their supply chain, sustainability targets (e.g. related to reductions in emissions) may be included in revenue contracts – structured either as an incentive or penalty.

The transaction price includes variable consideration (e.g. rebates, incentives, performance bonuses, performance penalties), based on the estimated amount to which the entity expects to be entitled. [606-10-32-3, 32-6]

An entity includes an estimate of variable consideration to the extent it is 'probable' that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. The estimate is updated at each reporting date, with a consequential effect on the transaction price. [606-10-32-11, 32-14]

Variable consideration in a revenue contract is explained in-depth in section 5.3 of KPMG Handbook, Revenue recognition.

Example 10.2
Revenue contract includes emissions targets

Customer has committed to be net zero by 2030 and is reviewing all of its contracts with suppliers. Service Provider is a logistics company that has committed to be net zero by 2035 and has set internal milestones to help it meet its commitment. The two companies enter into a five-year contract for Service Provider to provide a variety of logistics services to Customer.

The contract includes annual milestones that relate to Service Provider's emissions reduction milestones. To the extent that a milestone is not met, the contractual transaction price for that year is reduced by 2%.

As part of determining the transaction price, Service Provider expects to be entitled to 100% of the contract price with no amount needing to be constrained. In reaching this conclusion, Service Provider takes into account the following:

- its net-zero commitment was made two years ago and to date it has met all internal milestones;
- its internal milestones are within its control and are consistent with those specified in the contract with Customer; and
- its internal monitoring of progress toward its net-zero goal indicates that it is probable that its milestones will be met.

Therefore, Service Provider concludes that a most-likely-amount method to estimate the variable consideration will best predict the consideration to which it will be entitled. Applying that method, Service Provider concludes that it expects to be entitled to the full contractual amount.

Service Provider will review this conclusion at every reporting date for the duration of the contract.

10.3 Modifications and terminations

In response to climate risk, customers that previously entered into long-term contracts with suppliers may seek to adjust terms (or even terminate contracts) to align with their climate-related sustainability objectives.

When determining the transaction price, an entity assumes that the goods or services will be transferred to the customer based on the enforceable rights and obligations in the contract. Therefore, an entity does not consider the possibility of the contract being canceled, renewed or modified, and only accounts for those events when they occur. [606-10-25-10]

Modifications are accounted for when they are approved. [606-10-25-10, 25-12 – 25-13]

- If the modification only adds distinct goods or services at a price commensurate with stand-along selling price, the modification is accounted for prospectively as a separate contract.
- If the modification is not a separate contract, it is generally accounted for:
  - on a cumulative catch-up basis, if the remaining goods or services are not distinct;
  - prospectively, with a reallocation of remaining revenue under the original contract if the remaining goods or services are distinct; or
  - a combination of cumulative catch-up and prospective when the remaining goods or services are both non-distinct and distinct, respectively.

Aspects of the accounting for contract modifications may be more challenging as climate risk considerations increase, particularly if an entity changes the prices at which it is willing to sell its goods or services due to scarcity in resources, increased costs, or social and environmental awareness.

The accounting for contract modifications as a separate contract depends on the stand-alone selling prices of the additional distinct goods or services at the time of the contract modification. Frequent, inconsistent or rapidly changing prices may make it challenging to determine the stand-alone selling price, including as the market reacts to climate change risk. It may be important to focus on whether there is a past performance issue when the price in the modification is lower than the price in the original contract.

Contract modifications are discussed in chapter 11 of KPMG Handbook, Revenue recognition.

Example 10.3
Revenue contract terminated

Continuing Example 10.2, in Year 3 Customer exercises an early termination clause in the contract with Service Provider and terminates Years 4 and 5 of the contract, for which it will pay a substantive penalty. Although Service Provider

has met the milestone targets in the contract, Customer has decided to contract with an alternative supplier that is more advanced in reducing its emissions.

Service Provider accounts for this partial termination as a contract modification because the scope and price of the contract decreases. The termination payment is included as promised consideration under the modified contract.

The modification is accounted for by Service Provider as follows:

- if the remaining services in Year 3 are not distinct from those already provided in the contract, in the current period on a cumulative catch-up basis; or
- if the remaining services in Year 3 are distinct, prospectively with a reallocation of remaining revenue under the original contract.

Note: Contract modifications as a result of a partial termination of a contract are discussed in section 11.3.30 of KPMG Handbook, Revenue recognition.

10.4 Measurement of inventories

Climate risk has the potential to impact the valuation of inventory as a result of changes in customer demand and product pricing. Additionally, an entity may experience increasing costs of raw materials used in inventory production or idled manufacturing capacity.

In general, inventory is written down to the lower of cost and net realizable value (NRV) at the reporting date. NRV is the estimated selling price of the inventory in the ordinary course of business less reasonably predictable costs of completion, disposal and transportation. [330-10-35-1A – 35-1B, 330-10 Glossary]

Inventory measured using last-in, first-out (LIFO) or the retail inventory method is measured by reference to 'market' rather than NRV. [330-10-35-1A, 35-1C]

Depending on the inventory turn rate, NRV or 'market' may be susceptible to different types of climate risk.

- Extreme weather events can cause inventory to be damaged or destroyed.
- Immediate climate risks can also give rise to generally increasing costs to complete, store and/or transport the inventory. (Abnormal incremental costs are expensed as incurred – e.g. a warehouse is flooded and the entity is unable to move its product until the damage is fixed.)
- Additional risks arise from longer term expectations, and projected financial information is discussed in section 15.5.

10.5 Idle plant capacity, abnormal manufacturing overhead costs and price variances

Costs of production or conversion include all direct costs such as labor, material and direct overheads, and an allocation of fixed and variable indirect production overheads. Fixed production overheads are allocated to inventory based on the normal capacity of the production facilities. [330-10-30-3, 30-8]

Normal capacity reflects planned maintenance and some variation in production levels from period to period and will vary depending on the business and industry. When an entity's production facility is operating below the range of normal capacity (i.e. operating at an abnormally low production level), the fixed overhead costs allocated to each production unit are not increased (not allocated to inventory) and are instead recognized as an expense in the period in which they are incurred. [330-10-30-3, 30-7]

Other items such as abnormal freight, handling costs and amounts of wasted materials (spoilage) are also accounted for as an expense in the period in which they are incurred, not as part of inventory cost. [330-10-30-7]

Physical climate risks, such as from extreme weather events, can result in unplanned downtime and operational disruptions – either because of an event that affected the entity itself, or due to shortages or interruptions to an entity's materials supply chain.

Conversely, there may be entities in certain industries where the actual level of production is abnormally high – e.g. renewable energy production, wildfire suppressant supplies. In these cases, entities would reduce the amount of fixed overhead costs allocated to each production unit to ensure inventories are not measured above cost.

11. Compensation and benefits

Detailed contents

11.1 Questions to ask

It is becoming more common for entities to consider including sustainability targets (e.g. related to reductions in emissions) in compensation agreements, especially at the C-suite level.

Entities may revise or enter into new compensation arrangements, and evaluate existing compensation arrangements to determine if any specific terms, conditions or estimates have been affected.

In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Will emissions reduction targets be included in stock option awards?	Understand the implications for the recognition of compensation. Section 11.2 ▶
Is vesting of an award linked to a sustainability target (e.g. scope 3 emissions reduction)?	Analyze whether the vesting condition meets the definition of a performance condition and consequently whether the award is equity-classified. Section 11.3 ▶
Will emissions reduction targets be included in other compensation arrangements?	Understand the implications for the recognition of compensation. Section 11.4 ▶
Will emissions reduction plans result in employees being terminated?	Understand the different types of termination benefits, which have different accounting requirements. Section 11.5 ▶
Will voluntary terminations be offered?	Understand the timing of liability recognition, which is based on 'acceptance'. Section 11.5 ▶
Will an arrangement for ongoing termination benefits be set up for longer-term use as the company carries out its strategy?	Understand the timing of liability recognition, which is based on 'probability of entitlement'. Section 11.5 ▶
Will a restructuring result in a one-time arrangement under which employees will be involuntarily terminated?	Understand the timing of liability recognition, which is based on 'communication' date. Section 11.5 ▶

11.2 Emissions targets in share-based payments

Entities initially consider whether a sustainability target included in a share-based payment arrangement meets the definition of a performance condition. A performance condition is a condition affecting the vesting, exercisability, exercise price, or other pertinent factors used in determining the fair value of an award that relates to both: [718-10 Glossary]

- rendering services or delivering goods for an explicit or implicit period of time; and
- achieving a specified performance target that is defined by reference to the grantor's own operations (or activities) or by reference to the grantee's performance related to the grantor's own operations (or activities).

Based on the definition, a sustainability target (e.g. reduction in emissions) may or may not be considered a performance condition. In addition, when evaluating a target, entities consider its level of specificity and whether it is subject to any future discretion in determining whether a grant date has been established. For a discussion about discretionary clauses when determining grant date, see section 4 in KPMG Handbook, Share-based payment.

For awards with performance conditions, compensation cost is recognized when it is probable that the performance condition will be achieved. If the performance condition is not probable, no compensation cost is recognized until it is probable. This assessment is reevaluated at each reporting date to determine if a reversal of compensation expense is required. [718-10-25-20]

If a performance condition is modified, specific accounting requirements apply when either the fair value, vesting conditions or the classification of the award are not the same immediately before or after the modification.

In that case, if the fair value of the grant increases, the incremental fair value of the modified grant is accounted for in addition to the original grant (assuming this is a 'probable-to-probable' modification). However, an 'improbable-to-probable' modification is accounted for as a new award. Depending on the facts and circumstances, this may result in a lower amount of compensation cost than the grant date fair value of the original award or a greater amount of compensation costs than the sum of the grant date fair value of the original award plus the incremental fair value. [718-20-35-3]

The recognition of compensation cost in a share-based payment award, and subsequent modifications, are discussed in sections 4 and 5 of KPMG Handbook, Share-based payment.

Example 11.2
Emissions target in share option awards

Scenario 1: New award includes emissions target

Telco grants share options to senior executives. Vesting occurs if Telco reduces its emissions by 50% at the end of eight years and this is considered a performance condition. The base year for measuring reductions is Year 1.

At grant date and at the end of Year 1, Telco determines it is not probable that the target will be met. Accordingly, no compensation cost is recognized.

At the end of Year 2, Telco determines that it is now probable that the target will be met. Accordingly, Telco recognizes compensation cost in Year 2, which includes a catch-up adjustment for Year 1.

Scenario 2: Existing award modified to include emissions target

Continuing Scenario 1, at the end of Year 2, Telco adjusts the emissions target to be net zero at the end of six years. No other terms are changed.

At the date of modification, Telco determines that it is probable that the original target will be met, and it is also probable that the revised target will be met ('probable-to-probable' modification). In addition, the fair value of the awards has increased since the grant date.

The grant-date fair value constitutes the floor on the compensation cost and continues to be the basis on which compensation cost is recognized. This means that if the senior executives meet the original target but not the revised target, the original calculated compensation cost will be recognized (subject to forfeitures).

However, during the requisite service period, Telco will recognize incremental compensation cost based on the awards' fair value at the date of modification.

11.3 Vesting conditions tied to scope 3 emissions

Scope 3 emissions refer to indirect emissions from upstream (e.g. suppliers) and downstream (e.g. customers) value chain activities. Although they are a consequence of an entity's own activities, they occur at sources owned or controlled by another entity. [GHGP S3 Std]

The 15 categories of scope 3 emissions include purchased goods and services, business travel, upstream transportation and distribution, and employee commuting. Although an entity does not control its scope 3 emissions, it can influence them through strategic alliances with suppliers and customers, policies and protocols around employee travel and commuting and other initiatives. However, because scope 3 emissions are outside the entity's direct control, it largely relies on data from other entities involved in its value chain for its reporting.

Entities may create a vesting condition tied to scope 3 emissions reductions as part of an overall emissions reduction strategy, for example, as an incentive for senior management to find new suppliers with lower GHG emissions than existing suppliers or to renegotiate existing contracts.

A performance condition is defined by reference to the grantor's own operations (or activities) or by reference to the grantee's performance related to the grantor's own operations (or activities).

Therefore, because scope 3 emissions are based on the performance of a third party, a question arises as to whether a scope 3 vesting condition is a performance condition or an 'other' condition. If the vesting condition can be tied to specific operations or activities of the grantor, we believe a scope 3 vesting condition could meet the definition of a performance condition. However, if it is determined to be an 'other' condition, the award would be liability-classified. [718-10 Glossary]

Judgment may be required to determine whether a vesting condition linked to reduced scope 3 emissions meets the definition of a performance condition. Also, because there are 15 categories of scope 3 emissions, a separate analysis for each relevant category may be necessary.

Example 11.3
Scope 3 emissions vesting condition is a performance condition

Clothing Manufacturer (CM) grants several key executives 1,000 share option awards on January 1, Year 1. As part of its net-zero strategy, it structures the arrangement so the awards vest as follows.

Scenario 1	Scenario 2
• after three years of service; and • if CM reduces its scope 3, category 1 (**purchased goods and services**) emissions by 25% between January 1, Year 1 and January 1, Year 4.	• after three years of service; and • if CM reduces its scope 3, category 7 (**employee commuting**) emissions by 25% between January 1, Year 1 and January 1, Year 4.

Scenario 1: Category 1, purchased goods and services

Throughout Years 1 and 2, CM evaluates existing agreements with its fabric mills, garment manufacturers and other product and service suppliers. To evaluate its scope 3 category 1 emissions, CM requests information about its suppliers' scope 1 and 2 emissions through steps including inquiries with their management, site inspections and reviews of available financial and sustainability reporting.

By December 31, Year 2 CM has:

- renegotiated three supplier agreements to include emissions reduction commitments with penalties for nonperformance;
- terminated two agreements; and

- entered into two agreements with new suppliers.

Based on its evaluation, CM determines that it has objective evidence to support what constitutes its scope 3, category 1 emissions. Further, CM determines that because it controls whether it purchases goods or services from a supplier, and the extent to which it purchases goods or services from a particular supplier, the emissions are solely related to activities of CM through its purchasing decisions.

As a result, CM concludes that the vesting condition meets the definition of a performance condition and the awards are accounted for as equity-classified.

Scenario 2: Category 7, employee commuting

CM implements policies to encourage its employees to reduce commuting emissions, including:

- allowing employees to work from home when possible;
- carpooling incentives; and
- identifying lower emissions travel options for those commuting by air or rail.

CM also implements a mechanism to measure the impact of these policies on its employees' commuting behavior.

Based on its evaluation, CM determines that it has objective evidence to support what constitutes its scope 3, category 7 emissions. Further, CM determines that because it controls the policies implemented to incentivize employees to change their behavior and can objectively measure the impact of those policies on scope 3, category 7 emissions, the emissions are solely related to activities of CM through its decisions meant to reduce employee commuting emissions.

As a result, CM concludes that the vesting condition meets the definition of a performance condition and the awards are accounted for as equity-classified.

11.4 Emissions targets in other compensation arrangements

US GAAP contains specific guidance on compensated absences (e.g. vacation accruals) and generally for other non-stock-based compensation arrangements or non-postemployment or non-postretirement plans, normal accrual accounting (probable and estimable) applies. [710-10-25-1, 35-1]

The amount recognized for the period is the best estimate of the amount that the entity expects to pay. If payment is conditional (e.g. on a sustainability target being achieved), the conditions and the possibility of forfeiture are considered in measuring the obligation. [712-10-25-4]

11.5 Termination benefits

To align with its sustainability actions in response to climate risk, an entity may execute various programs and actions that result in the termination of employees, such as closure of certain polluting asset facilities, or exit of a product line or type of service (see section 14.4).

The accounting for termination benefits depends on the specific features of the arrangement.

Special termination benefits

Special termination benefits are benefits that are offered to employees for a short period in exchange for voluntary termination. This may arise when an entity makes an operational decision to encourage its employees to voluntarily leave instead of instituting an involuntary reduction in force. It is the employees, and not the entity, who elect to be voluntarily terminated, and they receive the special termination benefit as payment for that voluntary election. [712-20 Glossary]

An entity recognizes a liability for special termination benefits when the employees accept the offer and the amount can be reasonably estimated. [712-10-25-1, 715-30-25-10]

Contractual termination benefits

Contractual termination benefits are provided to employees who are involuntarily terminated when a triggering event occurs that is specified in the terms of a plan. A common example is a union contract that includes provisions to pay severance in the event of a plant or office closure. [712-10 Glossary]

Following an event specified in the plan, an entity recognizes a liability for the benefits payable when it is probable that employees will be entitled to benefits and the amount can be reasonably estimated. [712-10-25-2]

Other postemployment benefits

Benefits, other than special and contractual termination benefits, are classified as ‘other postemployment benefits’ if they are paid under an ongoing arrangement or substantive plan to: [712-10 Glossary]

- former employees;
- inactive employees – i.e. those not currently rendering services to the entity but who have not been terminated; or
- beneficiaries and covered dependents of former or inactive employees.

If the other postemployment benefit is a vesting or accumulating right, and is probable of being paid and can be reasonably estimated, the expense and liability are recognized as the employee’s service is rendered (i.e. over the service period). [710-10-25-2]

If the other postemployment benefit is not a vesting or accumulating right, the entity applies the loss contingency model (see section 9.3). [712-10-25-5]

One-time termination benefits

A different accounting model applies to one-time employee termination benefits. These one-time benefits may be incurred as part of an exit or disposal activity that may be a restructuring. To qualify as one-time termination benefits, they: [420-10 Glossary]

- must be paid to current employees who are being involuntarily terminated; and
- cannot be paid under an ongoing benefit arrangement or an individual deferred compensation contract.

If termination benefits are provided under an ongoing benefit arrangement to employees being involuntarily terminated, they are accounted for either as contractual termination benefits or other postemployment benefits (see above). [420-10-15-6]

A liability (measured at fair value) is generally recognized on the communication date, which is the date the plan of termination for one-time employee termination benefits meets the following recognition criteria and has been communicated to employees: [420-10-25-4, 25-8, 30-1]

- management commits to the plan of termination;
- the plan identifies the number of employees to be terminated, their job classifications or functions and their locations, and the expected completion date;
- the plan establishes the terms of the benefit arrangement in sufficient detail to enable the employees to determine the type and amount of benefits they will receive; and
- actions required to complete the plan indicate it is unlikely that significant changes to the plan will be made or that the plan will be withdrawn.

Example 11.5
Termination benefits as a result of plant closing

As part of its net-zero strategy, Industrial Manufacturer (IM) is closing one of its older facilities and moving operations to a new state-of-the-art facility in another State.

The following terms are announced on January 31, Year 1.

- Full transition to the new facility will take approximately 12 months.
- All 100 Type I employees are offered voluntary termination and have until the end of February Year 1 to indicate their irrevocable acceptance of the offer. Employees who accept the offer will each receive $3,000 upon separation on March 15, Year 1.
- Up to 50 Type II employees will be offered voluntary termination and have until the end of February Year 1 to put their names forward. IM will decide in March which of up to 50 employees will be terminated and they will be

notified on March 15, Year 1. They will each receive $5,000 upon separation on March 31, Year 1.

- Following the voluntary termination period, IM will make a decision to either relocate the remaining employees to another facility or to involuntarily terminate some or all of them.
- Employees who are involuntarily terminated will each receive $2,500 upon separation.

IM recognizes a liability for each type of termination benefit at the following dates.

- **Special termination benefit: Type I employees.** IM recognizes a liability of $3,000 per employee as they irrevocably accept the offer through the end of February Year 1.
- **One-time termination benefit: Type II employees.** Although Type II employees are offered voluntary termination, because IM makes the decision to accept or reject, the benefits are not special termination benefits and are instead accounted for as one-time termination benefits.

  IM recognizes a liability of $5,000 per employee on March 15, Year 1, which is the date of notification to the employees who will be terminated. The criteria to recognize a liability are not met on January 31, Year 1, because the plan does not identify the number of employees who will be affected (‘up to’ 50) and IM is unable to estimate the liability.
- **Other postemployment benefit.** IM recognizes a liability of $2,500 per employee as they are involuntarily terminated. For these employees, the liability is not probable or estimable before this date because IM may or may not involuntarily terminate employees depending on the voluntary acceptance rate.

12. Income taxes and related incentives

Detailed contents

Item significantly updated in this edition **#**

12.1 Questions to ask

Taxation is a key tool for policymakers in managing the risks of climate change in the coming years – not simply explicit carbon taxes but also deductions and investment credits, for example.

This chapter discusses certain aspects of income tax accounting that may be relevant in considering climate risk. In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Are industry and market conditions changing?	• Understand the external and internal pressure points that affect the recoverability of deferred tax assets. • If a process is set up for monitoring events that might trigger the impairment testing of groups of assets or of goodwill more broadly, that same process can be used to help assess valuation allowances. • Section 12.2 ▶
Is the legal or regulatory environment changing?	
Are new competitors emerging?	
Are costs increasing?	
Is financial performance deteriorating?	
Are projects essential to the company's future strategy struggling to produce results?	
Are operations exposed to areas that are becoming high risk for extreme weather events?	
Are tax laws changing in jurisdictions in which the company operates?	Understand the timing of accounting for the effects of changes in tax law or tax rates. Section 12.3 ▶
Will the company enter into transactions that qualify for tax credits?	Understand the nature of the various credits to be received as a starting point to determining the appropriate accounting. Section 12.4 ▶

Income tax accounting is discussed in-depth in KPMG Handbook, Accounting for income taxes.

12.2 Valuation allowances

A valuation allowance is required for deferred tax assets if, based on available evidence, it is more likely than not (i.e. greater than 50% chance) that all or some portion of the asset will not be realized due to the inability to generate sufficient taxable income in the period and/or of the character necessary to use the benefit of the deferred tax asset. [740-10-30-5]

The following possible sources of taxable income may be available to realize the benefit of deferred tax assets: [740-10-30-18]

- future reversals of existing taxable temporary differences;
- future taxable income exclusive of reversing temporary differences and carryforwards;
- taxable income in carryback years if carryback is permitted by the tax law; and
- tax-planning strategies.

In considering evidence about the sources of taxable income, all available evidence, both positive and negative, should be identified and considered when determining whether it is more likely than not that all or some portion of deferred tax assets will not be realized. [740-10-30-23]

As entities formulate strategies for reducing emissions and governments enact policies to mitigate the effects of climate change, this may provide elements of both positive and negative evidence that an entity should consider. However, the following events (not exhaustive) are precluded from being considered when estimating future taxable income to determine whether deferred tax assets are realizable.

- The tax effects of business combinations, including recognition or derecognition of a valuation allowance, are generally recognized and measured at the combination date.
- Changes in tax laws and rates should not be anticipated (see section 12.3).
- Gains or losses from the sale of assets or settlement of a liability resulting from future changes in their fair value should not be anticipated.

The valuation of deferred tax assets is discussed in-depth in section 4 of KPMG Handbook, Accounting for income taxes.

Example 12.2
Climate-related negative evidence

The following are possible examples of negative evidence that may arise from climate risk, which should be considered together with all other facts and circumstances.

- Projected increases in costs to comply with enacted environmental regulations.

- Trends, driven by changing customer preferences in favor of low-carbon products, indicate that projected results of operations based on historical results are not reasonable.
- Company is developing a new generation of low-carbon products, but does not have a proven record of developing significant and successful new products.
- Loss of a significant customer(s) who switched to a competitor with a lower carbon footprint.
- Company operates in a declining industry that is experiencing negative trends and climate-related stigmatization absent changes in strategy.
- Company's competitors are reducing emissions at a faster rate, making them more desirable as business partners.
- New competitors are emerging as Company diversifies its service offerings into low-carbon areas.
- Tax-planning strategies that were once seen as prudent and feasible are no longer available because of Company's climate-related strategy and related operational changes.

12.3 Changes in tax rates

Climate-related changes to the tax law or tax rates (e.g. accelerated deductions for investments in low-carbon plant) are one possible incentive for governments to encourage entities to take action in reducing emissions.

The provisions of the applicable tax law may have a significant effect on whether the tax benefits of deductible temporary differences and carryforwards can be realized (see section 12.2). However, expected changes to the tax law or tax rates are not considered before the enactment date – regardless of their likelihood. [740-10-35-4, 55-12, 55-35 – 55-36]

Changes in tax laws, rates or status are discussed in-depth in section 5 of KPMG Handbook, Accounting for income taxes.

12.4 Tax credits#

In August 2022, President Joseph R. Biden signed into law two pieces of legislation with significant investment tax credits (among other tax implications):

- H.R. 5376, commonly referred to as the Inflation Reduction Act of 2022 ('IRA'); and
- H.R. 4346, commonly referred to as the CHIPS and Science Act of 2022 ('CHIPS').

The IRA introduced a substantial package of energy and climate-related provisions, among other revenue raisers and incentives. CHIPS added a one-time ITC equal to 25% of an entity's investment in facilities that manufacture semiconductors or semiconductor manufacturing equipment.

The new laws also introduced mechanisms for monetizing certain credits that are novel to US federal tax law – including elections for 'direct pay' and third-party transfer. The IRA also allows for increased and bonus credits if a company meets certain criteria.

In July 2025, President Donald J. Trump signed into law H.R. 1 – the budget reconciliation bill known as the 'One Big Beautiful Bill'. The bill significantly modified many of the credits introduced under the IRA – including accelerated phase-outs, repeals of certain credits, and limitations tied to foreign ownership and supply chain considerations, while preserving the monetization and bonus provisions for certain credits.

The accounting for tax credits is driven by the underlying features of the tax credit. However, the application of Topic 740 under each of the accounting models depends on whether the underlying tax credit is an investment tax credit or a production tax credit. These distinctions are explained briefly below.

Features that drive the accounting

Direct pay election (refundable tax credits)

The direct pay election allows a taxpayer to treat an eligible credit as a direct payment of tax, which means a taxpayer can receive a cash payment even if it does not incur any income tax liability (i.e. it is 'refundable'). If the direct pay election is available for a particular credit (regardless of whether the taxpayer expects to elect direct pay), the credit is accounted for as a government grant.

US GAAP currently provides no specific guidance on how business entities should account for government grants and there is diversity in practice. In our experience, many companies have an existing policy to analogize to IAS 20, Accounting for Government Grants and Disclosure of Government Assistance, under IFRS Accounting Standards. Other acceptable approaches include analogizing to Subtopic 958-605 (not-for-profit grants) or Subtopic 450-30 (gain contingencies). Forthcoming requirements on accounting for government grants are discussed in section 16.7. For discussion about accounting for refundable credits, see chapter 3 of KPMG Handbook, Tax credits.

Third-party transfer feature (transferable tax credits)

US GAAP does not specifically address how the transferability feature in credits affects the accounting for the generation or sale of those credits. For transferable credits that are not refundable (i.e. no direct pay election is available), we believe it is acceptable to apply Topic 740 or a government grant model (as discussed above) as an accounting policy election. For transferable credits that are refundable, we believe an entity should apply a government grant model.

For discussion about accounting for transferable credits, see chapter 5 of KPMG Handbook, Tax credits.

Nonrefundable, nontransferable tax credits

Nonrefundable, nontransferable tax credits are accounted for under Topic 740. The accounting model under Topic 740 varies depending on whether the tax credit is an investment tax credit (ITC) or another tax credit, such as a production tax credit (PTC), as further explained below.

Accounting under Topic 740

Investment tax credits

In general, ITCs are federal tax credits that incentivize taxpayers to invest in renewable energy (e.g. solar, fuel cells, wind projects). The amount of the ITC is typically determined as a percentage of the taxpayer's investment cost. There are two methods of accounting for nonrefundable, nontransferable ITCs under Topic 740: the deferral method (preferred) and the flow-through method.

- Under the **deferral method**, which is the preferred method, the ITC is reflected in income over the life of the acquired property. The deferred benefit of the ITC is presented either as a reduction of the financial statement carrying amount of the property acquired (recognized subsequently as a reduction of income tax expense or depreciation expense) or as deferred income (recognized subsequently as a reduction to income tax expense).
- Under the **flow-through method**, in the year an ITC arises, it is recognized as a reduction in income tax expense.

These methods are discussed in chapter 4 of KPMG Handbook, Tax credits.

Example 12.4
ITC received for climate-related investment in property

Manufacturer operates in Country X and receives from Country X an ITC for 50% of the purchase price of low-carbon plant that is a qualifying asset. The plant cost $100,000.

The ITC does not result in a reduction in the tax basis of the plant. No valuation allowance is required on deferred tax assets. The tax rate in Country X is 21%.

The plant will be depreciated for both financial statement and tax purposes on a straight-line basis over five years. Manufacturer receives an ITC of $50,000 as a result of the purchase ($100,000 × 50% purchase price). In applying the deferral method, Manufacturer has elected as an accounting policy to record the tax benefit of the credit as a reduction from the carrying amount of the asset.

Manufacturer records the following journal entries upon purchase of the assets.

$	Debit	Credit
Asset	100,000	
Cash		100,000
Income taxes payable	50,000	
Asset		50,000

Manufacturer also recognizes a deferred tax benefit for the difference between the $50,000 adjusted financial reporting carrying amount and the $100,000 tax basis. In applying the deferral method, Manufacturer has made a policy election to record the corresponding deferred tax benefit as an adjustment to income tax expense instead of further reducing the financial statement carrying amount of the asset.

Manufacturer records the following journal entry.

$	Debit	Credit
Deferred tax asset[1]	10,500	
Deferred tax benefit		10,500

Note:

1. $50,000 × 21%.

For the year ended December 31, Year 1, Manufacturer has pretax financial statement income of $50,000.

Taxable income is $40,000, which differs from financial statement income due to tax depreciation in excess of financial statement depreciation. Tax depreciation is $20,000 ($100,000 ÷ 5), while book depreciation is $10,000 ($50,000 ÷ 5).

Manufacturer has no other permanent or temporary differences and records the following journal entries to recognize its Year 1 income tax expense.

$	Debit	Credit
Current tax expense[1]	8,400	
Income taxes payable		8,400
Deferred tax expense[2]	2,100	
Deferred tax asset		2,100

Notes:

1. Taxable income of $40,000 × 21%.
2. $8,400 deferred tax asset at December 31 minus the $10,500 deferred tax asset at January 1. The ending deferred tax asset of $8,400 is computed as 21% times the difference between the $40,000 financial statement carrying amount of the qualifying asset and its $80,000 tax basis.

Production tax credits

PTCs are similar to ITCs in the sense that they are federal tax credits designed to incentivize taxpayers to invest in renewable energy projects (e.g. wind,

bioenergy, geothermal and hydropower projects). However, PTCs are generally based on the amount of energy generated from the project and are given per kilowatt-hour of energy produced for a set period of time after a renewable energy facility has been placed into service. Nonrefundable, nontransferable PTCs are generally recognized when the credit arises.

Examples of PTCs are provided throughout KPMG Handbook, Tax credits.

13. Carbon credits

Detailed contents

Item significantly updated in this edition #

13.1 Questions to ask

As more entities enter into commitments to reduce their carbon emissions or invest in renewable energy, how to account for carbon credits is becoming more pressing. The complexity and variety of arrangements is giving rise to questions about how US GAAP applies, often involving more than one standard.

There are currently no accounting requirements under US GAAP specific to carbon credits, and there is diversity in practice as entities seek to apply current accounting guidance to arrangements that are often complex and innovative. This is likely to change, as the FASB continues its project on environmental credit programs (see Future developments).

The following are introductory questions that supplement the general questions in section 2.4, with more detailed questions following in the chapter.

QUESTION	ACTIONS IF 'YES'
Do the company's sustainability communications refer to the use of carbon credits in reducing emissions?	Understand the terms and conditions of the arrangement(s) being referred to in communications, which are often written without involvement of the finance function. Sections 13.2 and 13.3 ▶
Has the company purchased carbon credits on a stand-alone basis, or are they linked to or embedded in other acquisition transactions?	Understand how the arrangement(s) works, and whether the carbon credits are linked to or embedded with other goods or services in the contract(s). This is a starting point to determining the appropriate accounting. • Section 13.4 (buyer) ▶ • Section 13.5 (vendor) ▶
Is the company selling or retiring carbon credits as part of revenue transactions, or otherwise advertising low-carbon attributes in goods or services being sold?	

13.2 Carbon credits vs offsets

Before considering the proper accounting, it is important to understand the nature of the item being accounted for. Terms are often conflated or undefined – e.g. carbon credits or offsets, RECs, emissions permits or allowances, certified emissions reductions (CERs), environmental credits.

Historically, the most recognizable term in discussing GHG emissions in the US has been RECs, which are used to demonstrate compliance with renewable portfolio standards established by various jurisdictions.

This chapter focuses on the voluntary markets that are rapidly developing. In these markets, entities are buying and/or selling carbon offsets or credits as part of their own strategy related to reducing GHG emissions and not as the result of an underlying legal obligation.

The SEC's climate proposal referred to carbon offsets, which it defined as "an emissions reduction or removal of greenhouse gases ('GHG') in a manner calculated and traced for the purpose of offsetting an entity's GHG emissions." [Proposed Reg S-K Item 1500]

The FASB has adopted the term 'environmental credit' to describe the focus of its project, which includes credits created under compliance programs, RECs, renewable identification numbers (RINs) and carbon offsets. See Future developments.

In this chapter, we refer to 'carbon credits' while acknowledging that other terms may be used interchangeably to mean the same thing.

For a general understanding about the role of carbon credits ('offset credits') in GHG emissions reductions under the GHG Protocol, see chapter 9 of KPMG Handbook, GHG emissions reporting.

13.3 Accounting for carbon credits

In the absence of specific guidance on the accounting for carbon credits, and because of the complexity and variety of arrangements beginning to emerge, a critical initial step is to understand the entity's facts and circumstances, and the specific terms and conditions of the credits. There is no one-size-fits-all accounting answer, and a contractual reference to a carbon credit can mean a variety of things – from a separable asset that can be traded to a 'green' credential or attribute.

Before analyzing specific fact patterns, a general question often asked is whether carbon credits even meet the definition of an asset. An asset is a present right of an entity to an economic benefit. [CON 8.E16]

In some cases, it will be obvious that a carbon credit is an asset – e.g. an entity enters into a separate transaction to acquire a carbon credit that can be traded on an exchange. In other cases, the answer may be different because the

carbon credits are part of a larger transaction or they are immediately retired such that the economic benefits have been consumed, for example.

The following sections consider two scenarios in which the potential unit of account is the individual carbon credit – looking at key questions and the accounting implications. This commentary is intended to help an entity get started in thinking about the accounting that might apply; it is not intended to be exhaustive or determinative.

13.4 Entity purchases carbon credits

The primary objective in asking the questions below (not exhaustive) is to determine whether the entity has acquired a separate asset and, if it has, the nature of that asset.

These exploratory questions are not all intended to be linear and answers may overlap; they also consider only initial recognition. Further, the questions assume that financial instruments are not involved, including potential derivatives – e.g. as would be the case for a virtual PPA (see chapter 8).

Example questions	Commentary
How does the arrangement work? How is the carbon credit defined or described in the arrangement?	This is the gateway question to understanding the arrangement and also the nature of the carbon credits. Answering this question includes understanding whether and how the entity lays claim to the carbon credits, and how practically it can benefit. As noted in section 13.2, a 'carbon credit' might mean a variety of things.
Are the carbon credits part of a larger contract?	The carbon credits may be part of a larger contract for which understanding the overall substance of the arrangement is relevant to the accounting. For example, analysis of the facts and circumstances may lead to a conclusion that the carbon credits simply credentialize a larger asset acquired as a 'green' widget (i.e. an attribute of that asset), and therefore there is no separate asset to recognize for the carbon credits.
What are the terms and conditions of the carbon credits? Can they be traded or exchanged?	Carbon credits that can be transferred to a third party likely indicate that the entity has obtained a separate asset versus the credit being an attribute of another asset (e.g. a 'green' widget). However, the analysis may be less clear if the credits cannot be transferred but the entity can use them in some other way as part of its emissions reduction strategy. Further, if the entity does not have title or other contractual rights to the carbon credits, and cannot sell or otherwise exchange them, perhaps the carbon credits are actually part of the cost of another asset because they are like 'green' credentials and simply a characteristic of that other asset.

Example questions	Commentary
What will the carbon credits be used for?	The following observations apply if it is determined that the carbon credits are a separate unit of account. If the carbon credits will be retired immediately as part of the company's GHG emissions strategy, this may indicate that immediate recognition in the income statement is appropriate. Otherwise, there is diversity in practice and carbon credits are typically classified, by analogy, as either inventory or intangible assets. In our experience, in voluntary markets classification as intangible assets is more common because the carbon credits are not being held for sale.
Is there a time lag between payment and receipt of the carbon credits?	In many cases, there may be a time lag between initiating a transaction to buy carbon credits and actually receiving them. Any such time lag should be carefully considered to determine its impact on initial recognition.
Can the entity claim the benefit of the carbon credits in its GHG accounting?	Understanding whether the entity will be able to use the carbon credits as an offset against its GHG emissions can help to determine exactly what the entity receives. For example, if the entity discloses information about the intended use of carbon credits in achieving emissions targets, could it include these carbon credits as part of its strategy. Disclosing that the entity will benefit from the carbon credits to meet emissions targets may support the entity's determination that it has received an asset.
What does the entity's CDP (formerly, Carbon Disclosure Project) questionnaire say?	If the entity completes a CDP (or similar) questionnaire, the answers therein can be compared to information about the arrangement coming from other sources; this may be especially instructive if the questionnaire is completed outside the finance function. Evaluating a transaction in the context of an entity's strategy and intent around climate change can be helpful (but not determinative) in considering the accounting.

13.5 Carbon credits in revenue arrangements

As just two examples, carbon credits might be incorporated into a revenue contract by:

- transferring them to the customer when they purchase a 'widget'; or
- retiring carbon credits on a customer's behalf. In other cases, the carbon credits might simply credentialize or certify the 'widgets' sold.

In applying Topic 606 (revenue), the primary objective in asking the questions below (not exhaustive) is to determine whether the vendor has a separate performance obligation related to the carbon credits. If the answer to that question is 'yes', the vendor allocates a portion of the transaction price to the carbon credits or related service (assuming control does not transfer at the same time), and recognizes revenue when that performance obligation is satisfied. There may also be an impact on revenue recognition disclosures (e.g. disaggregation of revenue). Revenue recognition is discussed in depth in KPMG Handbook, Revenue recognition.

These exploratory questions are not all intended to be linear and answers may overlap.

Example questions	Commentary
How does the arrangement work?	This is the gateway question to understanding the arrangement and also the nature of the carbon credits or related service (e.g. retiring carbon credits). In particular, as noted in section 13.2, a 'carbon credit' might mean a variety of things.
What exactly does the customer get and what can it do with it?	Understanding how the customer benefits from the carbon credits is necessary in determining whether they are capable of being distinct (i.e. the customer can benefit) and distinct in the context of the arrangement (separately identifiable). If these conditions are met, the vendor has a separate performance obligation in relation to the carbon credits.
Is there a separate market for the carbon credits?	Understanding whether the vendor sells the carbon credits on their own, whether the customer could purchase them separately from another vendor, and whether the customer could sell or exchange them separately in a transaction with other parties can help identify whether there is a separate performance obligation in the arrangement.
When is control of the carbon credits transferred to the customer?	The determination of when the transfer of control occurs requires an analysis of the specific facts of the arrangement and the related carbon credits. Indicators of control transfer may differ between stand-alone carbon credit sales and arrangements in which carbon credits are bundled and sold with a widget. The following are example questions to consider: • When does the customer have a present obligation to pay for the credits? • Are the credits pre-certified and if so, does the jurisdiction recognize title over pre-certified credits? If not, when is title transferred to the customer? • How substantive is the certification process?

Example questions	Commentary
	• What are the significant risks and rewards related to the credits (e.g. market price risk, certification risk) and when do they transfer? • Are there any customer acceptance provisions?
Are carbon credits retired as part of the arrangement? How does the mechanism work?	If carbon credits are retired on behalf of the customer, that might indicate that a separate service is being provided to the customer. However, before concluding, understand exactly how the retirement mechanism works and how such retirement benefits the customer. This will help determine whether the customer is in fact the beneficiary of the carbon credits rather than it being a notional accreditation that credentializes the widget in some way.
Is the vendor acting as an agent by providing a service of retiring or buying and retiring carbon credits on behalf of the customer?	This is another way of investigating whether the vendor is performing a service for the customer (in addition to the sale of the widget).
Can the customer claim the benefit of the carbon credits in its GHG accounting?	Understanding whether the customer will be able to use the carbon credits as an offset against its GHG emissions can help to determine exactly what the customer receives.
Does the vendor have a 'green' commitment related to the revenue contract?	In some cases, the revenue arrangement might trigger a separate action for the company – e.g. if it has agreed to undertake certain 'green' actions (such as sponsor a tree planting) for each widget sold.

Future developments#

In December 2024, the FASB issued a proposed ASU, Environmental Credits and Environmental Credit Obligations. The Board redeliberated the proposal in July 2025 paving the way for a final ASU in early 2026.

Current accounting practice is diverse as entities analogize to guidance on inventory, intangible assets or even marketing costs to account for environmental credits. Further, there is inconsistency in how environmental compliance obligations are recognized and measured.

The proposed ASU would create Topic 818 to address the accounting and disclosure requirements for environmental credits and certain compliance obligations. It would introduce intent-based asset recognition and measurement models for environmental credits. That is, how an entity expects to use or consume an environmental credit would determine the required accounting model.

See KPMG Defining Issues, FASB proposes ASU on environmental credit programs.

14. Acquisitions and restructuring

Detailed contents

14.1 Questions to ask

As sustainability issues play a greater role in corporate strategy, acquisitions and restructuring are one way in which entities are seeking new opportunities to gain a competitive advantage. This chapter discusses some of the concepts behind acquisition accounting and disposals.

In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Do contracts to acquire businesses include consideration that is contingent on emissions reduction targets?	Understand the accounting for contingent consideration, as part of the acquisition accounting and subsequently. Section 14.2 ▶
Will operations be restructured?	Understand how to account for the cost of exit activities, including terminating contracts. Section 14.3 ▶
Will the company dispose of assets as part of its strategy?	Assess the criteria for classifying assets (disposal groups) as held-for-sale, and understand the related measurement. Section 14.4 ▶
Will the disposals represent a significant change in operations?	Assess whether a (planned) disposal rises to the level of a discontinued operation. Section 14.4 ▶

14.2 Contingent consideration in a business combination

As part of emissions objectives, an entity may make an acquisition targeted at achieving certain sustainability metrics. Given the defined purpose of the acquisition, the achievement of certain climate-related objectives (e.g. emissions output, green energy certificate generation) could be linked to contingent consideration.

As part of the consideration transferred in a business combination, an acquirer recognizes contingent consideration at fair value at the date of acquisition. Subsequent changes to the fair value of liability-classified contingent consideration are recognized in earnings. In contrast, equity-classified contingent consideration is not remeasured. [805-30-25-5 – 25-6, 35-1]

Contingent consideration in a business combination is explained in-depth in sections 6 and 12 of KPMG Handbook, Business combinations.

Example 14.2
Contingent consideration in a business combination

In January Year 1, Retailer purchased a 70% controlling interest in Target in a business combination for:

- initial cash payment of $1,000; plus
- $500 (cash) to be paid to Seller if Target's emissions are reduced by a specified amount by the end of Year 1.

At the date of acquisition, fair values were as follows:

- contingent payment, $400
- Noncontrolling interests (NCI), $600; for simplicity, the effects of any control premium are ignored.

As of December Year 1, Target had reduced its emissions by the specified amount.

Retailer records the following journal entries related to the contingent consideration.

$	*Debit*	*Credit*
Net assets	2,000	
Cash		1,000
Contingent consideration liability		400
NCI		600
Jan Year 1: To recognize contingent consideration (as component of overall entry for the business combination).		

$	Debit	Credit
Contingent consideration liability	400	
Income statement (opex)[1]	100	
Cash		500
Dec Year 1: To recognize settlement of contingent consideration.		

Note:

1. Because the contingent consideration relates to the agreement between Retailer and Seller (not the income (loss) of Target), none of the expense related to the change in the liability is attributed to NCI.

14.3 Exit activities related to restructuring

Part of an entity's plan to reduce emissions may involve restructuring operations, sometimes (but not always) following an acquisition. Examples include selling or terminating a line of business, and ceasing operations in a particular location. [420-10-15-4]

The guidance on exit costs applies to all entities and covers the following costs that might be incurred: [420-10-15-3]

- termination benefits (see section 11.5);
- costs to terminate a contract; and
- costs to consolidate facilities or relocate employees.

A liability for contract termination costs (measured at fair value) is recognized only when the entity: [420-10-25-11 – 25-13, 30-7]

- terminates the contract – e.g. the entity gives written notice to the counterparty within the notification period specified by the contract; or
- permanently ceases using the rights granted under the contract.

A liability for costs to consolidate facilities or relocate employees (measured at fair value) is recognized when the liability is incurred, which is generally in the period in which the goods or services (e.g. relocation services) are received. [420-10-25-15, 30-10]

Further, the exit activities may rise to the level of a discontinued operation (see section 14.4).

Example 14.3
Exit activities – contract termination costs

In Year 1, Restaurant Co enters into a contract for IT services to develop a system to meet its back-of-house requirements. Under the terms of this multiple-year licensing arrangement, there is a termination payment due if Restaurant Co

decides to early terminate the contract, and it must notify the IT provider in writing of its intent three months in advance.

In Q4 Year 2, Restaurant Co decides to terminate the contract and move to another provider that has a net-zero commitment in place. In Q1 Year 3, Restaurant Co formally notifies the IT provider of its intent to terminate the contract. In Q2 Year 3, at the end the notice period, Restaurant Co stops receiving services from the IT provider.

Restaurant Co recognizes the contract termination costs (fair value of the termination penalty) in the period in which it legally terminates the contract (Q1 Year 3). Although the decision is made in Year 2, and services end in Q3 Year 3, notification under the contract occurs in Q1 Year 3.

14.4 Discontinued operations and held-for-sale disposal groups

As an entity implements a plan to reduce emissions, it may give rise to significant changes in the entity's strategic direction and the make-up of its asset base. Any such changes may result in discontinued operations and assets held-for-sale, which are explained in-depth in KPMG Handbook, Discontinued operations and held-for-sale disposal groups.

Discontinued operations

A discontinued operation is: [205-20-45]

- a 'component' of an entity that:
  - has been disposed of (e.g. sold, spun off, abandoned), or meets the criteria to be classified as held-for-sale (see below); and
  - represents a strategic shift that has (or will have) a major effect on an entity's operations and financial results – i.e. satisfies the strategic shift test; or
- a business or nonprofit activity that, on acquisition, meets the criteria to be classified as held-for-sale.

A 'component' of an entity comprises operations and cash flows that can be distinguished clearly, both operationally and for financial reporting purposes, from the rest of the entity. [205-20-20]

The results of discontinued operations are reported separately from continuing operations, as a single amount in the income statement. An analysis of this single amount is presented either on the face of the income statement or in the notes. [205-20-45-3A, 50-5B]

Example 14.4
Climate risk leads to major disposal

Scenario 1: Disposal represents a strategic shift

Food Co manufactures and sells food and beverages that are grouped into four major product lines. Each product line represents an operating segment (see section 16.3).

One of the major product lines is very emissions intensive, and consumer sentiment favoring more sustainable products has been harming Food Co's overall profitability. Therefore, as part of its net-zero strategy, Food Co decides to sell the product line.

Because the entity is shifting its strategy toward products that are less emissions intensive, and the disposal relates to one of Food Co's major product lines, the disposal represents a strategic shift that Food Co will report in discontinued operations if and when all other criteria in Subtopic 205-20 are met.

Scenario 2: Disposal does not represent a strategic shift

Bottling Co distributes in North America under one brand name. The operations comprise three individual bottling facilities, all located in North America. Due to changing consumer sentiment favoring more sustainable products, Bottling Co decides to shut down one of its bottling facilities and will run production out of the other two.

Bottling Co determines that the shutdown of its bottling facility will have a major effect on its operations and financial results. However, Bottling Co also determines that the shutdown does not represent a strategic shift because it is not changing the way it is running its business; Bottling Co has not shifted the nature of its operations, nor is it exiting a major geographic area. Therefore, Bottling Co does not report any discontinued operations.

Assets held-for-sale

If an entity decides to dispose of a long-lived asset (or disposal group), it may have to classify the asset (group) as held-for-sale. A long-lived asset (or disposal group) is classified as held-for-sale if the following criteria are met: [360-10-45-9]

- management, having the authority to approve the action, commits to a plan to sell the asset (or disposal group);
- the asset (or disposal group) is available for immediate sale in its present condition subject only to terms that are usual and customary for sales of such assets (or disposal groups);
- an active program to locate a buyer and other actions required to complete the plan to sell the asset (or disposal group) have been initiated;

- the sale of the asset (or disposal group) is probable and transfer of the asset (or disposal group) is expected to qualify for recognition as a completed sale within one year;
- the asset (or disposal group) is being actively marketed for sale at a price that is reasonable in relation to its current fair value; and
- actions required to complete the plan indicate that it is unlikely that significant changes to the plan will be made or that the plan will be withdrawn.

Disposal groups that meet the held-for-sale criteria are measured at the lower of carrying amount and fair value less cost to sell. [360-10-35-43]

- Fair value measurement is discussed in chapter 15.
- Costs to sell are the incremental direct costs to transact a sale – the costs that result directly from and are essential to a sale transaction and that would not have been incurred by the entity had the decision to sell not been made.

The disposal group's long-lived assets are not depreciated or amortized after being classified as held-for-sale. [360-10-35-43]

The assets and liabilities of the disposal group are presented separately on the balance sheet as held-for-sale. The results of the disposal group are reported separately in the income statement as a discontinued operation only if the disposal group is also a component and its sale satisfies the strategic shift test or if it is a business or not-for-profit activity that is classified as held-for-sale on acquisition.

15. Fair value measurement and projections

Detailed contents

15.1 Questions to ask

Fair value measurements and projections are pervasive to financial reporting. Fair value is a market-based concept, whereas projections can be market-based (as one way of measuring fair value) or entity-specific depending on their usage.

Climate change is increasingly influencing financial reporting and valuation practices, particularly in the context of fair value measurement. It can be very challenging to reflect climate risk in fair value measurement, and in many markets reflecting such risks in valuation goes beyond current practice.

In the context of projected cash flows, climate risks can significantly affect an entity's future revenues, operating costs and capital expenditures. Further, market participants' perspectives play a pivotal role in fair value measurement because fair value is determined using assumptions that market participants would use in pricing an asset.

Throughout this publication, we refer to climate risk. However, specifically in the context of fair value, both climate risks and opportunities are relevant.

In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Are any assets measured at fair value?	Prepare an inventory of assets measured at fair value. Section 15.2 ▶
Are any liabilities measured at fair value?	Prepare an inventory of liabilities measured at fair value. Section 15.2 ▶
Are different approach(es) used to measure fair value?	Map the inventory of assets and liabilities measured at fair value to the approaches used. Sections 15.2 to 15.4 ▶
Has climate risk been considered in measuring fair value using the income approach?	Review the key assumptions in measuring fair value. Sections 15.3 and 15.4 ▶
Is climate risk a factor in assessing the recoverability of long-lived assets?	Review the key assumptions in estimating the recoverability of long-lived assets. Section 15.6 ▶

Fair value measurement is discussed in-depth in KPMG Handbook, Fair value measurement. Projected financial information is discussed in that Handbook to the extent it relates to fair value, or otherwise in the Handbook relevant to the specific topic (see our listing of US GAAP Handbooks).

15.2 Fair value measurement: general principles

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value is an exit price – e.g. the price to sell an asset instead of the price to buy that asset. An exit price embodies expectations about the future cash inflows and cash outflows associated with an asset or liability from the perspective of a market participant – i.e. based on buyers and sellers who have certain characteristics, such as being independent and knowledgeable about the asset or liability. [820-10 Glossary, 820-10-30-2]

Fair value is a market-based measurement, not an entity-specific measurement, and is measured using assumptions that market participants would use in pricing the asset or liability, including assumptions about risk. As a result, an entity's intention to hold an asset is not relevant in measuring fair value. [820-10 Glossary, 820-10-35-9]

A fair value measurement is made up of one or more inputs, which are the assumptions that market participants would make in valuing the asset or liability. The most reliable evidence of fair value is a quoted price in an active market. Such values are derived directly from market transactions and therefore any market sentiment toward climate risk and opportunity is inherently incorporated into the valuation. The market approach is discussed in section 15.3. [820-10 Glossary]

When this is not available, an entity uses a valuation approach to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs; the income approach is discussed in section 15.4. [820-10-35-40]

The following are some examples of assets and liabilities that fall in the scope of Topic 820 for the purpose of measurement and/or disclosure.

	Measurement	Disclosure
Debt securities available-for-sale or held for trading [320, 825]	✓	✓
Equity securities with a readily determinable fair value (other than equity method investments and consolidated investees) [321, 825]	✓	✓
Investments of investment companies [946]	✓	✓
Nonfinancial assets and nonfinancial liabilities initially measured at fair value in a business combination or other new basis event, but not measured at fair value in subsequent periods [805]	✓	✗
Reporting units measured at fair value as part of the goodwill impairment assessment [350 post-ASU 2017-04]	✓	✓

	Measurement	Disclosure
Nonfinancial long-lived assets (asset groups) measured at fair value for an impairment assessment [321, 825]	✓	✓

15.3 Fair value measurement: market approach

Valuation techniques that fall under the market approach include quoted prices in an active market, but often derive market multiples from a set of comparable assets. Market multiples are typically expressed as ratios of enterprise value of the comparable company to the underlying financial metric.

- The numerator is typically equity, business enterprise value or total invested capital.
- The denominator is typically net income (earnings), total assets, revenue, EBITDA or EBIT.

The numerator needs to be consistent with the corresponding metric in the denominator. There are many factors that go into the selection of a multiple, one of which is climate-related risks and opportunities.

Some climate risk impacts may be similar across an industry, while others may vary among companies within the same industry. When performing a fair value analysis using valuation multiples under the market approach, climate risk can affect both the numerator and the denominator. For example, climate risk might directly impact the underlying financial metric in an observed multiple (e.g. EBITDA, EBIT) if the guideline company reflects this risk in its financial information. However, it can also impact the observed value of the comparable guideline companies and therefore be embedded in the denominator, or both.

Applied multiples depend on a company's growth rates, profit margins and risk profile. Generally, these multiples require adjustments from the observed multiples of comparable guideline companies. Such adjustments consider factors like size, growth trajectory, profitability and differences in risks and opportunities. As discussed in section 15.4, climate change can influence any of these factors.

Chapter 2.1 discusses several risk categories as outlined in the recommendations of the TCFD. All of these risk categories can influence the comparability of a subject entity to comparable guideline companies, necessitating adjustments to valuation multiples. For example, transition and physical risks that a company is exposed to may depend on where the business is located, because different countries have different climate-related laws and regulations, and certain areas are more exposed to physical risks than others.

The first step is to understand how any given risk factor affects both the subject company and the guideline companies. It is also necessary to determine if the risk factor has been considered in the respective baseline financial metric. For example, transition risks might impact similar companies that are subject to the

same regulations, require similar technology and are competing in the same market in the same manner.

- If the subject company is on par with the guideline companies, this type of risk might be embedded in the financial metric multiple (e.g. EBITDA, EBIT) and, if so, no further adjustment to the applied multiple is necessary.
- However, if a given risk factor is expected to affect the subject entity differently from the guideline companies, or if the level of risk reflected in the baseline financial metric is different, this necessitates adjustments to the applied valuation multiple. In this regard, climate risk elements are no different from any other value driver when applying the market approach.

Measuring fair value using the market approach for the purpose of impairment testing is discussed in section 8.3.40 of KPMG Handbook, Impairment of nonfinancial assets.

15.4 Fair value measurement: income approach

The income approach converts future cash flows (projected financial information or PFI) to a current amount on the measurement date. The fair value measurement reflects current market expectations about those future amounts, discounted to their present value. A common valuation technique that falls under the income approach is the discounted cash flow method, which is commonly used in the quantitative impairment test for goodwill. [820-10 Glossary]

The discounted cash flow approach is based on the discounted cash flows derived from future earnings. This requires an entity to make various estimates and judgments that have a significant impact on the fair value estimate. The key drivers of fair value in a discounted cash flow model include:

- the expected future cash flows;
- the forecast period of discrete cash flows;
- the discount rate; and
- if applicable, the derivation of the residual/terminal value.

Each of these assumptions requires management judgment and is determined from a market participant perspective.

The discount rate is based on a market participant's view of the asset as of the measurement date. It is rare that a discount rate can be observed directly from the market. Therefore, an entity will generally need to build up a market participant discount rate that appropriately reflects the risks associated with the cash flows of the asset being valued.

Measuring fair value using the income approach for the purpose of impairment testing is discussed in section 8.3.50 of KPMG Handbook, Impairment of nonfinancial assets.

Reflecting climate-related impacts in cash flows vs the discount rate

While climate risks may impact both the PFI and the discount rate, in our experience, the preferred approach in valuation practice is generally to reflect climate-related matters in the PFI rather than the discount rate, especially when reasonable and supportable cash flow assumptions can be made from a market participant perspective.

Any adjustments made to the discount rate require equally reasonable and supportable assumptions as adjustments that would be made to the PFI. If adjustments are made to both the discount rate and the PFI, care is required to avoid double counting (see below).

Reflecting climate-related matters in cash flows

Climate-related risks (and opportunities) can affect an entity's future cash flows in several ways. The following are key considerations from a PFI perspective.

- **Customer and supplier behavior.** Revenue and growth may change as customer preferences shift toward more sustainable products. Entities that are proactive in developing green products or implementing decarbonization plans may benefit from new market opportunities or shifting consumer preferences.
- **Sourcing.** Sustainability strategies may lead to higher costs due to the selection of sustainability minded suppliers who may incur higher production costs. Further, the purchase price of raw materials may increase due to suppliers facing higher costs of production, transport and/or financing. Conversely, focusing on sustainable supplies might enhance supply chain resiliency because all parties prioritize adaptability. This approach may help entities mitigate the risks and costs associated with supply chain disruptions in the longer term.
- **Investor and lender behavior.** Entities with higher climate-related risks might face higher financing costs or financial constraints.
- **Government policies and legislation.** New climate-related policies or legislation may affect revenues or operating costs, such as carbon taxes, carbon credits or restrictions on asset use. Climate-related regulations may target certain industries more than others, depending on their impact on the environment and their level of GHG emissions.
- **Technological developments.** Emerging green technologies may affect competitiveness in the market and require higher capital expenditure to develop or acquire equivalent technology. Conversely, new technology might improve operational efficiency.
- **Physical impacts.** Physical climate change impacts like rising temperatures and an increase in the frequency and severity of extreme weather events may increase insurance or maintenance costs or affect the suitability of current operating locations.

- **Capital expenditures.** Climate commitments and adapting existing operations to be more sustainable and resilient in anticipation of potential physical impacts may require changes to an entity's capital expenditure profile.

From a fair value measurement perspective, even if an entity has not yet begun to focus on climate risk, a valuation of the entity (or its assets) would need to take into account climate risk and opportunities if a market participant would do so.

Example 15.4.1
Impact of climate change on cash flows

Utility Co services an area that is at risk of flooding and storm damage from increasing severe weather activity; as a result, several of their power generating stations might be impacted by severe weather events.

Following the last major storm, Utility Co's insurance provider gave notification that:

- Utility Co's premiums will increase; and
- the insurance provider will drop coverage for certain locations close to the coastline entirely unless Utility Co substantially upgrades the physical infrastructure for these locations to prevent future flooding.

In addition, Utility Co has determined that it will require substantial capital expenditures to flood-proof certain locations, upgrade power lines and work with the local municipalities to replace above ground lines with underground infrastructure.

In measuring its fair value, Utility Co takes these conditions into account, and these facts and circumstances are reflected in the PFI as increased insurance costs and increased capital expenditures. Utility Co also takes into consideration expected rate increases to the extent it is allowed to pass these costs onto customers.

The forecast period

The length of the forecast period depends on the specific facts and circumstances of the entity being valued. In general, the forecast period consists of a discrete forecast period (often three to five years) and a terminal value. The length of the discrete forecast period is determined based on the time that an entity will require to achieve a steady state; considering climate-related risk in PFI does not change this principle.

However, climate risk-related transitions, adaptation and resilience projects might span a time horizon that is longer than the customary forecast period of an entity. In such cases, it is generally appropriate to extend the forecast period to fully reflect the changes in the discrete planning period. This approach is

consistent with how the forecast period is evaluated in the context of other long-term projects.

Example 15.4.2
Adjustments to the forecast period

Continuing Example 15.4.1, Utility Co determines that the required infrastructure upgrades will require approximately 10 years and the required capital expenditures over this period will (1) be substantially more than historic levels and (2) exceed the amount Utility Co expects to spend once the upgrades are complete. Previously, Utility Co prepared a five-year budget.

Based on the following factors, Utility Co decides to extend the forecast period to fully reflect the required upgrades in both the expected capital expenditures as well as associated increases in the rate charged to customers.

- The expected capital expenditures at the end of Utility Co's usual five-year forecast period will not be representative of a steady state.
- Utility Co will still need to work the infrastructure improvements into its rate base.

Therefore, Utility Co extends its forecast period to cover a 10-year period. A customary terminal value computation is included once the project is complete and a steady state is reached.

Discount rate considerations and the beta factor

The most common discount rate used in fair value measurement is the WACC (Weighted Average Cost of Capital) and is generally based on the Capital Asset Pricing Model (CAPM). The WACC is a market-based discount rate. Market risk is reflected in the discount rate via the beta factor.

The beta factor measures the risk of an industry or sector in which an entity operates, relative to the market risk as a whole (systematic risk). It is typically estimated based on the betas of comparable companies within the relevant industry or sector.

Climate-related factors can significantly affect the beta factor by altering the risk profile of companies within an industry or sector. For example, industries with high GHG emissions or those heavily reliant on non-renewable energy sources may experience increased systematic risk due to regulatory changes, market shifts and physical climate impacts. Companies in sectors like energy, utilities or transportation might see increased betas if they are more susceptible to climate policies or physical risks like extreme weather events.

At the same time, in addition to changes that impact an industry or sector as a whole, climate risk might also affect comparability between the subject entity and the comparable guideline companies as not all entities will be affected by climate risk in the same way.

Example 15.4.3
Climate risk affects comparability and beta factor

Oil & Gas Co is a private company narrowly focused on operating on-shore oil and gas fields. The available public comparable guideline companies in the same sector are more diversified and are actively pursuing the development of alternative energy sources.

Oil & Gas Co is aware that over time this difference might limit the comparability of the guideline companies, potentially requiring it to reassess the available guideline companies or make additional adjustments to the discount rate to reflect its specific risk profile.

Adjusting the discount rate and avoiding double counting

As noted above, in our experience, the preferred approach in valuation practice is to reflect the impact of climate risk in the cash flows rather than in the discount rate. This approach results in risks being accounted for explicitly in the projection of future cash flows and also limits the risk of double counting.

When adjustments to the discount rate are considered, it is important to determine if the adjustment is for an industry- or sector-wide risk or for an entity-specific risk.

Industry- or sector-wide risk (market risk) is generally already captured in the beta factor and therefore would not require an additional adjustment. However, since observed beta factors are based on historical information (often beta factors are based on the last two to five years), it is possible that certain elements of market risk are not yet fully captured in these observations. In such cases, an adjustment might be required, but any such adjustment should be reassessed over time. As listed companies provide more substantive climate-related information and disclosures, this information should be priced in by the market. Therefore, any adjustments for market-based risk should be temporary.

The risk profile of companies in an industry can be very different because of their specific exposure to climate risks (and opportunities). This could be due to different geographical locations, differences in legislation in different jurisdictions and differences in corporate strategy.

Adjustments for entity-specific climate risk elements need to be well supported and closely assessed to confirm that such risk elements are not already addressed in the PFI (preferred) or are actually risk factors that address the industry as a whole and as such would be captured in the observed beta factor.

15.5 Entity-specific projections: general principles

Unlike fair value measurements, entity-specific projections (and measurements) are informed by the plans and actions of management instead of being driven by market participant assumptions. However, they are not hypothetical and the relevant standard typically sets specific parameters.

One example that is relevant in considering the effect of climate risk in the financial statements is the recoverability test for the impairment testing of long-lived assets (see section 15.6). The entire measurement is based on entity-specific projections.

In other cases, management's entity-specific analysis acts as a gating question in determining the appropriate accounting – e.g. in assessing the probability of meeting an emissions reduction target in a revenue contract (see section 10.2), share-based payment (see section 11.2) or business combination (see section 14.2).

15.6 Long-lived assets: recoverability test

As explained in section 6.3, when an entity concludes that the carrying amounts of one or more long-lived assets may not be recoverable, the first step is to perform a recoverability test.

In performing the recoverability test, the undiscounted expected future cash flows from an asset group (the unit of account) are compared to the asset group's carrying amount. If the carrying amount exceeds the undiscounted estimated future cash flows, the entity then measures the fair value of the asset group to determine if the carrying amount is impaired.

The recoverability test is discussed in-depth in chapter 7 of KPMG Handbook, Impairment of nonfinancial assets. The following are key points that may be relevant.

General principles

The following general principles apply in estimating future cash flows for purposes of the recoverability test.

- **Entity perspective.** The cash flows are based on the entity's own assumptions about its use of the asset group. [360-10-35-30]
- **Current level of service capacity.** The cash flows are based on the asset group's current physical output and cash flow generation capacity. [360-10-35-33]
- **From use and disposition.** The cash flows are based on the operation and ultimate disposal of the asset group. The period of operation is based on the useful life of the 'primary' asset. [360-10-35-31]

- **Excludes financing.** The cash flows exclude interest charges that will be recognized as an expense when incurred. [360-10-35-29]
- **Undiscounted.** The cash flows are not discounted to a present value.

In addition to the above general principles, there is a specific requirement that the cash outflows related to a recognized ARO be excluded from the recoverability test. [360-10-35-18(a)]

Assumptions

The assumptions underlying the estimates of future cash flows must be consistent with the assumptions underpinning other information prepared by the entity, regardless of whether that information has been communicated publicly. Examples include internal budgets and projections, accruals related to incentive compensation plans and MD&A. [360-10-35-30]

The SEC staff has reinforced that the assumptions used to develop cash flows for purposes of applying Topic 360 must be consistent with other financial statement calculations and disclosures, including disclosures in MD&A and other public communications. [360-10-S99-2]

We do not believe that the Topic 360 or SEC staff guidance literally requires an entity to use the same amounts of cash flows from one estimate to another. However, cash flows used in the recoverability test should be reconcilable to internal forecasts and budgets and the cash flows used in other financial statement measurements.

Single best estimate vs probability-weighted cash flows

The general requirement in Topic 360 is for the entity to consider all available evidence, and for the underlying assumptions to be consistent with those used for other estimates.

There are two reasons why probability-weighted cash flows might make sense in considering the effects of climate risk for a particular asset group.

- To comply with the specific requirement to consider the likelihood of the different outcomes if: [360-10-35-30]
  - the entity is considering alternative courses of action for the operation or disposition of the asset group; and/or
  - there is a range of possible future cash flows.
- As the environment becomes less certain as a result of climate risk and the range of possible future cash flows widens, entities are more likely to base their recoverability test on probability-weighted cash flows.

16. Presentation and disclosure

Detailed contents

New item added in this edition **

16.1 Questions to ask

This chapter discusses financial statement presentation and disclosure topics that are separate from those required for the topics covered in other chapters (e.g. discontinued operations in section 14.4).

In addition to the general questions in section 2.4, the following are example questions specific to the accounting topics discussed in this chapter (not exhaustive).

QUESTION	ACTIONS IF 'YES'
Do conditions and events related to climate risk raise substantial doubt about the company's ability to continue as a going concern?	Understand the steps required in management's assessment of whether it is probable the entity will be unable to meet its obligations over a period of one year from the date the entity's financial statements are issued (or available to be issued). Section 16.2 ▶
Are operations being reorganized, either physically or in terms of reporting?	Consider whether there is a change in operating segments or reportable segments. Section 16.3 ▶
Does the company have climate-related contingencies that do not meet the criteria to be recognized?	Assess whether the disclosures being made are appropriately robust. Section 16.4 ▶
Is the company subject to climate-related risks and uncertainties that could affect estimates in the financial statements in the near term?	Assess the quality of the disclosures being made. Section 16.5 ▶
Does the company have significant concentrations (e.g. through its supply chain or customer base) that create exposure as a result of climate risk?	
Has the company made purchase commitments as a result of its emissions reduction strategy that require disclosure?	Assess purchase contracts and determine if they fall in the scope of disclosures for commitments. Section 16.6 ▶
Has the company received government assistance to support any of its climate-related actions?	Assess whether the disclosure requirements of Topic 832 (government assistance disclosures) apply. Section 16.7 ▶

16.2 Going concern

Each reporting period, following a two-step process, management assesses whether it is probable the entity will be unable to meet its obligations over a defined period. In extreme cases, climate risks may threaten an entity's near-term existence as a going concern, or exacerbate existing conditions such that it is no longer a going concern.

The going concern assessment and the appropriate disclosures are explained in-depth in KPMG Handbook, Going concern.

Step 1: Assess whether substantial doubt is raised

Substantial doubt about an entity's ability to continue as a going concern is raised when it is probable the entity will not be able to meet its obligations during the 'look-forward period'. The look-forward period spans one year from the assessment date – i.e. the date the entity's financial statements are issued (or available to be issued). [205-40-50-1, ASU 2014-15.BC24]

Under Step 1, management determines whether there are conditions and events that, considered in the aggregate, raise substantial doubt about the entity's ability to continue as a going concern. Management can make this determination by breaking the process into smaller steps that collectively identify what the entity has, owes and needs to continue to operate throughout the look-forward period. Step 1 notably requires a thorough analysis of the entity's debt arrangements and detailed cash flow forecasts. [205-40-50-1 – 50-5]

Climate risk can create or exacerbate such conditions or events, e.g. a supplier or customer renegotiating a contract, a change in customer behaviors, the loss of an operating license, or scarce resources becoming unavailable.

If management determines substantial doubt is not raised, it concludes its going concern assessment with no disclosure or other action. Otherwise, management proceeds to Step 2 to determine whether substantial doubt exists and which disclosures to provide.

Step 2: Assess whether substantial doubt exists

Substantial doubt about an entity's ability to continue as a going concern exists when such doubt is raised and is not alleviated by management's plans. Management may implement a variety of mitigation plans, such as disposing of assets or a business, borrowing money, restructuring debt, reducing or delaying expenditures or increasing ownership equity. [205-40-55-3]

Under Step 2, management determines whether these plans alleviate the substantial doubt that is raised in Step 1. For its plans to alleviate the substantial doubt, management must establish that it is probable the plans will: [205-40-50-6 – 50-7]

- be timely implemented – i.e. they are approved and feasible; and
- successfully mitigate the conditions and events that raise the substantial doubt.

This demonstration may prove challenging when key elements of the plan are beyond management's control. We believe a plan is typically beyond management's control when the outcome of critical elements of the plan depends on:

- action from at least one external counterparty; or
- uncontrollable external market forces.

Disclosures

There are three potential disclosure outcomes from management's going concern assessment.

- **No disclosure.** No disclosure is required if management concludes under Step 1 that substantial doubt has not been raised.
- **Disclosures when substantial doubt raised but alleviated.** Even when management's plans alleviate substantial doubt (Step 2), the entity needs to disclose certain information about its conclusions regarding the going concern assessment.
- **Disclosures when substantial doubt exists.** When management's plans do not alleviate substantial doubt, the entity needs to disclose that substantial doubt exists.

Example 16.2
Going concern threatened by climate-related customer boycott

In recent years, the business of Consumer Products Co (CP) has been negatively affected by changes in consumer preferences. Sales have decreased but have been sufficient to keep CP in business thanks to its loyal customer base.

However, brand influencers recently called out CP's lack of commitment to reducing emissions through its supply chain, and a consumer campaign to boycott its products became an unexpected viral success. As a result, sales have been further reduced and management has concluded that its current situation may raise substantial doubt about CP's ability to continue as a going concern.

Step 1: Assess whether substantial doubt is raised

Absent mitigation measures, at the assessment date, management forecasts that CP's liquidity position will deteriorate and it will not be able to meet its obligations in six months.

CP has approved a plan to permanently close half of its stores and sever all corresponding employees, including store back-office clerks and managers, representing half of its workforce. The decision has been announced but has not yet been executed.

In addition, CP plans to negotiate with suppliers to modify and/or terminate certain supply contracts and will seek to enter into new contracts with suppliers that are committed to reducing emissions.

Because these plans are not fully implemented at the assessment date, their mitigation effect is only considered as part of Step 2. Therefore, management concludes that substantial doubt is raised under Step 1 and then evaluates in Step 2 whether the plans alleviate the substantial doubt.

Step 2: Assess whether substantial doubt exists

Management concludes it is probable that its cost-saving measures – i.e. the store closures and its workforce reduction (which is within its control) – will be effectively implemented.

However, management's plan to adjust CP's supply chain is not within its control because the outcome depends on suppliers accepting new terms, such as reduced pricing or extended payment terms. Further, although management has started discussions with existing and potential suppliers, agreements have not yet been signed; therefore, the plan will take at least a year to implement and its mitigating effects will not be realized within the look-forward period. The potential effect of this plan is therefore disregarded in Step 2.

Management prepares detailed forecasts and scenario analyses that weigh its cost-saving measures and readily available liquidity resources against the effects of the boycott and brand rehabilitation. After thorough evaluation, management concludes its plans do not alleviate the substantial doubt raised in Step 1, and therefore substantial doubt exists.

Disclosure

CP's financial statements include a statement indicating that substantial doubt about its ability to continue as a going concern exists and the following disclosures: [205-40-50-13]

- the principal conditions or events that raised the substantial doubt (before consideration of management's plans);
- management's assessment of the significance of those conditions or events in relation to the entity's ability to meet its obligations; and
- management's plans intended to mitigate the substantial doubt.

16.3 Segment reporting

Topic 280 requires public entities to disclose segment information in the notes to their financial statements – i.e. information about 'operating segments' that meet certain quantitative thresholds. An operating segment that meets these thresholds is called a reportable segment. [280-10-15, 50-10]

An operating segment is a component of the entity that: [280-10-50-1]

- engages in business activities;

- has operating results that are regularly reviewed by the entity's 'chief operating decision maker' (CODM) to make decisions about resources to be allocated to the segment and assess its performance; and
- for which discrete financial information is available.

Operating segments with similar economic characteristics may be aggregated and treated as a single operating segment if the aggregation criteria are met. However, operating segments that do not meet all of the aggregation criteria cannot be aggregated. [280-10-50-11]

In response to climate risk, an entity may undergo changes to its overall organization to align with sustainability or net-zero targets, which may include realignments of operations, closures of existing or creation of new facilities or operations. Any reallocation of resources and changes in operations may impact the entity's reporting structure, including the information provided to the CODM responsible for resource allocation and performance assessment.

If there is a change in the composition of operating segments or in reportable segments, segment information for comparative periods is recast in current-period financial statements to conform to the current-period presentation. [280-10-50-34]

Further, a change in the identification of operating segments may have a direct effect on the goodwill impairment test. This is because goodwill is assessed for impairment at the reporting unit level, which is defined as an operating segment or one level below. [350-20-35-34, 35-36]

Segment reporting is explained in-depth in KPMG Handbook, Segment reporting.

Example 16.3
Resegmentation following implementation of net-zero strategy

O&G Co's historical business model has been to operate under two separate divisions: upstream and downstream.

Following the hiring of a new CEO to guide its net-zero strategy, O&G Co makes a strategic shift to focus on products that support a low-carbon economy, which it believes will be key to its future success.

As a result, O&G Co combines the two legacy divisions ('traditional') and creates two new divisions: renewables and transportation. O&G Co also eliminates the role of the segment managers who have historically been responsible for operating activities, financial results and forecasts for oversight of the legacy divisions.

O&G Co has historically identified two operating segments, which have been based on the two legacy divisions. The CODM historically has been the CEO. But through the development of this new strategy and operating model, O&G Co no longer organizes its sales, operations and management teams under the

previous reporting structure. O&G Co has also stopped creating the legacy division level financial data because it believes this data is no longer meaningful, and this information is also no longer discussed in earnings releases or presentations to the board of directors or audit committee.

O&G Co concludes that the new CEO is the CODM because the CEO continues to review the operating results to assess performance and allocate resources. O&G Co also concludes that it has three operating segments: traditional, renewables and transportation.

16.4 Unrecognized contingencies

Contingencies are discussed in chapter 9. A loss contingency is recognized if a loss is probable and it can be reasonably estimated, and specific disclosures are required. [450-20-25-2]

If these criteria are not met, or the potential loss is greater than the amount recognized, the entity discloses the nature of the contingency and an estimate of the possible loss or range of loss (or a statement that an estimate cannot be made). [450-20-50-3 – 50-4]

To the extent that climate risk increases the potential for noncompliance with new environmental laws and regulations, and the threat of litigation increases, these disclosures may be particularly relevant.

Over the years, the SEC staff has expressed concern that many registrants' disclosures about loss contingencies do not comply with the requirements of Topic 450. These concerns remain relevant not just for SEC registrants, but for all entities applying Topic 450.

- Registrants often do not disclose ranges of reasonably possible losses when known or do not disclose the fact that an estimate of the range of a reasonably possible loss cannot be made. The SEC staff has reminded registrants that:
  - neither precision nor confidence is included in the relevant standards; and
  - registrants should ensure that they attempt an estimate by undertaking a thorough process to determine an estimate of the possible loss or range of loss before concluding that such an estimate cannot be made.
- Disclosures about a specific loss contingency may not have been updated with the passage of time. The SEC staff is skeptical if a range of reasonably possible losses cannot be estimated years after the contingency arose.
- The SEC staff does not believe the requirements in Topic 450 are satisfied by disclosing:
  - a general statement indicating that the eventual outcome of the actions against the registrant will not have a material adverse effect on the financial position or results of operations; or

  - that in the event of unexpected future developments, it is possible that the ultimate resolution of those matters, if unfavorable, may be material to the registrant's results of operations.

- A liability has been recognized, but registrants have not disclosed:
  - the amount of the accrual when such disclosure may be necessary for the financial statements not to be misleading; or
  - that there is an exposure to loss in excess of the amount accrued and what the additional loss may be for each particular loss contingency.

- Some registrants may have inappropriately recorded loss reserves in immaterial increments over successive periods leading up to a material settlement. With the announcement of a material legal settlement, the SEC staff may review prior period disclosures to:
  - assess whether appropriate disclosure was made if the contingent loss was reasonably possible as of previous reporting dates; and
  - consider whether related accruals were appropriately recognized (and disclosed in MD&A if necessary) in the period the contingent loss became probable.

- The SEC staff has noted that Topic 450 requires registrants to consider all facts and circumstances each reporting period. Discussions with a regulator, calculations of potential damages or settlement offers may provide evidence that there is a reasonable possibility that a loss will be incurred and that disclosure is necessary. Failure to recognize or disclose loss contingencies timely may result in a material error, violation of SEC rules and substantial fines.

16.5 Risks and uncertainties

Topic 275 requires disclosure about risks and uncertainties that could significantly affect the amounts reported in the financial statements in the near term (i.e. within one year of the balance sheet date). This includes disclosures addressing certain estimates and significant concentrations in the entity's operations. [275-10-05-02]

The disclosure of risks and uncertainties is explained in-depth in KPMG Handbook, Financial statement presentation.

Estimates

Estimates disclosures are required when, based on known information available before the financial statements are issued (or available to be issued): [275-10-50-8]

- it is reasonably possible that the estimate will change in the near term; and
- the effect of the change will be material.

An entity discloses the nature of the uncertainty and an indication that it is at least reasonably possible that a change in the estimate will occur in the near term. [275-10-50-9]

Significant concentrations

Vulnerability from concentrations may arise when an entity is exposed to risk of loss greater than it would have been had it mitigated its risk through diversification. This may be the case when an entity's supply chain, workforce or customer base depends on a particular geography or market.

Such concentrations are disclosed if they exist at the reporting date and it is reasonably possible that they could have a severe impact in the near term. The assessment also takes into consideration known information available before the financial statements are issued (or available to be issued). [275-10-50-16]

16.6 Commitments

Topic 440 requires disclosure about certain purchase commitments and unconditional purchase obligations.

- The purchase commitments in the scope of Topic 440 include a commitment for plant acquisition (see section 3.5) and related to leases (see chapter 4). [440-10-50-1]
- Unconditional purchase obligations include take-or-pay and throughput contracts, but exclude product financing arrangements in the scope of Topic 470 (debt) and repurchase agreements in the scope of Topic 606 (revenue). [440-10-15-3 – 15-4]

For unrecognized commitments, an entity discloses: [440-10-50-4]

- the nature and term of the obligation(s);
- in aggregate, the fixed and determinable portion of the obligation(s) at the reporting date and, if determinable, for each of the five succeeding fiscal years;
- the nature of any variable components of the obligation(s)
- the amounts purchased under the obligation(s) for each period for which an income statement is presented.

These disclosures do not apply to a mere intent or goal of purchasing items in the scope of Topic 440. Therefore, an entity's commitment to be net zero by 2050, for example, does not trigger these disclosures absent other actions.

16.7 Government assistance

The discussion in this section relates to current requirements before the adoption of ASU 2025-10, which has expanded disclosure requirements. See forthcoming requirements.

Topic 832 requires business entities, excluding not-for-profit entities and employee benefit plans, to disclose information about government assistance received that is accounted for by analogizing to either of the following: [832-10-15-4]

- a grant model – e.g. IAS 20 (government grants and disclosure of government assistance) under IFRS Accounting Standards; or
- a contribution model – e.g. Subtopic 958-605 (revenue recognition by not-for-profit entities).

Examples of government assistance in the scope of Topic 832 include refundable and transferable credits under the IRA and CHIPs legislation that are accounted for by analogy to IAS 20 or Subtopic 958-605 (see section 12.4).

Topic 832 specifically requires the following disclosures about transactions with a government entity in its scope: [832-10-50-3 – 50-4]

- the nature of the transactions, including a general description of the transactions and the form in which the assistance was received (e.g. cash or other assets);
- the accounting policies used to account for the transactions;
- the line items on the balance sheet and income statement that are affected and the amounts applicable to each financial statement line item in the current reporting period; and
- significant terms and conditions of the transactions, including, but not limited to, the duration or period of the agreement, commitments made by both parties, other contingencies, and if there are any other provisions that would allow the government entity to recapture the amounts awarded.

In the rare circumstance that an agreement legally prohibits specific information from being disclosed, the entity discloses: [832-10-50-5]

- the general nature of the information omitted; and
- that fact that the required disclosures are omitted because the information is legally prohibited from being disclosed.

For further discussion, see KPMG Issues In-Depth, Government assistance disclosures.

Forthcoming requirements**

In December 2025, the FASB issued a final standard, Accounting for Government Grants by Business Entities. The final standard provides guidance on the recognition, measurement and presentation of grants received by business entities from a government. Entities will need to evaluate government incentives related to sustainability initiatives to determine whether they are in the scope of this new guidance.

For additional discussion of the project, see KPMG Defining Issues, FASB issues ASU on accounting for government grants.

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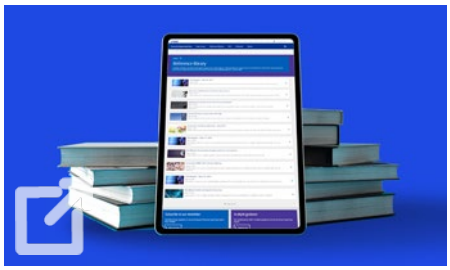

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Acknowledgments

This Handbook has been produced by the Department of Professional Practice (DPP) of KPMG LLP in the United States.

We would like to acknowledge the efforts of the main contributors to this edition:

Louise Santacruz

Julie Santoro

We would also like to acknowledge the current and former members of DPP who contributed significantly to this edition: P.K. Barot, Kimber Bascom, Frederik Bort, Valerie Boissou, Mike Breen, Nick Burgmeier, Molly Chilakapati, Danielle Imperiale, Leigh Louis, Amy Luchkovich, Scott Muir, Joan Rood, Jenna Terrell.

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