Sample industry practices for managing climate-related risks

A. Background

The following practical examples aim to help the industry comply with the requirements. These samples have made reference to suggestions from the Climate Change Technical Expert Group (TEG)[1] and publications issued by industry participants and standard setters which include climate-related risk management elements.

B. Illustrative samples of industry practices for managing and disclosing climate-related risks by fund managers

B 1. Governance

B 1.1 Board or the board committee's roles and responsibilities

Practice 1

A fund manager has a governance framework to oversee how exposures to climate-related risks and opportunities are assessed, managed and controlled within the group's risk appetite. The board, which is ultimately accountable for the long-term stewardship of the group, has delegated oversight of the management of the climate-related risks to the Group Environment Committee which:

- sets the strategy for managing environmental impact with a focus on climate, including setting targets, monitoring and reporting performance;
- provides central oversight of the management of climate impact to ensure that climate change informs strategic planning and decision-making across all group activities;
- oversees the management practices which ensure these exposures are controlled in line with the group's risk appetite and environmental strategy;
- promotes internal awareness and understanding of climate-related threats and opportunities;
- ensures that the actions and responses to climate are proportionate; and
- considers both the transition and physical risks associated with climate change and their impact on a variety of asset classes, in both the short and long terms.

[1] The Securities and Futures Commission (SFC) established the TEG in 2020 to engage with the industry and experts in developing the requirements for fund managers to take climate-related risks into consideration in their investment and risk management processes and make appropriate disclosures. The TEG comprises technical experts from global asset management companies, information providers and standard-setting bodies.

Practice 2

The board is responsible for the company's overall strategy and oversight of climate-related risks and opportunities. Its mandate includes:

- setting corporate and strategic objectives;
- setting and maintaining the company's high ethical standards and reputation;
- approving major initiatives and expenditures;
- setting the company's policies and ensuring a robust system of internal controls exists; and
- ensuring the financial stability of the company.

The board meets at least four times a year. It exercises oversight of climate-related issues and delegates the management of the company to the CEO, who has created management-level committees focusing on climate-related responsibilities. They include the Global Operating Committee (GOC), Corporate Sustainability Committee (CSC) and Sustainable Investment Operating Committee (SIOC). Both the CSC and the SIOC report to the GOC in its capacity as a management committee reporting to the CEO.

Practice 3

A fund manager discharges its stewardship responsibilities including those regarding climate change risks and opportunities with a governance structure led by the board. The board and executive committee review the firm's climate management approach on an annual basis and are kept up to date on the progress of implementation.

The Head of Policy and Advocacy is the climate change coordinator who leads the implementation and delivery of climate change strategies and reports progress to the board and the working groups.

B 1.2 Management's roles and responsibilities

Practice 4

A fund manager:

- has its CEO publicly announced the inclusion of sustainable development goals in its social and environmental responsibility policy;
- sets targets to align its investments with the goals of the Paris Agreement by 2025;
- has a sustainability centre involving experienced people from different fields which provides investment teams with company- and sectoral-level sustainability information and facilitates the integration of sustainability risks and opportunities into investment strategies; and
- tracks the evolution of its carbon footprint, the temperature pathways of fund portfolios, exposure to high-carbon sectors and each portfolio's green share and brown share to monitor the status of climate-related risk management.

Practice 5

A fund manager has a dedicated team to oversee the company's sustainable investment efforts globally. This team works together with investment professionals to integrate sustainability considerations across investment processes and drive sustainable investment research. The team's progress is supervised by a designated global head of environmental, social and governance (ESG).

In addition, the fund manager has a risk management team which evaluates the risks of all investments, including sustainability risks, for portfolio managers' periodic review. The global executive committee, with members including the global heads of investment, oversees investment processes and consistency across the firm.

B 1.2.1 Management setting goals and developing action plans for addressing climate-related issues

Practice 6

A fund manager publishes a statement on climate change which says it is committed to:

- analyse and, where possible, mitigate potential risks arising from climate change to protect value for clients; and
- advocate more responsible and sustainable behaviour regarding climate change through stewardship activities.

In addition, the fund manager has signed statements in support of the Paris Climate Agreement, urging these governments to continue to uphold the agreement's principles. It is also a signatory to the United Nations Global Compact and supports its principles on the environment and the sustainable development goals.

Practice 7

A fund manager is committed to support the goal of net zero greenhouse gas (GHG) emissions by 2050 or sooner. It helps investors prepare their portfolios for a net zero world, including capturing opportunities created by the net zero transition. Key actions for 2021 include:

<u>Measurement and transparency</u>

- publish a temperature alignment metric for public equity and bond funds;
- publish the proportion of assets under management (AUM) which are currently aligned to net zero as well as those which will be aligned to net zero in 2030; and
- help investors manage and meet their climate objectives by tracking investment portfolios' trajectories toward net zero, and help to catalyse robust, standardised climate data and metrics for the industry;

<u>Investment management</u>

- incorporate the impacts of climate change into the capital market assumptions for portfolio constructions;
- implement a scrutiny model in active portfolios for managing securities which pose significant climate risks;
- help clients benefit from opportunities created by the energy transition; and
- launch investment products with explicit temperature alignment goals;

<u>Stewardship</u>

- use investment stewardship to ensure the investee companies are mitigating climate risks and considering the opportunities presented by the net zero transition;
- ask companies to disclose a business plan aligned with the goal of limiting global warming to well below 2ºC, consistent with achieving net zero global GHG emissions by 2050; and

- increase the role of votes on shareholder proposals in stewardship efforts around sustainability.

Practice 8

A fund manager sets out its approach to climate change in a position statement, including:

- developing internal capacity to assess climate change risks and opportunities in investment processes;
- collaborating with the investment community such as peer learning though the Global Investor Coalition on Climate Change;
- engaging in active dialogue and exercising voting rights to promote positive outcomes for the investee companies, the firm, and investors in relation to climate change; and
- adopting Task Force on Climate-related Financial Disclosures (TCFD) reporting.

Practice 9

A fund manager sets an objective to make a substantive contribution to the low-carbon energy transition and three targets including (1) to align its investment portfolios with the goals of the Paris Agreement by 2025, (2) to encourage its investee companies and countries to align their strategies with the goals of the Paris Agreement, and (3) to encourage policymakers to adopt measures which align with the goals of the Paris Agreement.

The fund manager has taken action to meet these targets. For example, it introduced an enhanced coal policy to exclude coal-mining companies which derive more than 10% of their revenue from mining thermal coal or account for 1% or more of total global production. It also excludes coal-power generators whose carbon intensity is above the 2017 global average of 491gCO_2/kWh.

The fund manager has also committed to track, monitor and publicly report to fund investors climate-related key performance indicators including CO_2 emissions per portfolio and green share (%) of AUM or total green investments (sustainable economic activities).

B 2. Investment management

B 2.1 Identifying climate-related risks for investment strategies and funds

Approaches	Examples
Qualitative approach	▪ Identify those sectors (eg, utility and power, mining, automobile manufacturers, oil and gas, transportation and logistics) which are more likely to be adversely affected by the transition to a low-carbon economy and evaluate whether the investment portfolio is unintentionally skewed towards these sectors. Fund managers may also consider second-level effects on companies within the value chain of those sectors. ▪ Meet with the management of investee companies and analyse the positioning of the investee companies' business models towards risks and opportunities arising from climate challenges.
Quantitative approach	▪ Use ESG scores (or scores of a similar nature) developed by third-party providers to identify investee companies subject to relatively higher climate-related risks. ▪ Utilise in-house or third-party data tools to analyse a portfolio's climate-related risks in the context of weather or climate data (eg, five-year history of daily weather variables such as temperature and precipitation, extreme weather events including cyclones, earthquakes and drought) or projected climate conditions (eg, the agreed rate of sea level rise in 10, 20 or 30 years' time) and assess their likely impact on the portfolio. ▪ Use internally developed or externally available "heat maps" of extreme weather events, rising sea levels or water scarcity to assess the dollar value impact or portion of assets located in regions subject to the threat of these climate-related risks. ▪ Measure investee companies' carbon footprints to assess the impact of carbon price changes or carbon tax on the investment portfolio's value; or compare the total carbon footprint against a benchmark, another portfolio or peers to evaluate the magnitude of exposure of the underlying portfolio. ▪ Integrate climate-related data as constraints in the portfolio construction process by setting an upper bound on a chosen carbon measure on an absolute or benchmark-relative basis.
Asset class approach	<u>Corporate equity and bond</u> ▪ Assess the financial impact of physical and transition risks on each investee company's business, strategies for products and services, value chain, operations and investment in research and development. ▪ Apply revenue-based models to assess the physical location of the assets or value chain to gauge the expected losses resulting from physical and transition events. ▪ Evaluate the investee company's climate report and form a view on

Approaches	Examples
	company-level climate-related risks and their likelihood. ▪ Make reference to the set of metrics developed under the EU taxonomy to analyse the performance of the investee company in managing climate-related risks, which could be done at a company or portfolio level for investments within or outside the EU.
	<u>Sovereign bond</u> ▪ Assess the country's climate change exposure and sensitivity, including reliance on agriculture and natural resources, energy mix and government policies to combat climate change, which may affect the country's ability to repay debts, especially those prone to extreme weather events and with carbon intensive economies (eg, share of brown sectors to the overall gross domestic product (GDP)). ▪ Use free-to-use resources such as the ND-GAIN Country Index[2] or rely on third-party tools to analyse the implied warming potential of sovereign assets. ▪ Rank countries according to their carbon intensity of emissions and conduct analysis and comparison of countries at the sub-national level for climate-related risks.
	<u>Real estate</u> ▪ Assess the use of sustainable or renewable energy and the likelihood and potential physical damage to properties under extreme weather events based on their location, occupancy and building type. ▪ Conduct qualitative analysis of the typology of real estate assets, their date of construction or renovation, geographical location and the existence of an energy label. Establish a risk scoring system to analyse the real estate portfolio. ▪ Use metrics such as the carbon intensity per square foot for transition risks and percentage of absolute value of liabilities exposed to key indicators for the physical risks identified.

[2] The ND-GAIN Country Index summarises a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience.

Assessing materiality

When assessing the materiality of the impact of climate-related risks on an investment strategy or a fund, fund managers should adopt an approach which is appropriate and proportionate to their circumstances. The approach can be qualitative, quantitative or some combination of both. Fund managers may consider adopting the methodologies suggested by international reporting frameworks, such as the Sustainability Accounting Standards Board (SASB) [3], Principles for Responsible Investment (PRI)[4] and others[5], in assessing the materiality of climate-related risks. Fund managers should maintain appropriate internal records to demonstrate that they have assessed the materiality of the risks.

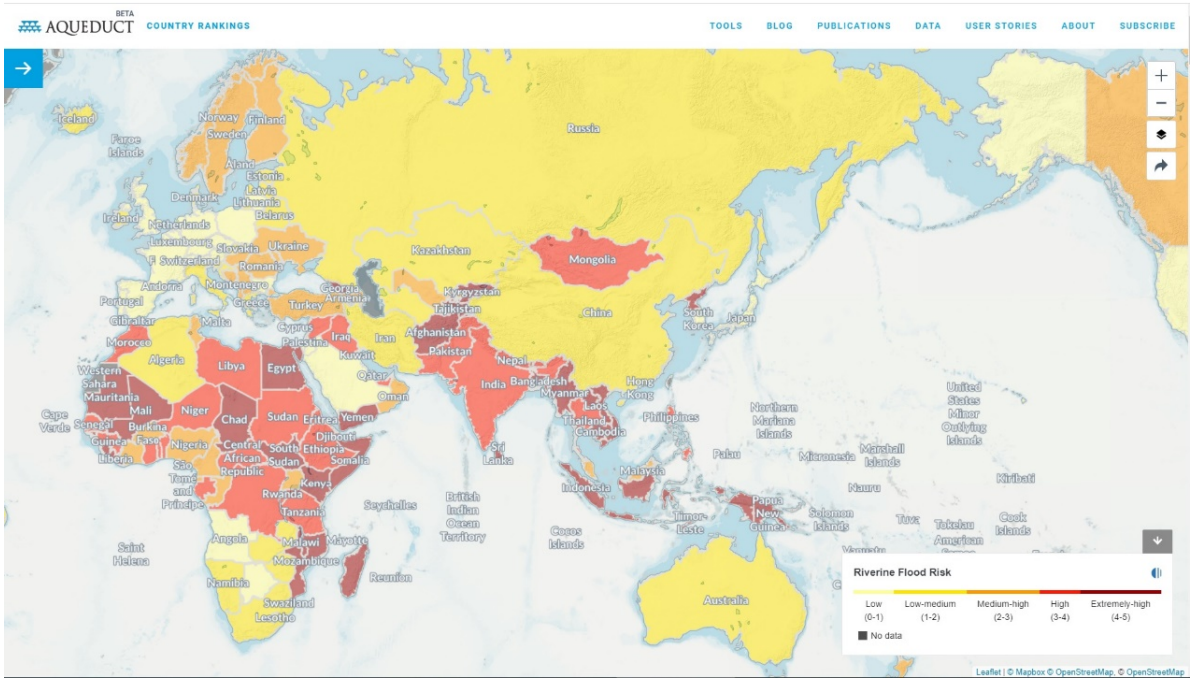
[3] See the *SASB Materiality Map®*.

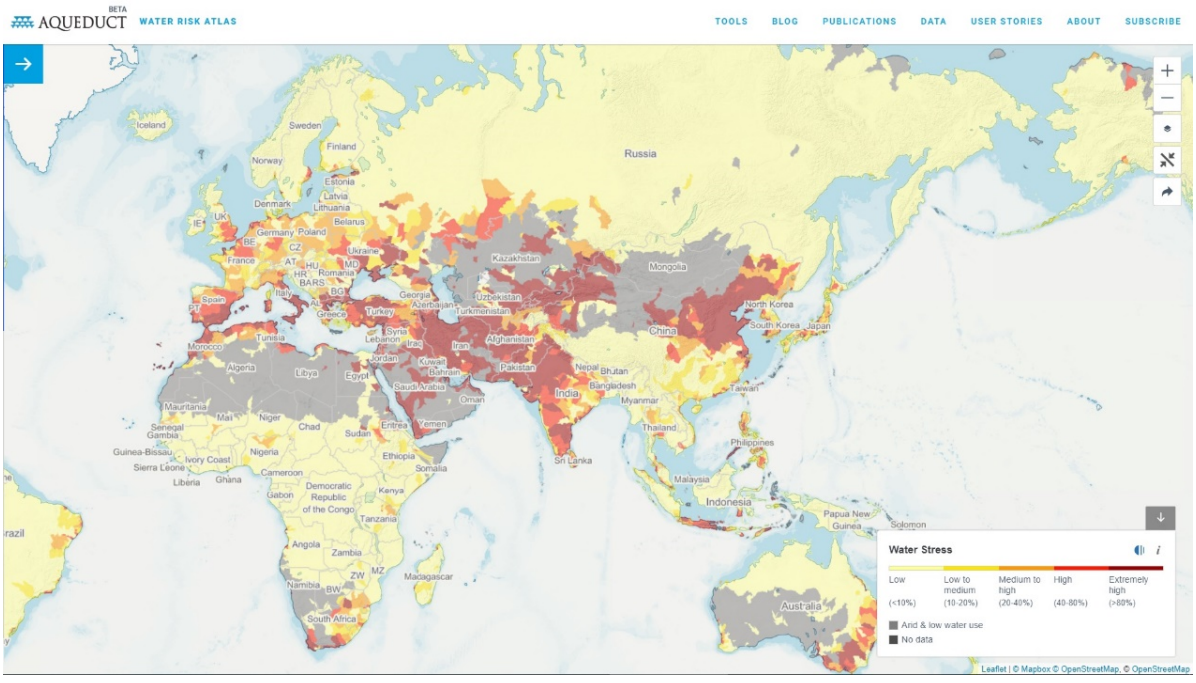
[4] In the report *Implementing the TCFD Recommendations - A Guide for Asset Owners*, the PRI suggests that when prioritising climate-related risks, fund managers may also consider total portfolio risks, asset class risks, mandate or individual portfolio risks, sector risks and risks specific to a company or asset.

[5] Fund managers can also refer to the TCFD, Climate Disclosure Standards Board, the Global Reporting Initiative, the International Integrated Reporting Council and Partnership for Carbon Accounting Financials (PCAF).

Practice 10

Fund managers could make reference to publicly available information or research to assess climate-related risk exposures by geographic location when deciding the potential impact of climate-related risks on the operations of investee companies. Below are examples of tools available from the World Resources Institute on flood risk and water stress (www.wri.org).





B 2.2 Factoring material climate-related risks into the investment process

Practice 11

A fund manager incorporates climate considerations in the stock selection process using bottom-up research to unearth climate risks or unexploited opportunities from the energy transition process.

To conduct a bottom-up assessment, the fund manager updated the internal scoring methodology with its in-house tool, resulting in more detailed coverage of climate and environmental issues. The tool scores companies by comparing them to their peers on a range of environmental metrics such as carbon emissions (scope 1, 2 and 3), carbon reserves and green revenue. This helps flag companies which are both particularly exposed to climate risks and those which could be well positioned to benefit from opportunities.

Physical risks are assessed at the country level using metrics such as climate change policies, economic and population exposure to natural hazards, exposure to water and heat stress and overall country data on GHG emissions, waste management, air quality, biodiversity and deforestation. These data points are used to develop a country score. More granular information is collected and analysed for direct investments in property and infrastructure as part of the due diligence to assess future risks such as storms and floods.

The fund manager would also conduct qualitative assessments by gathering information from potential investee companies such as their environmental and climate change policies, water use, gas flaring and waste management. This information is scored to allow for inter-company comparisons.

The quantitative outcome is combined with the qualitative analysis to allow for more holistic investment decisions.

Practice 12

A fund manager has integrated climate change considerations in the research process from an impact and risk perspective.

The GHG emission intensity of investee companies is a starting point for determining the impact of climate change. The fund manager also adds a forward-looking element in the research process by assessing decarbonisation potential, strategy and targets. This is to ensure that the strategy follows the desired decarbonisation trajectory. This may include companies whose emissions are currently high but are making an effort to reduce them.

The fund manager would also conduct research to determine to which sectors and industries climate change is material and relevant. The climate change strategy of a company in one of those sectors or industries is analysed and compared to its peers. Based on this analysis, the fund manager will assess the impact on the company's business model, which reveals the risks and opportunities to which it is exposed.

Practice 13

A fund manager has ESG specialists who work with portfolio managers and analysts to analyse the impact of climate-related risks and opportunities on a company's business, management strategy and financial projections and incorporate these analyses into its investment strategies, ESG scores, stock price ratings and other metrics. Corporate GHG emissions and ESG scores are analysed and compared with benchmarks and other metrics and used in engagement to improve the corporate value of portfolio companies. If a company's value does not improve after engagement, the fund manager considers this in its investment decision. All of the fund manager's investment products are subject to climate-related monitoring.

Practice 14

A fund manager views that successfully avoiding damages from climate change will help drive economic growth and offer investors better returns. Throughout its portfolio design process, it incorporates steps such as examining the carbon emissions intensity and other measures to assess potential investments.

Practice 15

A fund manager uses an impact investing approach which seeks to generate both compelling financial returns and positive, measurable social and environmental effects. They seek investments which are aligned with the transition to a resilient and net-zero emissions society by 2050.

Practice 16

A fund manager adopts an impact investing approach and sets out nine investment themes, crossed referenced to the UN sustainability goals, to benchmark against its portfolio holdings. Amongst these are climate change-related themes covering cleaner energy, sustainable transport, resource efficiency, and environmental services, with the ultimate aim of assessing the amount of CO_2 equivalent emissions avoided and renewable energy generated.

Other approaches to consider

In factoring material climate-related risks into the investment management process, fund managers may make reference to the publications and standards of international organisations. For example, the Standards Board for Alternative Investments (SBAI) has developed a responsible investment policy framework[6]. It suggests that a fund manager's approach to responsible investment will sit on a spectrum depending on the degree of integration such as applying baseline exclusions (eg, tobacco) to all investment mandates within the firm or having a specific mandate to invest responsibly. In addition, a fund manager can use a wide range of methods including integration, asset selection, ownership and corporate and market citizenship as building blocks for a responsible investment approach.

[6] See the SBAI's Responsible Investment Policy Framework.

B 2.3 Assessing the impact of the climate-related risks on the performance of underlying investments

- Examples of climate-related risks and their potential financial impact[7]

Type	Climate-related risks[8]	Potential financial impact
Physical risk	Acute ▪ Increased severity of extreme weather events such as cyclones and floods Chronic ▪ Changes in precipitation patterns and extreme variability in weather patterns ▪ Rising mean temperatures ▪ Rising sea levels	▪ Reduced revenue from decreased production capacity (eg, transport difficulties, supply chain interruptions) ▪ Reduced revenue and higher costs from negative impact on workforce (eg, health, safety, absenteeism) ▪ Write-offs and early retirement of existing assets (eg, damage to property and assets in "high-risk" locations) ▪ Increased operating costs (eg, inadequate water supply for hydroelectric, nuclear and fossil fuel plants) ▪ Increased capital costs (eg, damage to facilities) ▪ Reduced revenue from lower sales or output ▪ Increased insurance premiums and reduced availability of insurance for assets in "high-risk" locations
Transition risks	Policy and legal ▪ Increased pricing of GHG emissions ▪ Enhanced emissions-reporting obligations ▪ Mandates for and regulation of existing products and services ▪ Exposure to litigation	▪ Increased operating costs (eg, higher compliance costs, increased insurance premiums) ▪ Write-offs, asset impairments and early retirement of existing assets due to policy changes ▪ Increased costs or reduced demand for products and services resulting from fines and judgements
	Technology ▪ Substitution of existing products and services with lower-emission options ▪ Unsuccessful investments in new technologies ▪ Costs to transition to lower-emission technology	▪ Write-offs and early retirement of existing assets ▪ Reduced demand for products and services ▪ Research and development expenditures for new and alternative technology ▪ Capital investments for technology development ▪ Costs to adopt or deploy new practices and processes
	Market ▪ Changing customer behaviour ▪ Uncertain market signals ▪ Increased cost of raw materials	▪ Reduced demand for goods and services due to shifts in consumer preferences ▪ Increased production costs due to changing input prices (eg, energy, water) and output

[7] Reference: Table 1 of the Recommendations of the TCFD issued in June 2017.
[8] The risks described are not mutually exclusive and some may overlap.

Type	Climate-related risks[8]	Potential financial impact
		requirements (eg, waste treatment) ▪ Abrupt and unexpected shifts in energy costs ▪ Decreased revenue resulting from changes in revenue sources and mix ▪ Re-pricing of assets (eg, fossil fuel reserves, land valuations, securities valuations)
	Reputation	
	▪ Shifts in consumer preferences ▪ Stigmatisation of sectors ▪ Increased stakeholder concerns or negative stakeholder feedback	▪ Reduced revenue from decreased demand for goods or services ▪ Reduced revenue from decreased production capacity (eg, delayed planning approvals, supply chain interruptions) ▪ Reduced revenue from negative impact on workforce management and planning (eg, employee attraction and retention) ▪ Reduction in capital availability

B 3. Risk management

B 3.1 Taking climate-related risks into consideration in risk management process

Risk analysis

In assessing the impact of climate-related risks on underlying investments, fund managers can make reference to available methodologies and research. For example, the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) published[9] an Overview of Environmental Risk Analysis (ERA) by Financial Institutions which provides wide-ranging examples of how to translate environmental risks into financial risks and a review of the tools and methodologies used by financial institutions for ERA, including asset managers. Fund managers can also refer to the Case Studies of Environmental Risk Analysis Methodologies issued by the NGFS for an in-depth discussion of the tools and methodologies to develop or enhance their own ERAs.

Practice 17

Some fund managers:

- conduct ongoing assessments of climate-related risks which include updating ESG scores periodically and implementing a climate monitoring dashboard with metrics related to physical and transition risks;
- establish appropriate processes for the timely escalation and reporting of significant issues noted during risk monitoring to the board or other appropriate functional units such as the investment management function; and
- regularly review the effectiveness of their risk management systems to ensure that any potentially significant deterioration in climate-related risks is followed up promptly.

[9] Please refer to the NGFS's press release on 10 September 2020.

Practice 18

Some fund managers engage with investee companies by:

- establishing policies and internal guidelines which set out priorities and objectives when engaging with investee companies;
- having regular discussions with investee companies to understand their policies and activities to manage climate-related risks and opportunities;
- seeking commitments from investee companies and monitoring their progress in addressing climate-related concerns; and
- using their voting authority to drive investee companies to enhance disclosures and practices related to climate-related matters to make more data available and better assess climate-related risks. This may involve:
  - establishing voting policies and guidelines which set out the expectations for how investee companies handle climate-related matters (eg, consistent and decision-useful disclosures which are in line with the SASB standards and TCFD Recommendations); and
  - voting against the re-election of the company directors and senior executives of investee companies with poor ESG scores or which lack adequate governance or disclosures of climate-related matters.

Practice 19

Some fund managers reallocate assets under their management by:

- applying a set of restrictions to limit ESG risks, divest holdings in coal and tar sand activities or avoid financing the tobacco industry as well as companies which are not considered ESG compliant or have the worst ESG practices among peers; and
- reducing positions in or excluding companies with behaviours which deviate from the fund manager's own beliefs and investor preferences.

Practice 20

Some fund managers play an active, constructive role in supporting the development of a well-functioning green and sustainable financial system by:

- engaging with regulators and policymakers to encourage the adoption of measures which align with the goals of the Paris Agreement; and
- participating as an active member of industry bodies, initiatives and networks (eg, the PRI, Climate Action 100+) which advocate for progressive public policy and action for sustainable investments.

B 3.2 Scenario analysis for Large Fund Managers

Assessing the utility of scenario analysis

User group	User	Examples of questions for assessing the utilities of scenario analysis
Market	▪ Equity analyst	▪ Who could be winners and losers structurally, including adaptive capacity? ▪ What are the material impacts of climate change on existing risk factors? Have new risk factors been identified?
	▪ Product developer	▪ Where do new investment needs arise and existing needs diminish? ▪ How can this be reflected in new products or during the transition of existing products?
	▪ Portfolio manager	▪ How could climate change affect the relative risk-return profile of specific sectors? ▪ To what extent can security selection affect the average sector risk? ▪ Can the sector actively manage its risks and opportunities? ▪ What are the material impacts of climate change on existing risk factors? Have new risk factors been identified?
Risk control	▪ Risk manager	▪ Would new risk factors or a change in the materiality of risk factors imply a need for reflection in general risk management?
Sustainability	▪ CSR manager	▪ Which metrics for the disclosure of climate risks should be retrieved from the specialist departments? ▪ Qualitative vs. quantitative: Which financial indicators should be mapped?

Reference: NGFS Occasional Paper – Case Studies of Environmental Risk Analysis Methodologies.

If assessed to be relevant and useful, examples of application of scenario analysis

Practice 21

A fund manager categorises scenario analysis into three major types, which vary by asset class:

- Discrete shocks or stress tests: these scenarios are typically points in time and provide investment teams a "what-if" analysis – for example, "what if the government imposes a carbon tax this year?"
- Pathway alignment scenario analysis: these scenarios help answer questions such as "what is the alignment of my portfolio to a 2°C outcome?"
- Discounted value at risk scenario analysis: these scenarios help investment teams answer questions such as "if the world is on track for a 2°C scenario by 2030, what does that imply for my portfolio's value today?" and "are my securities under- or over-valued?". This requires forward-looking assumptions about energy consumption and production, future earnings and a discount rate to current values.

Practice 22

To consider the impact on investment returns and volatility under different climate change scenarios (eg, scenarios which project global warming paths to between 2°C and 4°C above pre-industrial temperatures by 2100), a fund manager identifies climate-related investment risk factors such as technology development, resource availability and the impact of physical damage and policy changes, which can be used to translate each climate change scenario into the language of investments. These scenarios reflect climate change policy ambitions which result in varying CO_2 emissions pathways, temperature outcomes and economic damage related to climate change. Considering the scenarios through the lens of the climate change risk factors can provide perceptible indications of changes in the economy resulting from climate change.

Practice 23

A fund manager shares a high-level overview of its climate-related scenario analysis. Its modelling takes scenario and baseline factors (eg, carbon budgets, policies, technology, GDP, population) as inputs and uses integrated assessment models to consistently estimate key economic and energy system variables (eg, carbon prices or fossil fuel demand) across each scenario. Outputs can then be used to determine the implications for company valuations. The fund manager develops the following four-step approach for its low-carbon transition scenario analysis framework:

- use 10-scenario analysis to explore how future policies and technological uncertainty might shape the transition;
- translate scenario assumptions via an energy system model into levels of economic activity, price changes, energy use and cleantech deployment;
- model value streams to capture key dynamics affecting company performance, such as emissions abatement, cost pass-through and changes in demand for emission-intensive and cleantech products; and

- quantify potential changes in equity valuation and corporate credit ratings with a consolidated entity-level dataset of climate-related risk and opportunity metrics.

Practice 24

A fund manager has developed Carbon Beta, an investment metric which measures portfolio sensitivity to carbon prices. Carbon Beta is used to generate a set of base-case carbon tax stress-test scenarios, ranging from a low initial carbon price per metric ton to a relatively high one. With these carbon tax scenarios, portfolio managers can review their funds' exposures to carbon pricing across dimensions, identify potential risks and opportunities, and construct new pathways and hypothetical portfolios to improve outcomes.

Practice 25

A fund manager considers climate change in constructing scenario analysis, including 2°C and 4°C global temperature increases, to map the potential effects on economic growth, inflation and various asset classes.

Insights from the climate scenario analysis are captured in a "traffic light" model. For each economic sector at each time horizon, the fund manager designates both physical risks and transition climate-related risks as high, moderate or low. Each score is determined using the difference in the values of a key climate factor (eg, carbon pricing, oil demand, litigation risk and flooding danger) under the business-as-usual and the 2°C scenarios. The larger the difference between the values, the larger the risk or opportunity.

In addition, the fund manager has developed a climate dashboard to track the speed of the transition to a low-carbon economy. It supports the assessment and management of climate-related risks and opportunities in a shorter time frame by monitoring the changes in 20 indicators to obtain an overall score.

Practice 26

A fund manager compared the carbon emissions of its Japanese and global equities portfolios with the 2°C, 4°C, and 6°C scenarios in the Paris Agreement. The results showed that the global equities portfolio is likely to reach the total carbon emissions permitted in the 2°C scenario earlier than its Japanese equities portfolio because it includes shares in the energy, materials and utilities sectors in emerging and developing countries where GHG emissions are increasing in tandem with economic growth.

Network of Central Banks and Supervisors for Greening the Financial System (NGFS) – scenario analysis

- NGFS has published a common framework for climate scenario analysis[10] which provides step-by-step guidance. It provides reference scenarios which can be used to explore the economic impact and financial risks of climate change, including three representative scenarios – orderly, disorderly and hot house world.

- These three scenarios cover pathways which meet the Paris Agreement targets of net zero CO_2 emissions by 2050 in an orderly or disorderly manner as well as pathways which fail to meet the Paris Agreement targets, resulting in severe physical risks and temperature increases over 2°C by 2050.

- NGFS has chosen scenarios which cover a range of higher and lower risk outcomes for CO_2 emissions, carbon prices, GDP impact and energy mix. This can also better harmonise transition pathways for scenario analysis amongst fund managers.

[10] See the *NGFS Climate Scenarios for central banks and supervisors*.

B 4. Disclosure

The above practical examples have also illustrated how disclosures can be made in relation to governance, investment management and risk management. Below are additional practical examples to illustrate how disclosures can be made when climate-related risks have been assessed to be irrelevant and how GHG emissions can be disclosed.

B 4.1 Strategies and funds where climate-related factors are not considered relevant

Practice 27

In its responsible investment statement, a fund manager specifies that there are some strategies for which ESG integration, including climate change analysis, is not applicable due to the style of the investment. For example, ESG factors are generally not integrated into quantitatively-driven products, passively managed accounts or strategies where portfolio turnover is high.

B 4.2 Disclosure of GHG emissions

Practice 28

A fund manager states that because investors increasingly want to know how CO_2-emission-intensive its portfolios are and invest in a low-carbon economy, it measures the environmental footprints of its funds. A comparison of the fund manager's sustainability equity strategy with the MSCI World Index showed that the companies in its portfolio have a smaller negative impact on the environment than the benchmark index, generating 72 metric tons of CO_2 emissions per US$1 million invested versus the benchmark's 153 metric tons.

Practice 29

A fund manager disclosed the carbon emissions and footprints of its portfolios, which include equity, fixed income, multi-asset and property, the coverage of holdings and the sources of its carbon data. The fund manager published calculations of the measures recommended by the TCFD, including Total Carbon Emissions, Carbon Footprint, Carbon Intensity and Weighted Average Carbon Intensity.

C. References

- *A call for action – Climate change as a source of financial risk*, NGFS, April 2019.
- *A Practical Guide to ESG Integration for Equity Investing*, PRI, 2016.
- *Final Report - Recommendations of the Task Force on Climate-related Financial Disclosures*, TCFD, June 2017.
- *Guide to climate scenario analysis for central banks and supervisors*, NGFS, June 2020.
- *Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures*, TCFD, June 2017.
- *Implementing the TCFD Recommendations - A Guide for Asset Owners*, PRI, 2018.
- *IPCC Special Report on Global Warming of 1.5°C*, Intergovernmental Panel on Climate Change (IPCC), 2018.
- *NGFS Climate Scenarios for central banks and supervisors*, NGFS, June 2021.
- *NGFS Occasional Paper – Case Studies of Environmental Risk Analysis Methodologies*, NGFS, October 2020.
- *NGFS Scenarios Portal*, NGFS.
- *Overview of Environmental Risk Analysis by Financial Institutions*, NGFS, September 2020.
- *PRI Reporting Framework 2020: Strategy and Governance*, PRI, November 2019.
- *Responsible Investment Policy Framework*, SBAI, March 2021.
- *SASB Materiality Map®*, SASB.
- *The Global GHG Accounting and Reporting Standard for the Financial Industry*, PCAF, November 2020.