UK Government

SEC

ASEAN Low Carbon Energy Programme

Series 1 – Climate-related disclosures and implementation

7 March 2022

EY Building a better working world

CARBON TRUST

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Program overview

7 March 2022

Series 1 – Climate-related disclosures and implementation

Subtopics:

1. Introduction to climate risk
2. Introduction to climate risk disclosure
3. Disclosure on governance
4. Disclosure on strategy
5. Disclosure on metrics and targets
6. Sharing session by True Corporation Public Company Limited

9 March 2022

Series 2 – Climate risk management, climate scenario analysis and implementation

Subtopics:

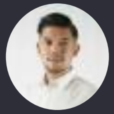
1. Setting the direction and framework
2. Disclosure on risk management
3. Scenario analysis
4. TCFD checklist

Main speakers

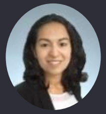
Nithawan Jarernporn
Partner, EY Corporate Services Limited

Wilaiporn Itthiwiroon
Partner, EY Corporate Services Limited

Russell Marsh
Director, EY Corporate Advisors Pte. Ltd



Nattapon Vasasmith
Senior Manager, EY Corporate Services Ltd



Sheena Narula
Manager, EY Corporate Advisors Pte. Ltd

What's on for today?

Date and time: 7 March 2022, 1:30 p.m. to 3:45 p.m.			
Introductions and opening speech	▸ Opening remarks by Khun Archinee Pattamasukhon, SEC ▸ Opening remarks by Khun Andrew Beirne, British Embassy Bangkok	10 mins	1:30 p.m. to 1:40 p.m.
Introduction to climate risk	▸ Risks arising from climate change ▸ Impact of climate risks on financial system and the wider economy	10 mins	1:40 p.m. to 1:50 p.m.
Introduction to climate risk disclosure	▸ Introduction to the Task Force on Climate-Related Financial Disclosures (TCFD) ▸ Why TCFD is gaining importance ▸ Core elements of TCFD recommendations ▸ When and how firms disclose their TCFD recommendations	15 mins	1:50 p.m. to 2:05 p.m.
Disclosure on governance	▸ Deep dive into the requirements of disclosure on governance ▸ Examples from TCFD adopters	10 mins	2:05 p.m. to 2:15 p.m.
Disclosure on strategy	▸ Deep dive into the requirements of disclosure on strategy ▸ Examples from TCFD adopters	20 mins	2:15 p.m. to 2:35 p.m.
Disclosure on metrics and targets	▸ Deep dive into the requirements of disclosure on metrics and targets ▸ Examples from TCFD adopters	25 mins	2:35 p.m. to 3:00 p.m.
Short break		5 mins	3:00 p.m. to 3:05 p.m.
Sharing session by Dr. Teerapon Tanomsakyut, Chief Innovation and Sustainability Officer at True Corporation PCL	▸ Experience and challenges faced by organization when implementing TCFD recommendations for governance, strategy and metrics and targets	20 mins	3:05 p.m. to 3:25 p.m.
Interactive Q&A session		20 mins	3:25 p.m. to 3:45 p.m.

Note: Case studies and examples from various sectors will be provided throughout the workshop for better understanding.

Welcome remarks

Ms. Archinee Pattamasukhon
Assistant Secretary-General (Stakeholders Relations),
The Securities and Exchange Commission of Thailand

Welcome remarks

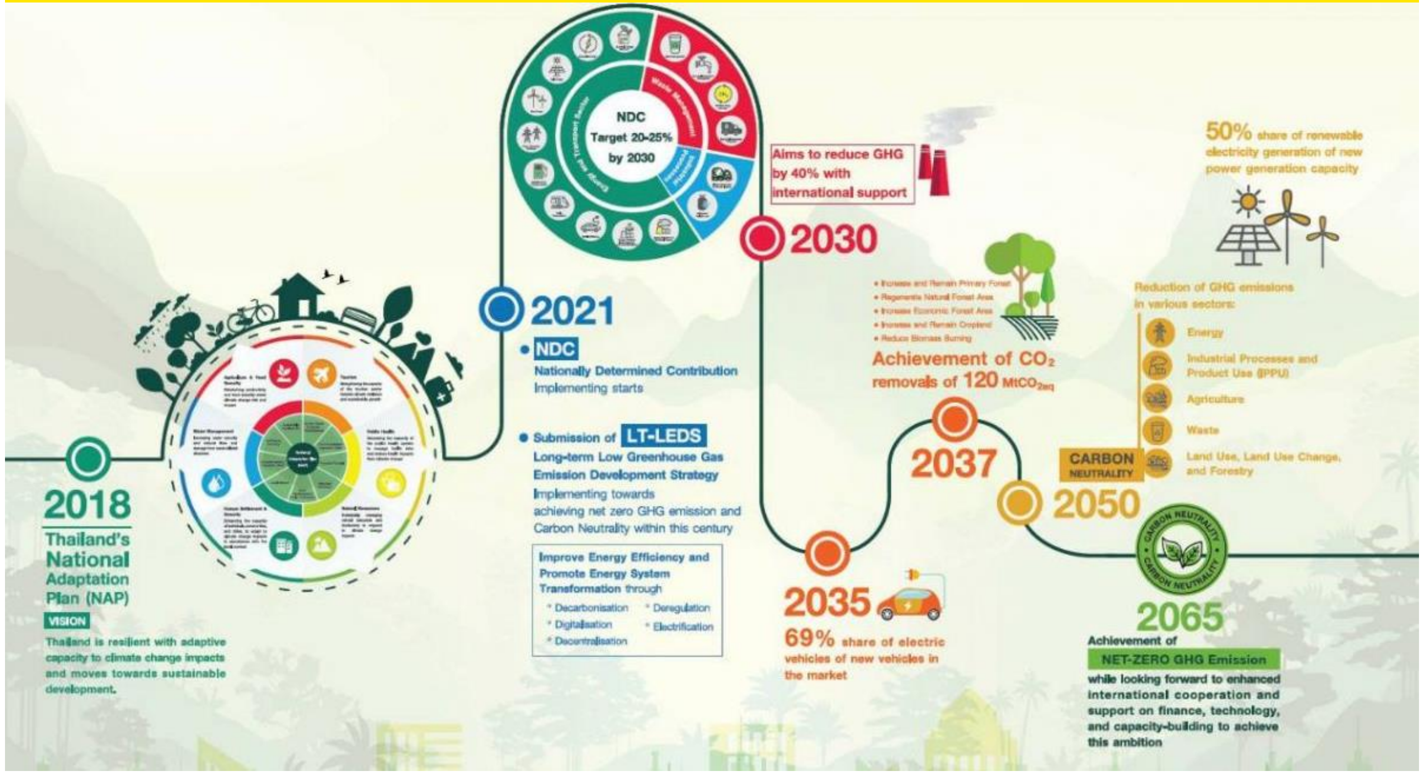
Andrew Beirne

Economic & Prosperity Counsellor, British Embassy Bangkok

Introduction to climate risk

What is climate change?

Thailand plans to reach carbon neutrality by 2050 and net zero by 2065



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Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere, and which is in addition to natural climate variability observed over comparable time periods.

We can view it as the change in global/regional patterns, and currently largely linked to the increased levels of concentration of greenhouse gases in the atmosphere.

United Nations Framework Convention On Climate Change (UNFCC)

Source: UNFCC Article 1 and Global Compact Network Thailand

Is climate change a real concern for us and our businesses?

Top 10 risks in terms of severity on a global scale

1. Climate action failure
2. Extreme weather
3. Biodiversity loss
4. Social cohesion erosion
5. Livelihood crises
6. Infectious diseases
7. Human environmental damage
8. Natural resource crises
9. Debt crises
10. Geoeconomic confrontation

The Global Risks Report 2021

Survey respondents were asked to assess the likelihood of individual global risk on a scale of 1 to 5, 1 representing a risk that is very unlikely to happen and 5 a risk that is very likely to occur.

Categories

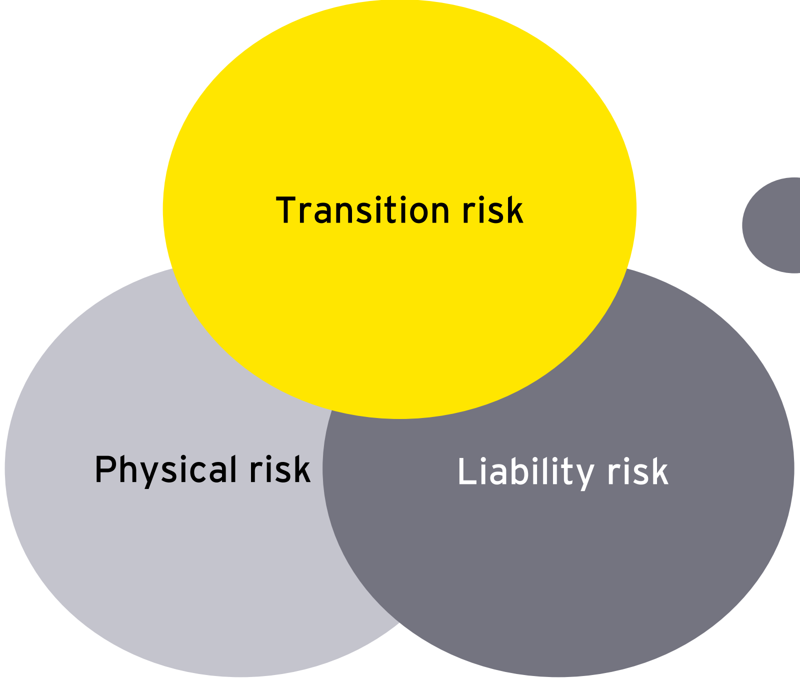
- Economic
- Environmental
- Geopolitical
- Societal
- Technological

Source: World Economic Forum Global Risk Survey 2021-2022

Risks arising from climate change

- Transition risk is the lack of preparedness to deal with the physical risk of climate change[1].
- It relates to adjustment to low-carbon economy due to regulatory reforms, technological advancement, shift in market sentiment and reputational risks due to social activism[2].

- Physical risk is the threat to tangible assets, which would in turn affect intangible assets[1].
- It directly impacts assets, financials, earnings or reputation due to the increased frequency or severity of adverse climate-related events[2].



- Liability risks relate to climate-related insurance claims under liability insurance policies and direct legal claims against the insured for failing to manage climate risks[2].
- The risks impact financial institutions, particularly the insurance sectors[2].

Sources: [1]TCFD, Final Report: Recommendations of the Task Force on Climate-Related Financial Disclosures, June 2017; [2]Bank Negara Malaysia, Climate Change and Principle Based Taxonomy, 27 December 2019 and 3Grantham Research Institute on Climate Change, Global trends in climate change litigation, 4 July 2019

Risks arising from climate change to Thailand

Thailand is considered to be highly vulnerable to climate variability and change. Increasing natural hazards, including heavy rain, floods and droughts, and sea level rise are impacting the coasts.

Climate change impacts that may affect Thailand

Coastal zones

- Studies have been conducted on extreme land subsidence along Thailand's coast, and the effects on coastal inundation and seawater intrusion.
- Sea level rise in the Gulf of Thailand ranged from 1.4-12.7mm/year between 1985 and 2009 - the largest factor being subsidence.
- Bangkok is susceptible to flooding, due to rising sea levels, sinking land and cyclone-induced storm surges.
- Land loss from sea-level rise will affect land use for tourism, import and export sectors and industrial zones.

Types of drought affecting Thailand

Meteorological

- Meteorological drought is usually associated with lack of rainfall.
- Thailand has approx. 4% median probability of facing severe meteorological drought.

Hydrological

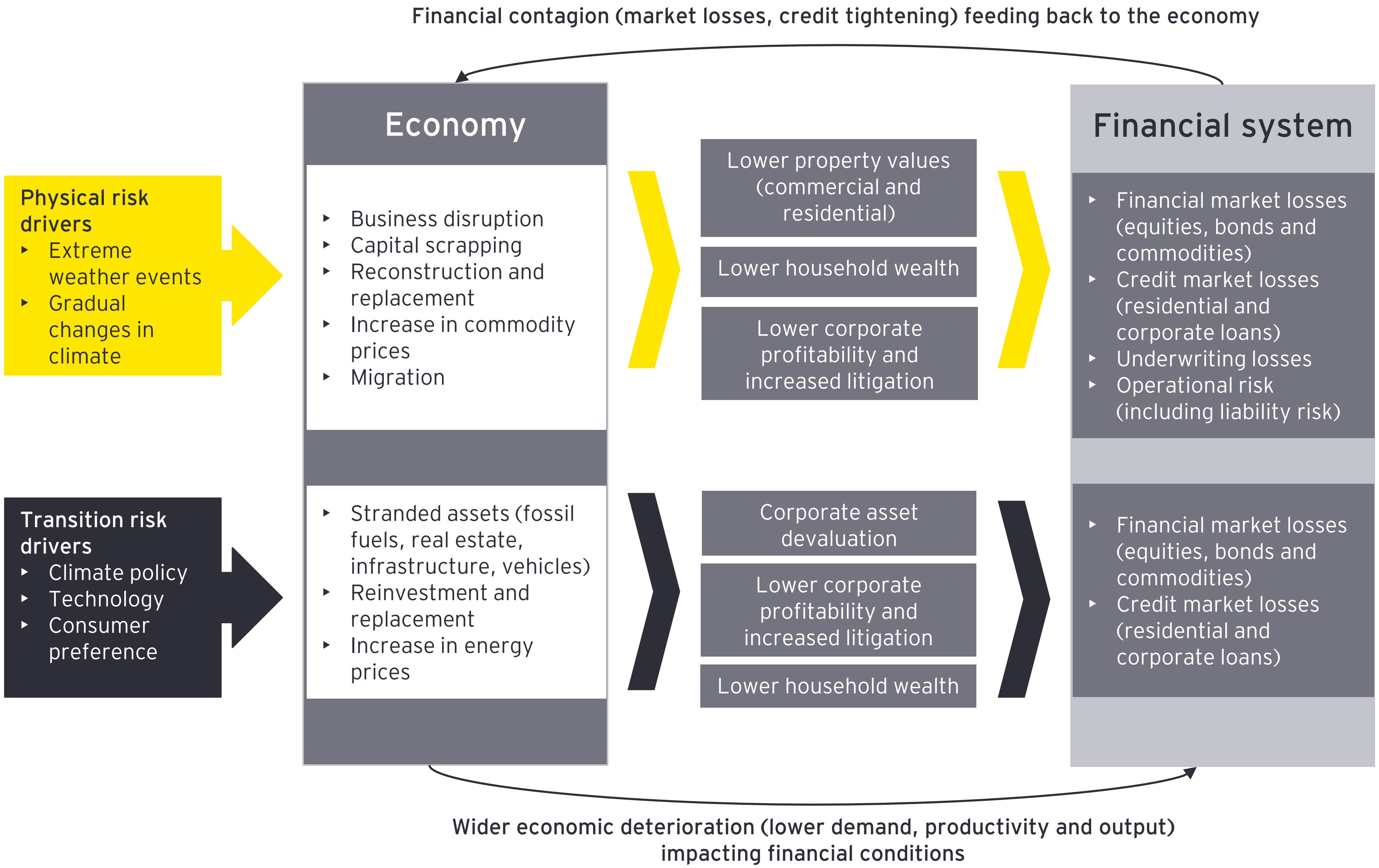
- Hydrological drought is usually associated with a deficit in surface and subsurface water flow.
- Potential origin is from the wider river basins.

Connection with PM2.5 – With increased drought and temperature, Thailand may face higher air pollution.

This combination is likely to increase the risk of forest fires, affecting the level of particulate matter (e.g. PM2.5) and negatively impacting population health and revenue from the tourism sector.

Source: Asean Development Bank and World Bank Group

Impact of climate risks on the financial system and the economy



Source: Network for Greening the Financial System (NGFS), Call for Action Report, 2019

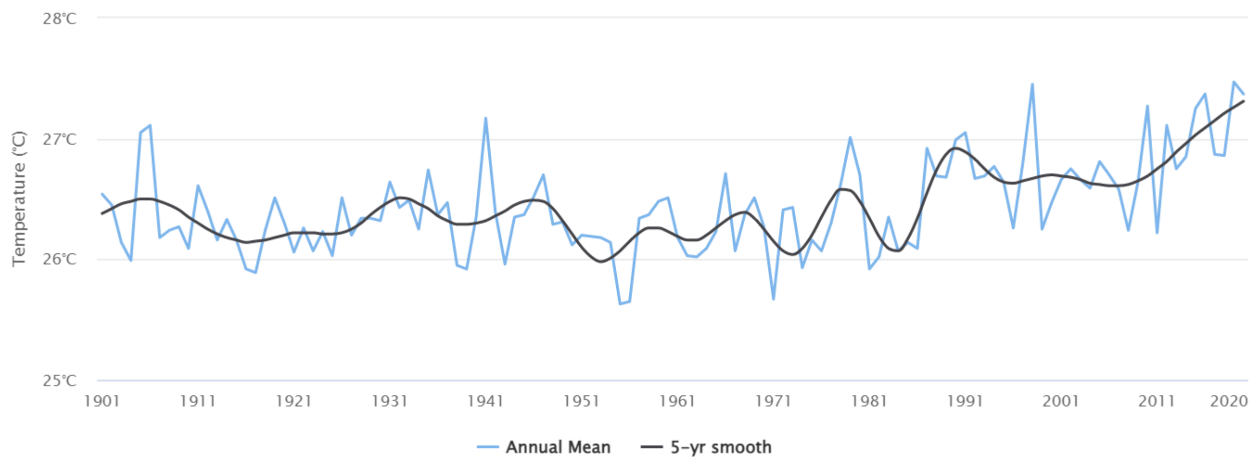
Financial and business impacts of climate risks in various sectors

- **Agriculture**
  Climate change may significantly affect the Thai agricultural sector, due to its location in the tropics where agricultural productivity is particularly vulnerable
  - Decreases in rainfall during the rice productive phase (September and October) and increases in temperature could affect rice yield
  - The ADB report[1] states that rain-fed rice yields may decrease by 10% by 2080 under the RCP 8.5 emissions pathway, and crop water productivity may decrease by 29% by 2080 under the same emissions pathway.

- **Food & Beverage**
  Climate change is expected to worsen the frequency, intensity, and impacts of certain types of extreme weather events. This impacts ecosystems and biodiversity, global resources, human wellbeing and security, and economic development. Potential impacts that may affect the industry include
  - Increased cost of water sourcing and treatment
  - Potential enforcement of water tariffs, laws and legal obligations regarding watersheds in the areas where factories are located
  - Availability of commodities and price fluctuations

- **Energy**
  - One concern is that the increased focus on climate change and the push toward decarbonization could bring about changes in policies such as carbon taxes, emission trading schemes or increased restrictions on conventional power generation that could affect the industry's revenue and operations

Annual mean temperature (°C) in Thailand over the period 1901-2020



Sources: [1]Climate Risk Country Profile, Thailand, Asean Development Bank, The World Bank Group; Thai Beverage Pcl., Annual Report, 2021; Climate Change Knowledge Portal, World Bank

Introduction to climate risk disclosure

Question time

How would you assess your organization's level of readiness to manage climate risks?

Please use the poll to give your answer.

Question time

How would you describe your level of awareness of climate risk disclosure?

Please use the poll to give your answer.

Drivers of climate risk disclosure in 2022

Increasing regulation

- The Task Force on Climate-Related Financial Disclosures (TCFD) is a widely-known disclosure framework. Many regulators have begun to enforce climate disclosure for listed corporations.
- The EU Taxonomy Regulation led regulatory adoption in 2020, increasing the granularity and transparency of sustainability-related disclosures.

Access to capital requirements

- TCFD is the ESG disclosure used by two-thirds of investors surveyed by the EY Global Institutional Investor Survey.
- Businesses are expected to adopt emissions targets aligned with the Paris Agreement and commit to climate action by investors.
- Setting a net zero target isn't enough: companies are expected to calculate and disclose climate-related physical and financial risks to their assets and have a credible energy transition plan.
- Without climate risk disclosure, including a low-carbon strategy, capital may quickly disappear.

Customer and talent

- 64% of those surveyed under the Peoples' Climate Vote, a UNDP and Oxford survey conducted in 2021, consider the climate crisis as a "global emergency".
- Low carbon footprint is considered a criteria of customers' decision when selecting brands and of employees when applying for jobs.

Source: EY Global Climate Risk Disclosure Barometer, June 2021

Risks of non-disclosure

Punishment by asset managers

- A growing number of large asset managers have warned companies that they will actively punish the board executives if they do not improve their pollution disclosure.

Increased legal exposure

- In 2007, the Office of the New York State Attorney General (NYAG) issued subpoenas to several energy companies relating to non-disclosure of climate change risks.
- Investigation was prompted by concerns that investors were being denied information about the companies' plans to build and operate coal-fired power plants, which represented a significant financial risk due to the potential liabilities associated with GHG emissions.
- Three of these energy companies eventually reached settlements with the NYAG in which they agreed to disclose material financial risks related to the effects of climate change.

Increased compliance risk

- In many countries, companies and directors have obligations under national laws to assess, manage and report on climate risk. These legal obligations typically fall into two categories:
  1. Reporting obligations and
  2. Directors' duties to act in the best interests of the company and to exercise due care and diligence when performing their functions
- For many companies, climate risk assessment, management and disclosure will be necessary to comply with these legal obligations.

Sources: Commonwealth Climate and Law Initiative, University of Oxford, 2017; Managing the Transition to a Net-Zero Economy, G30, 2020; Corporate (Non)disclosure of Climate Change Information, Columbia Law Review, 2019, The Financial Times, 2019 and HM Treasury, November 2020

Introducing the TCFD

The Challenge

- Investors, lenders and insurers are not able to evaluate which companies will survive or thrive as the climate changes and decarbonization regulations, new technologies and behavioral change emerge.
- There is no standardized approach to disclose climate-related financial information, which prevents financial markets from pricing climate-related risks and opportunities. This may lead to rapid changes in prices and costs as conditions change.

What is the Task Force on Climate-Related Financial Disclosures?

- The Financial Stability Board (FSB) developed TCFD with the goal to drive more informed investment, credit and insurance underwriting decisions and increase stakeholder understanding of climate-related risks.
- The TCFD seeks to develop recommendations for voluntary climate-related financial disclosures that are consistent, comparable, reliable, clear, and efficient, and provide decision-useful information to lenders, insurers and investors.

Source: TCFD website

Introducing the TCFD

The Founders

- The TCFD's 32 members were chosen by the Financial Stability Board (FSB), a body that monitors and make recommendations to promote international financial stability. The 32 members include both users and preparers of disclosures from across the G20 constituency covering a range of economic sectors and financial markets.
- The TCFD is chaired by Michael R. Bloomberg.
- The work and recommendations of the Task Force will help firms to understand what financial markets want from disclosure in order to measure and respond to climate change risks and encourage firms to align their disclosures with investors' needs.

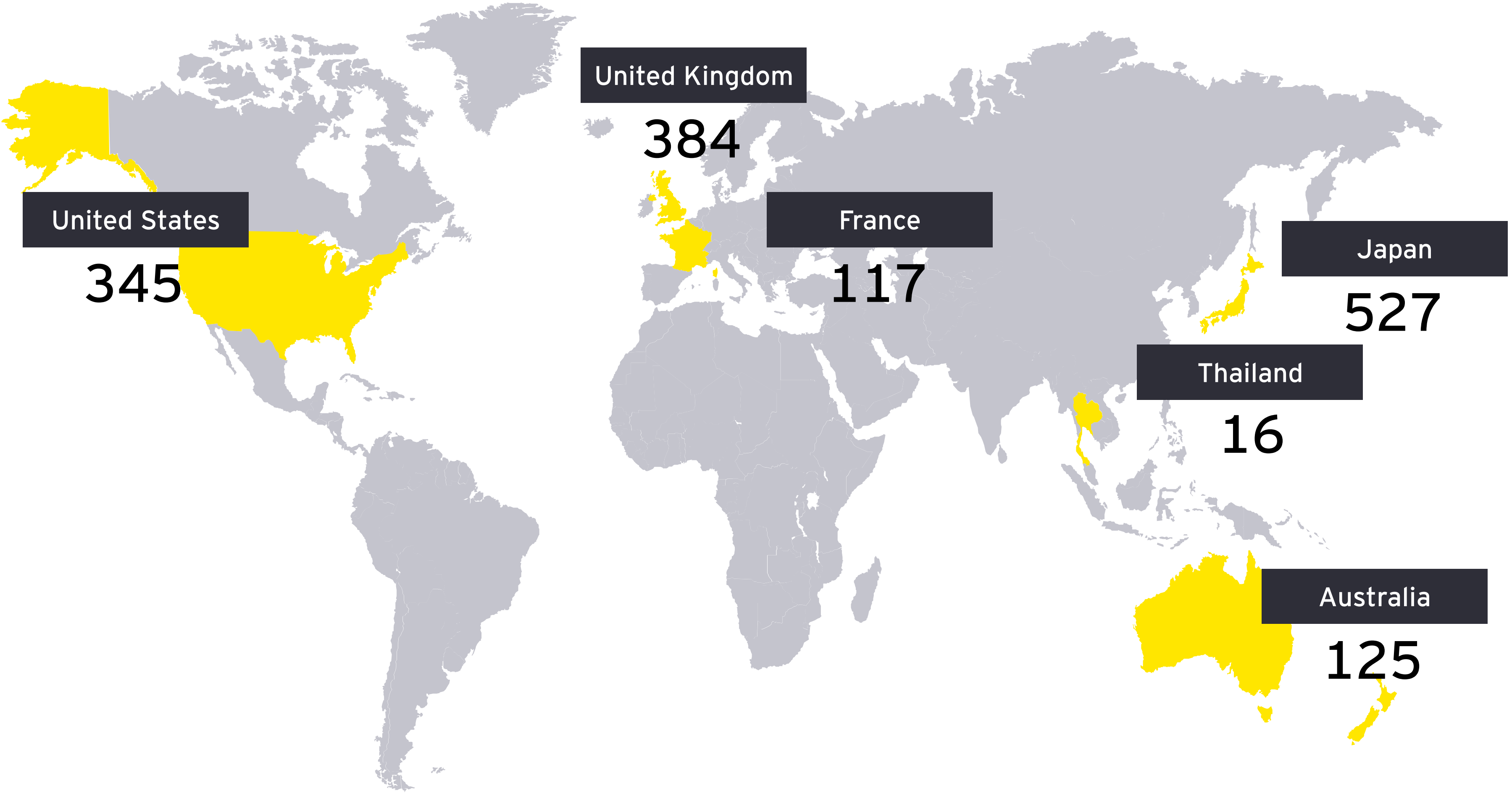
TCFD's Mission

- The TCFD considers the physical, liability and transition risks associated with climate change in developing recommendations and what constitutes effective financial disclosures across industries.
- As companies and investors greater understand the financial implications of climate change, investments would be channeled into sustainability solutions, opportunities and business models.

Source: TCFD website, FSB

Organizations supporting TCFD

As of October 2021, support for the TCFD has grown to over **2,600 organizations**, representing a combined market capitalization of **US$25 trillion**. The below map shows the top five countries of TCFD adopters and Thailand.



Source: TCFD, Task Force on Climate-related Financial Disclosures, Status Report, 2021

Why disclose your climate-related risks in line with TCFD?

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By firms revealing their preparedness, their impact of these (climate change) changes on their business, that alleviates some of the uncertainties and can actually raise the value of their stocks and bonds.

Richard Cantor
Chief Risk Officer, Moody's

The UK has recently announced its plan to mandate large companies and financial institutions to report their impact on climate by 2025 in line with TCFD.

Why is this important?

- Better access to data will **enhance how climate-related risks are assessed, priced, and managed.** Companies can more effectively measure and evaluate their own risks and those of their suppliers and competitors.
- TCFD represents an opportunity to bring climate-related financial reporting to a **mainstream audience.**
- The TCFD engages extensively with key stakeholders to ensure that it builds on existing work and **produces recommendations that can be used by the private sector, globally.**
- Internationally-recognized sustainability ratings and indices including CDP (formerly Carbon Disclosure Project) and the Dow Jones Sustainability Indices (DJSI) have also revised their assessments to be aligned with the TCFD recommendations. Implementing the recommendations can therefore help a **company to perform better on climate-related aspects.**

Source: TCFD website

Comparisons of TCFD with other international reporting frameworks

	TCFD	Form 56-1 One Report	Global Reporting Initiative (GRI)	Carbon Disclosure Project (CDP)	Dow Jones Sustainability Indices (DJSI)
Year launched	2017	2021	1997	2002	1999
Users	Investors, lenders and insurers	Regulators, investors, lenders and insurers	Broad set of stakeholders	Investors, companies, cities, states and regions	Businesses and investors
Form of Report	Annual financial filings (e.g., annual report)	Annual financial filings	Corporate sustainability reports, annual reports and integrated reports	CDP Questionnaire	Corporate sustainability reports, annual reports, integrated reports and company websites
Purpose	Encouraging firms to align climate-related risk disclosures with investors' needs. TCFD is intended to accompany a chosen framework, not to replace it	Combining the annual registration statement (Form 56-1) and annual report (Form 56-2) to streamline disclosure and promote ESG disclosure for listed companies	Helping organizations report on economic, environmental, and social impacts considering a wide range of interests	Helping companies get ahead of regulatory and policy changes, identify and tackle growing risks	Evaluating the sustainability performance of listed companies and operated under S&P Dow Jones Indices and SAM (Sustainable Asset Management)
Scope	The TCFD disclosures are organized in four broad sections: Governance, Strategy, Risk, and Metrics. As such, TCFD is more of a "top-down" structure – in contrast with CDP (for example) that begins with carbon reporting and expands from there	The One Report requires sustainable management policy and targets, description of how the organization manages its environmental and social impacts on stakeholders, and disclosure of governance policy, structure and progress	GRI also addresses Governance topics, with special emphasis on governance structures and stakeholder engagement	Scope is limited – growing out of the initial sole focus on carbon/GHG. Even with additions to the CDP scope (e.g., supply chain, forests, water), the scope remains narrowly focused on environment	Only invited companies based on float-adjusted market capitalization can submit the Corporate Sustainability Assessment (CSA) to be considered for index inclusion

Source: ESG Navigator; 'ABCs of ESG Ratings/Reporting'; S&P Global, 'DJSI Index Family', S&P Global; Thai SEC

Core elements of recommended climate-related financial disclosures

Governance

The organization's governance around climate-related risks and opportunities

Strategy

The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning

Risk management

The processes used by the organization to identify, assess and manage climate-related risks

Metrics and targets

The metrics and targets used to assess and manage relevant climate-related risks and opportunities

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

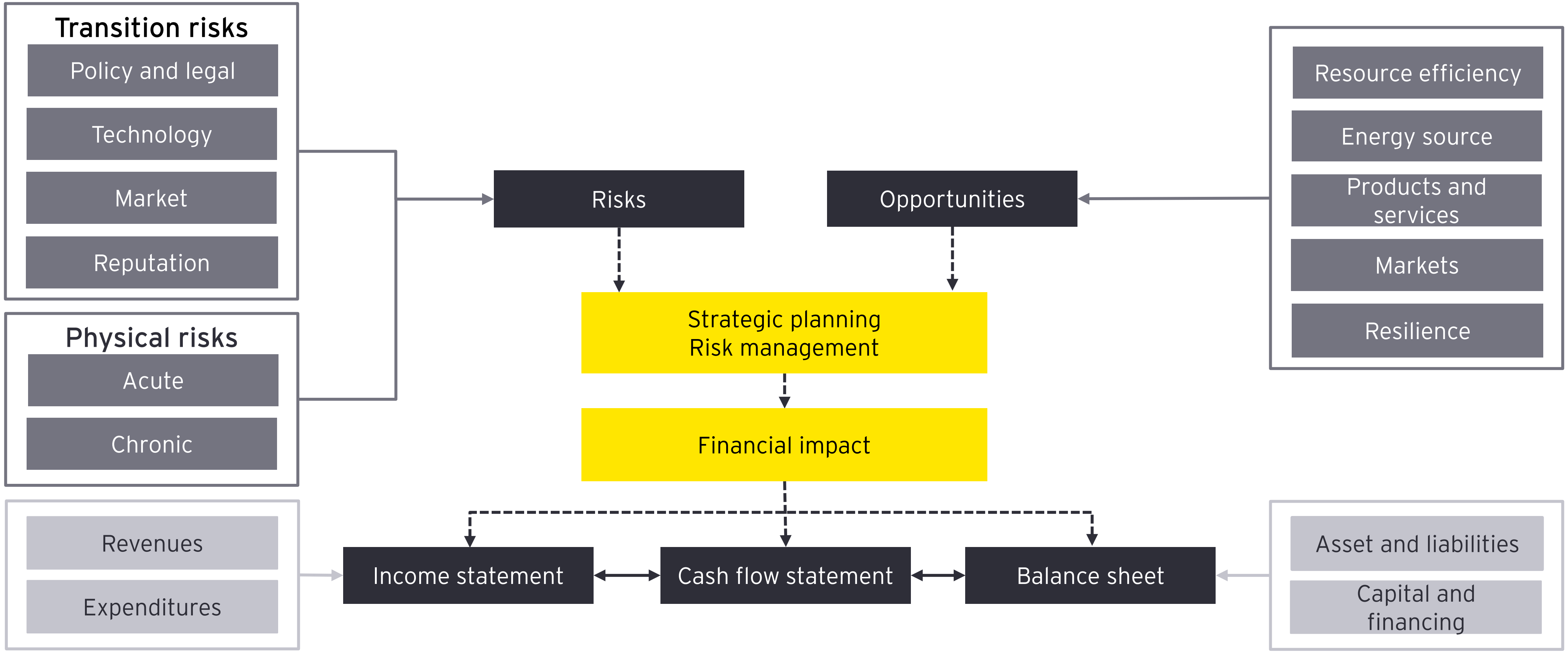
Core elements of the TCFD recommendations

Governance	Strategy	Risk management	Metrics and targets
Disclose the organization's governance around climate-related risks and opportunities	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning where such information is material	Disclose how the organization identifies, assesses and manages climate-related risks	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material
Recommended Disclosures	**Recommended Disclosures**	**Recommended Disclosures**	**Recommended Disclosures**
a) Describe the board's oversight of climate-related risks and opportunities	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term	a) Describe the organization's processes for identifying and assessing climate-related risks	a) Describe the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process
b) Describe the management's role in assessing and managing climate-related risks and opportunities	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning	b) Describe the organization's processes for managing climate-related risks	b) Describe Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks
	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	c) Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets

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

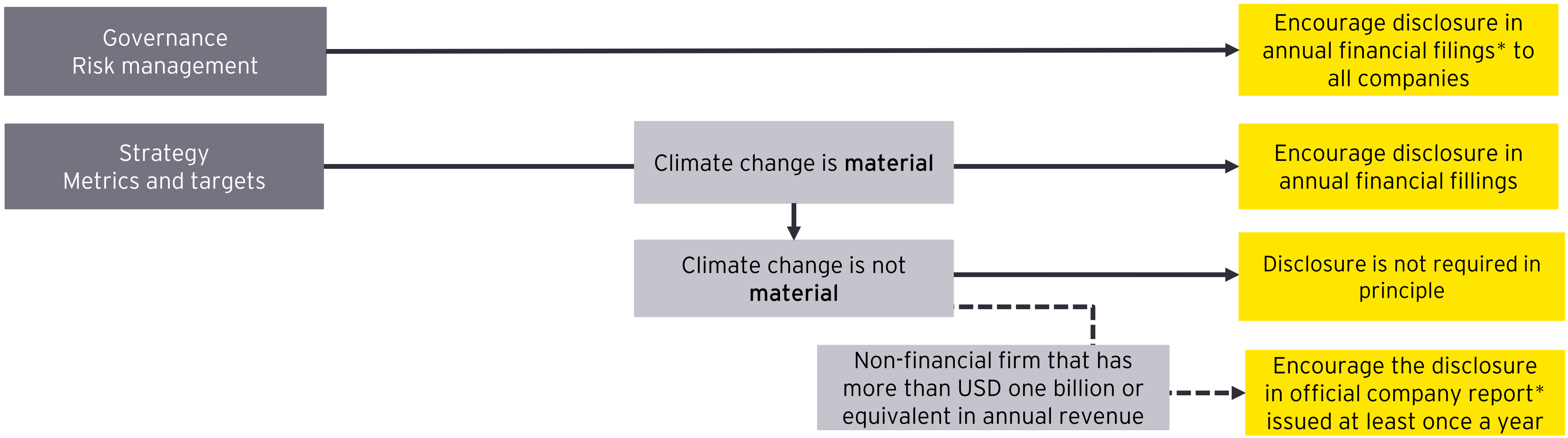
TCFD: Climate-related risks and opportunities

TCFD focuses on the financial impact of climate-related risks and opportunities on an organization, rather than the impact of an organization on the environment.



Source: TCFD, Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures pg. 8, June 2017

When and how do firms disclose their TCFD commitments?



*reporting in reports other than financial report is permitted

*Financial filings refer to the annual reporting packages in which organizations are required to deliver their audited financial results under the corporate, compliance, or securities laws of the jurisdictions in which they operate.

Other possible ways of disclosure

1 **Integrated report, annual report**	Reports that compile both financial information and non-financial information including sustainability-related information of companies
2 **Environmental report, sustainability report, CSR report, etc.**	Voluntary disclosure mediums for non-financial information

Sources: TCFD, Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures, June 2017; Ministry of Trade, Economy and Industry of Japan, TCFD Guidance, 2018

Percentage of companies disclosing TCFD-aligned information tends to increase with company size

Recommendation	Recommended disclosure	< US$3.4 billion market capitalization (540)	US$3.4 billion - 12.2 billion market capitalization (541)	> US$12.2 billion market capitalization (542)
Governance	a) Board oversight	12%	24%	39%
	b) Management's role	10%	18%	27%
Strategy	a) Risks and opportunities	38%	52%	67%
	b) Impact on organization	30%	36%	51%
	c) Resilience of strategy	5%	13%	20%
Risk management	a) Risk identification and assessment processes	16%	31%	42%
	b) Risk management processes	17%	30%	41%
	c) Integration into overall risk management	12%	26%	41%
Metrics and targets	a) Climate-related metrics	31%	43%	57%
	b) Scope 1,2,3 GHG emissions	26%	36%	50%
	c) Climate-related targets	19%	30%	54%

Low to high percentage of disclosure

Source: TCFD, Annual Status Report, October 2020

Content

Elements of TCFD recommendations that we will go through today:

1	2	3
Disclosure on governance	Disclosure on strategy	Disclosure on metrics and targets

Along with examples of disclosure on governance, strategy, metrics and targets from various sectors

Content

About this topic

1

Disclosure on governance

1.1 Board's oversight on climate-related risks and opportunities

- Overall tone from the top regarding climate-related issues, including consideration of climate-related issues when reviewing strategic plans, policies and setting performance objectives

1.2 Management's role in assessing and managing climate-related risks and opportunities

- Clear responsibilities at the management level to manage, monitor and report climate-related risks and opportunities

Question time

How would you describe your understanding of the TCFD recommendations?

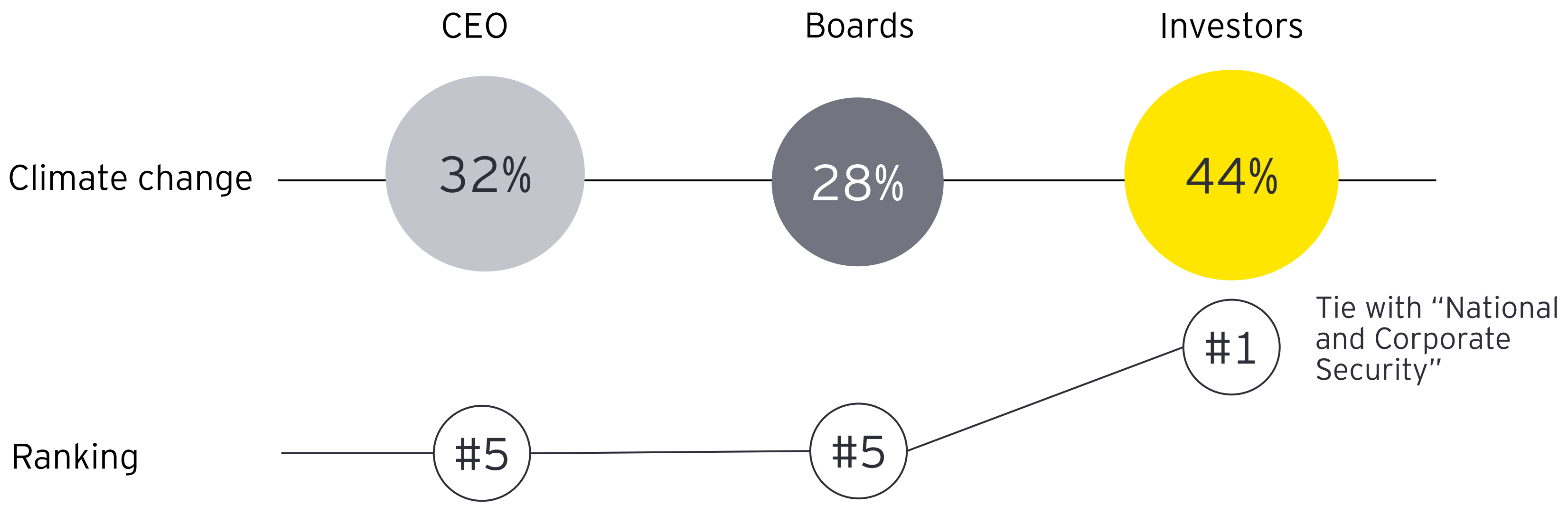
Please use the poll to give your answer.

1.1 Board's oversight of climate-related risks and opportunities

Prioritization gap between investors, CEOs and Boards on climate change

The 2019 EY CEO Imperative Study – a survey of CEOs, board directors and institutional investors from the world's largest companies and firms – found that:

What are the top three global challenges in terms of their potential to harm business growth and the global economy over the next 5–10 years?



Tackling climate change means organizations need to work collaboratively with everyone to find innovative ways to address the climate emergency and broader global challenges.

Investors are already fully behind them. Boards now need to take the lead.

Source: EY, *How Your Board Can Drive Transformative Action on Climate Change, 2019*

Boards should disclose their governance approach on climate-related risks and opportunities as recommended by TCFD

G (a) Describe the board's oversight on climate-related risks and opportunities

- Processes and frequency by which the board and/or board committees (e.g., audit, risk, or other committees) are informed about climate-related issues
- Whether the board and/or board committees consider climate-related issues when reviewing and guiding strategy, major plans of action, risk management policies, annual budgets and business plans as well as setting the organization's performance objectives, monitoring implementation and performance and overseeing major capital expenditures, acquisitions and divestitures
- How the board monitors and oversees progress against goals and targets for addressing climate-related issues

G (b) Describe management's role in assessing and managing climate-related risks and opportunities

- Whether the organization has assigned climate-related responsibilities to management-level positions or committees; and, if so, whether such management positions or committees report to the board or a committee of the board and whether those responsibilities include assessing and/or managing climate-related issues
- Description of the associated organizational structure(s)
- Processes by which management is informed about climate-related issues
- How management (through specific positions and/or management committees) monitors climate-related issues

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

How can organizations structure their disclosures on the board's role in addressing climate-related risks and opportunities?

Baseline disclosures A

- **Organizational chart** that illustrates which board committee(s) are responsible and the frequency
- Summary of **key issues and initiatives discussed** in the current reporting period
- **ESG experience** of board members in a summary of board credentials and experience and/or individual biographies
- Acknowledgment of the connection (if any) between management of **climate-related risks and board compensation**

Advanced considerations B

- **Separate committee(s)** that report to the board of directors for climate-related matters with clear descriptions of their roles and responsibilities
- Organizational chart that **illustrates how those committee(s) roll up into the board**
- Details of the **board member incentives linked to climate initiatives** and a description of the criteria for the incentive compensation, including connection to specific metrics
- **Description of interaction among steering groups** and committees to facilitate knowledge sharing

Current disclosure practices of reporters:

- Organizational structure
- How the governance bodies are briefed
- Frequency of board meetings or committees
- What board reviews (e.g., objectives, strategy, plans and feedback)
- How they identify climate issues compared to other priorities

Source : [1]EY IIF UNEPFI, TCFD Report Playbook, 2020; [2]Institute of International Finance, Climate-related Financial Disclosures, Examples of Leading Practices in TCFD Reporting by Financial Firms, 2019; [3]World Economic Forum, How to Set Up Effective Climate Governance on Corporate Boards, 2018

Example from TCFD adopter

Real Estate | Example: CapitaLand, Singapore

CapitaLand discloses its strategic sustainability management structure A

CapitaLand's strategic sustainability management structure consists of CapitaLand Sustainability Council, CapitaLand Management Council and Sustainability Work Teams under the Board of Directors.

CapitaLand Sustainability Council reports to the CapitaLand Board. The Sustainability Council consists of selected CapitaLand Board's independent directors and members of the CapitaLand Executive Committee. The Board is also updated regularly through the Risk Committee and Audit Committee regarding related sustainability risks and business malpractice incidents.

The CapitaLand Board sets the Group's risk appetite, which determines the nature and extent of material risks that the Group is willing to take to achieve strategic and business objectives. The risk appetite incorporates environment, social and governance (ESG) factors such as fraud, corruption and bribery, environment, health and safety.

Source: CapitaLand Global Sustainability Report 2020

Example from TCFD adopter

Energy | Example: BP Group (BP), United Kingdom

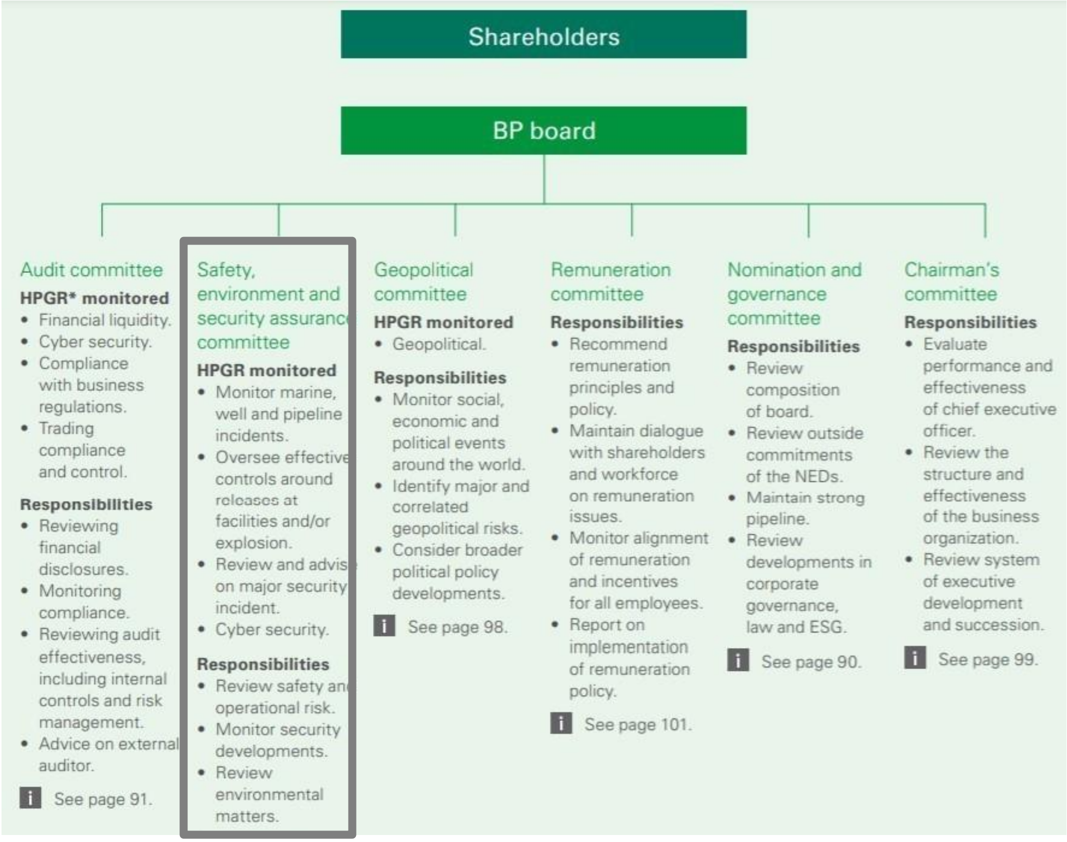
A Organizational chart that illustrates which board committee(s) are responsible and the frequency

The board is responsible for the overall conduct of the group's business, which extends to setting the BP's strategy and approach to the energy transition. The board and its associated committees, where appropriate, have oversight of climate-related matters (which include issues and opportunities) and are updated on these matters as frequently as necessary. In 2019, climate matters were included on the agenda for each of the six board meetings. This informed the board's consideration of strategy.

The process by which the board is updated on climate-related matters is managed by the company secretary's office and depends on the topic being discussed. In 2019, these processes included briefings with subject matter experts from the business and the preparation and consideration of corporate reporting documents. The board has reviewed the consistency of BP's current strategy with the Paris goals.

BP's organization chart presents the Safety, environment and security assurance committee separate from other committees with its roles and responsibilities.

B Separate committee(s) that reports to the board of directors for climate-related matters with clear descriptions of their roles and responsibilities



Source: Sustainability Report 2019, BP PLC

EY

Example from TCFD adopter

Services | Example: Canadian National Railway (CN), Canada

Organizational chart that illustrates which board committee(s) are responsible and the frequency A

The role of the Board is to supervise the management of CN's business and affairs, with the objective of increasing shareholder value. This includes the monitoring of internal controls, ensuring that an appropriate risk assessment process is in place to identify, assess and manage the principal risks of CN's business and financial strategy.

CN has identified climate change as one of its enterprise risks as the business is exposed to transition and physical risks and opportunities. As such, CN's Board supervises CN's management of climate-related risks and opportunities. All Board directors receive regular updates on the company's climate change and fuel efficiency strategies and performance toward targets as part of the briefing materials provided before each Board meeting, approximately ten times per year. In addition, Board members receive CN's sustainability report, which includes specific information on the company's carbon management strategy and performance.

Summary of **key issues and initiatives discussed** within the current reporting period A

In 2019, the Audit Committee reviewed the results of the Enterprise Risk Management (ERM) program and made the decision to approve the identification of 19 net risks, which included climate change physical risks. Specifically, they approved climate risk mitigation controls, MD&A disclosure, initiatives to integrate climate risk management activities into the 2020-2022 business plan, as well as other climate-related disclosure commitments such as support for the Task Force on Climate-related Financial Disclosures recommendations.

CN's Board obtains critical matter reports every quarter.

Source: CN Task Force on Climate-related Disclosure Report, 2019

1.2

Management's role in assessing and managing climate-related risks and opportunities

Management should disclose their governance approach on managing climate-related risks and opportunities as recommended by TCFD

G (a) Describe the board's oversight of climate-related risks and opportunities

- Processes and frequency by which the board and/or board committees (e.g., audit, risk, or other committees) are informed about climate-related issues
- Whether the board and/or board committees consider climate-related issues when reviewing and guiding strategy, major plans of action, risk management policies, annual budgets and business plans as well as setting the organization's performance objectives, monitoring implementation and performance and overseeing major capital expenditures, acquisitions and divestitures
- How the board monitors and oversees progress against goals and targets for addressing climate-related issues

G (b) Describe management's role in assessing and managing climate-related risks and opportunities

- Whether the organization has assigned climate-related responsibilities to management-level positions or committees; and, if so, whether such management positions or committees report to the board or a committee of the board and whether those responsibilities include assessing and/or managing climate-related issues
- Description of the associated organizational structure(s)
- Processes by which management is informed about climate-related issues
- How management (through specific positions and/or management committees) monitors climate-related issues

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

How can organizations structure their disclosures on management's roles in managing climate-related risks and opportunities?

Baseline disclosures[1] A

- **List of management level committees and/or functions** (e.g., Environmental and Social Risk Management function) related to climate change management
- **Frequency of committees or executives reporting** to the board to assess and manage climate-related risks and opportunities
- Acknowledgment of the connection between management of **climate-related risks and management compensation**

Advanced considerations[1] B

- **Details of the incentive structure** linked to climate initiatives and a description of the criteria for the incentive compensation, including the connection to specific metrics

Current disclosure practices of reporters:

- Organizational structure
- Responsibilities of the management and relevant committees in identifying, assessing and managing climate-related risks and opportunities
- Management systems and defined management accountability

Source : [1]EY IIF UNEPFI, TCFD Report Playbook, 2020; [2]Institute of International Finance, Climate-related Financial Disclosures: Examples of Leading Practices in TCFD Reporting by Financial Firms, 2019
TCFD, Task Force on Climate-related Financial Disclosures, Status Report, 2021

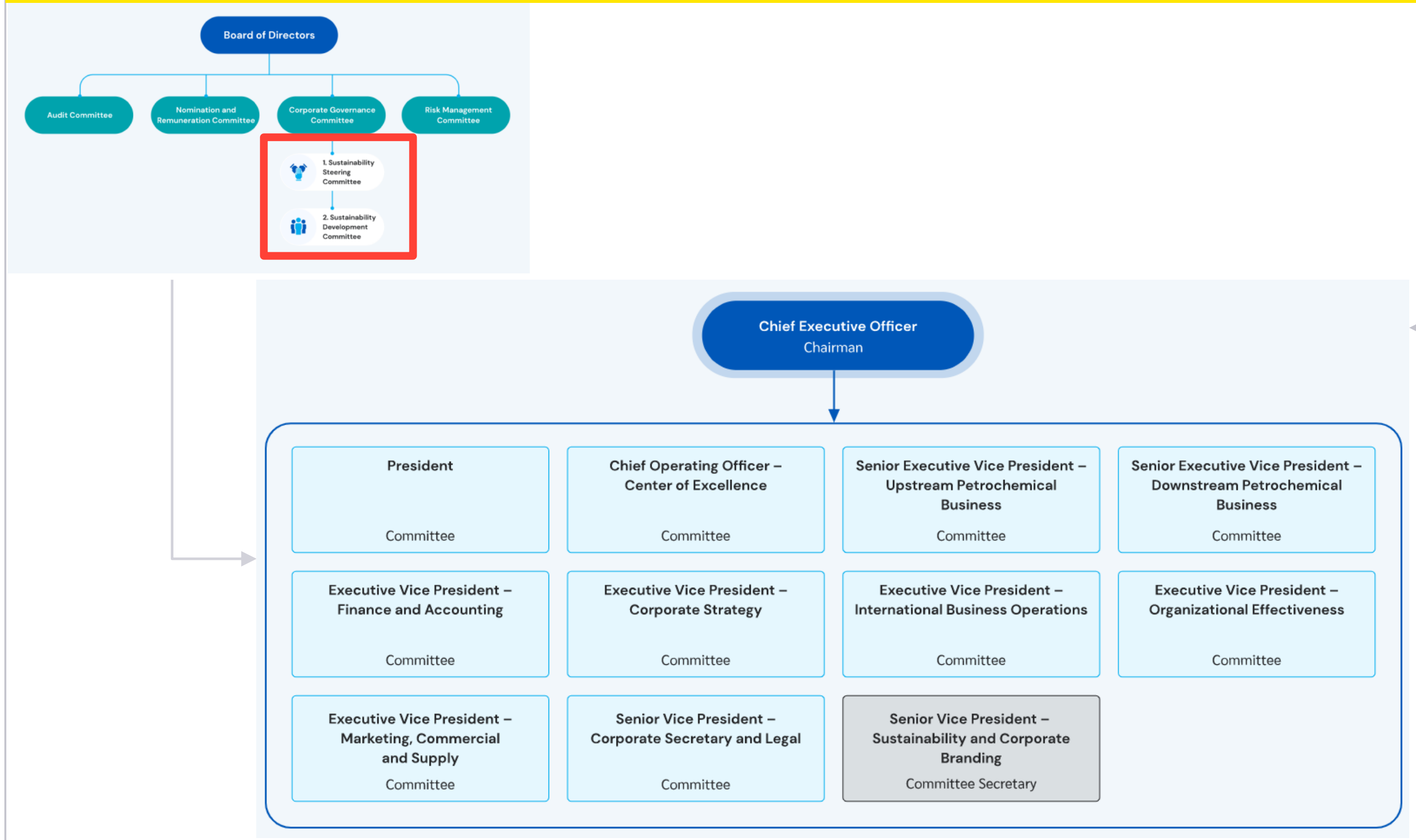
Example from TCFD adopter

Chemicals

Example: PTT Global Chemical Public Company Limited, Thailand

List of management level committees and/or functions related to climate change management

A



Sustainability Steering Committee (SSC)

The SSC, whose Chairman is the CEO, reports to the Corporate Governance Committee.

Sustainable Development Committee (SDC)

The SDC reports to the SSC, and is established to govern the strategic direction of the mitigation of climate change-related issues e.g., GHG reduction target setting and refinement of project investment plans.

Source: PTT Global Chemical, TCFD Report 2021

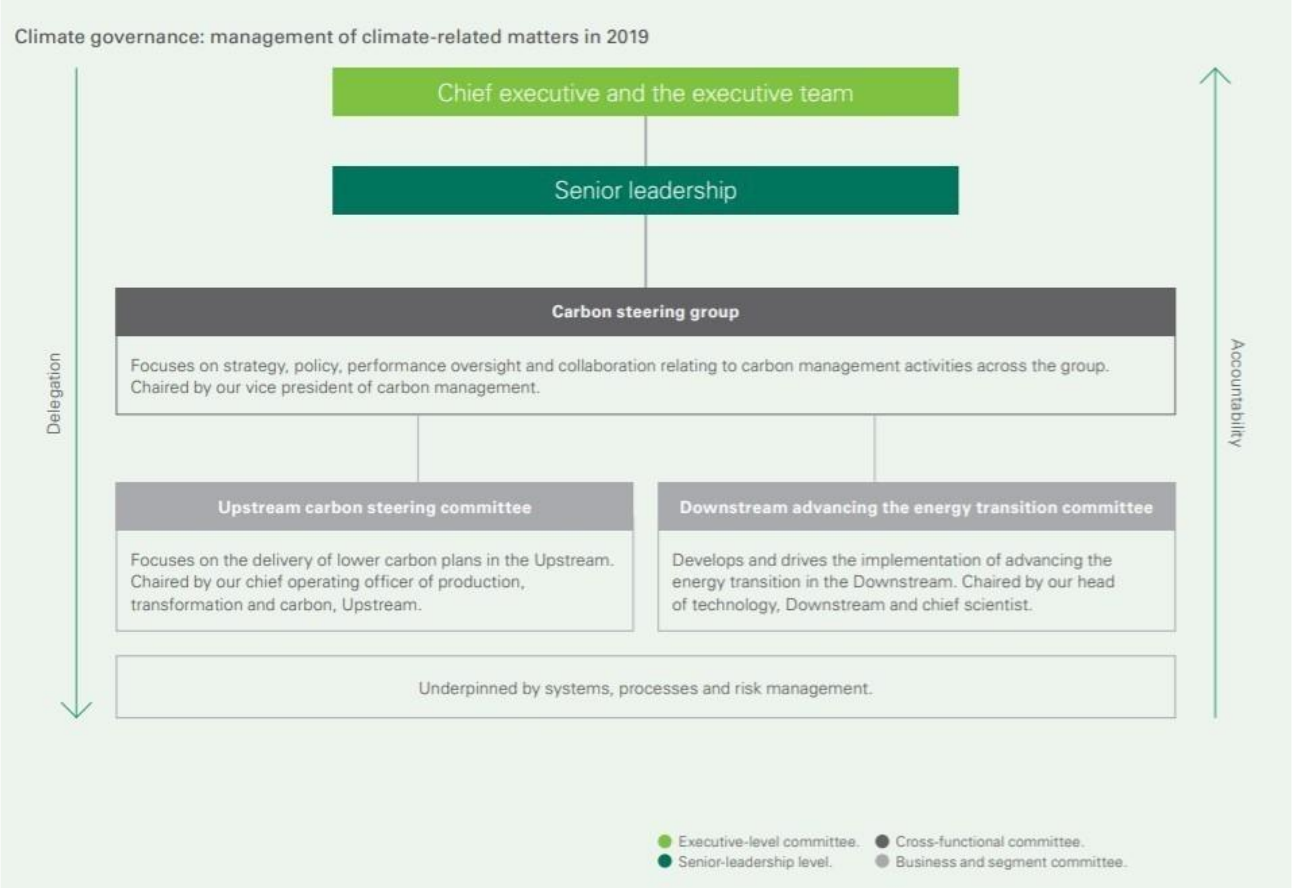
Example from TCFD adopter

Energy

Example: BP Group (BP), United Kingdom

List of management level committees and/or functions related to climate change management

A



BP has defined the roles and responsibilities in each management level for climate risk matters management including accountability and delegation flow.

Source: BP PLC, Sustainability Report 2019

Example from TCFD adopter

Transport

Example: Canadian National Railway (CN), Canada

Frequency of committees or executives reporting to the board to assess and manage climate-related risks and opportunities A

Executive Leadership
The Executive Vice-President and Chief Operating Officer (COO) is the highest-level management position with direct responsibility for climate-related issues. As part of the Executive Leadership Team, the COO reports directly to the President and Chief Executive Officer (CEO) and the Board on climate-related risks and opportunities, including fuel efficiency, winter readiness plans, and rail network resiliency and safety.

In parallel, the Chief Financial Officer (CFO), working with the Vice-President Financial Planning, provides executive management oversight on CN's carbon strategies. With climate-related risks and opportunities impacting the business, the Financial Planning and Sustainability function needs to have direct responsibility for ensuring CN proactively identifies climate-related risks and opportunities, and for ensuring the company establishes the right policies and programs to meet regulatory compliance obligations, corporate targets, and effectively mitigate potential risks.

Sustainability Committee
The mandate of CN's Sustainability Committee is to monitor, assess, propose, and initiate mitigation measures for sustainability risks and opportunities, including climate-related matters. The committee comprises Director- and Senior Management-level representatives from relevant Business Units and Corporate Functions that have oversight over or can influence critical levers in managing CN's environmental or social impact. These include, but are not limited to, Operations, Facilities Management, Fuel Management, Procurement, and Sales and Marketing**. CN's Director of Sustainability chairs the quarterly meetings and reports directly to the Vice-President Financial Planning. Critical matters are reported up to the Board as part of the quarterly reports by the CFO and COO.**

Management
Management, like all employees at CN, are responsible for upstream and operations cost control, including energy efficiency, and are educated on energy management best practices through CN's EcoConnexions employee engagement program. Management at CN works collaboratively across the value chain to support sustainable production and consumption. CN employees are highly engaged in working together to optimize materials and minimize waste in operations, which is also reflected by the inclusion of emissions and energy efficiency strategy performance indicators in their EPS objectives.

CN Sustainability Committee has meetings on climate risk monitoring and assessment on a quarterly basis.

Source: CN Task Force on Climate-related Disclosure Report, 2019

Question time

What is the current level of maturity of your organization's governance approach in managing climate-related risks?

Please use the poll to give your answer.

Content

About this topic

2

Disclosure on strategy

2.1 Climate-related risks and opportunities identification

- Identify how climate-related risks and opportunities manifest themselves over the short, medium and long term

2.2 Impact of climate-related risks and opportunities

- Assess and explain the impact of climate-related risks and opportunities on the organization's business, strategy and financial planning

2.3 Resilience of organization's strategy

- Assess the resiliency of an organization's strategy taking into consideration different climate-related scenarios within a defined time horizon

2.1 Climate-related risks and opportunities identification

Companies should disclose the identified climate-related risks and opportunities recommended by TCFD

S (a) Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term

- A description of what they consider to be the relevant short, medium and long term **time horizons**, taking into consideration the useful life of the organization's assets or infrastructure and the fact that climate-related issues often manifest themselves over the medium and longer terms
- A description of the **specific climate-related issues** potentially arising in each time horizon (short, medium and long term) that could have a material financial impact on the organization
- A **description of the process(es)** used to determine which risks and opportunities could have a **material financial impact** on the organization

+ Supplemental guidance for the financial sector

Banks

- Banks should describe significant concentrations of credit exposure to carbon-related assets
- Banks should consider disclosing their climate-related risks (transition and physical) in their lending and other financial intermediary business activities

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

How companies can structure their disclosures on climate-related risks and opportunities identified

Baseline disclosures[1]

A

Time horizons

- Identification of time horizons used (analysis of TCFD disclosures and CDP reports indicate standardization across the below time horizons):
  - Short-term (0-1 years)
  - Medium-term (1-5 years)
  - Long term (5-40 years)
- Clear connection to time horizons throughout risks and opportunity forecasting and scenario analysis
- Brief explanation on why an institution has settled on these time frames and context on how they are reasonable in the context of decision-making or risk management

Risks and opportunities

- Qualitative identification of risks and opportunities (i.e., types of transition or physical risks)
- Description of materiality assessment process
- Reference of industry recognized frameworks or models for identifying risks and opportunities and a discussion of why the framework(s) is selected

Advanced considerations[1]

B

Time horizons

- Clear time horizons for management of risks and opportunities, including detailed milestones to show progress and quantify business impact
- Scenario analysis results are reflected in resiliency strategy

Risks and opportunities

- Firms describe climate-related risks and opportunities by business segment or geographical region

Current disclosure practices of reporters:

- Summary of direct and indirect risks from climate change
- Identification of time horizon, risk type, risk classification and magnitude of financial impact

Source: [1]EY IIF UNEPFI, TCFD Report Playbook, 2020; [2]Institute of International Finance, Climate-related Financial Disclosures: Examples of Leading Practices in TCFD Reporting by Financial Firms, 2019
TCFD, Task Force on Climate-related Financial Disclosures, Status Report, 2021

Example from TCFD adopter

Transport

Example: Transurban Limited, Australia

Clear connection to time horizons throughout risks and opportunity forecasting and scenario analysis

A

Time horizon for risk to be realised	TCFD category	Scenario	Risk/opportunity description	Existing controls	Example business opportunities
Opportunities					
Short term	Markets	All scenarios	Transurban takes a leadership position in climate mitigation demonstrating a strong commitment and continues to drive enhanced outcomes.	In all areas of our business we strive to be leaders in our sector, and sustainability and climate mitigation are no different. In 2013 we established a clear energy reduction target to reduce our energy use by 10% by 2023. This was followed by a science-based greenhouse gas reduction target to reduce our emissions by 52% by 2030 (from a 2016 baseline). To ensure we are at the forefront of sustainability aspirations, we have also recently revised our Sustainability Strategy to align with the UN Sustainable Development Goals (SDGs). Goal 13 "Take urgent action to combat climate change and its impacts" is a material SDG for Transurban.	• Continue to enhance our climate change disclosures in corporate reporting • Participate in the Carbon Disclosure Project (from 2019)
Short to mid term	Policy	2°C and 4°C futures	Provide a safe and reliable option for travel during periods of extreme weather.	As above, there are a number of mitigation measures in place to reduce the risk to road users during extreme weather events. Our customer apps and tools, like the LinktGo and Linkt mobile app, provide platforms for engagement and information sharing related to weather patterns and safety. We conduct emergency management exercises and tests to ensure we have the capability to respond to the impacts of extreme weather on our roads. We regularly collaborate with emergency services to ensure familiarity with our assets and response processes. Our Operations teams prepare for extreme weather events to minimise the potential impact to our customers.	• Together with Traffic Management Centres across our networks, further explore opportunities to integrate weather related information and updates into communications with customers (eg via appropriate and safe use of mobiles apps and variable message signage on motorways).
Mid term	Resource Efficiency	2°C future	A shift towards reuse and recycling reduces our operating costs and enables better access to goods/material within the Australian market.	Our sustainability policy includes a commitment to examine and challenge the way we plan, design, construct and operate assets to reduce their whole-of-life impact while maintaining or improving their economic performance. We work with our suppliers to incorporate materials with recycled content in projects (eg steel slag and recycled crushed glass) and reuse materials (eg asphalt). There is also an initiative underway to develop a Circular Materials Strategy focussing on concrete, asphalt and steel (refer to p43 in the FY19 Corporate Report for information on a low carbon cement partnership with Beyond Zero Emissions).	• Establish targets for reducing embodied carbon emissions for cement • Engage with suppliers and road agencies to explore strategies to achieve emission reductions in key materials
Mid to long term	Resilience	1.5°C and 2°C futures	Uptake of low emission vehicles, ride sharing solutions and autonomous vehicles, are accelerated due to climate policy changes and therefore reduces the amount of indirect emissions caused by customer vehicles on our network.	Global and local patterns related to low emissions vehicles are currently managed through six-monthly trend analysis and reporting. A business-wide working group has also been established to explore the various operational impacts and opportunities related to low emission vehicle uptake. A number of strategic projects related to autonomous vehicles and ride sharing are underway to encourage reduced emissions from customer vehicles.	• Identify additional opportunities to optimise ventilation processes and reduce ongoing power requirements • Continue to deliver strategic projects to encourage the uptake of low emission vehicles and drive reduced customer emissions

Source: Transurban Limited, FY19 Sustainability Data and Climate Change Disclosures

EY

Example from TCFD adopter

Food | Example: Wesfarmers, Australia

Wesfarmers considers climate-related risks and opportunities in its investment decisions over the long term A

TIMEFRAME - SHORT TERM (FROM 1-5 YEARS)

SCENARIO 1.5°C	2°C	4°C		RISKS		MITIGATION AND OPPORTUNITIES
✓	✓		PL R M	The introduction of Carbon Border Adjustment Mechanisms by the EU, UK, USA, Canada, China and Japan on imports from countries that are not appropriately pricing carbon will have a detrimental impact on carbon intensive exports.	M PS	Engage with the Federal Government to reiterate that a carbon price would provide certainty for future investment and may mitigate this risk. Applying an internal carbon price to our investment decisions ensures we are properly valuing the cost of carbon and will be well-positioned if the Australian Government moves into alignment with the global community.
✓	✓		PL	Prices may increase as a result of input cost pressures (including carbon pricing), leading to a decrease in consumer demand. Increasing environmental regulation may impact our customers' projects. LNG and LPG fuels could be affected by carbon pricing compared to liquid fuel solutions.	PS M	Ensure we maintain a business model that can pivot both offer and range to meet changes in consumer demand at the right price point, while doing all we can within our businesses control to keep costs low. For our industrial businesses, there may be opportunities for efficient operators as relatively inefficient and more carbon-intensive operators become less competitive. Continue to assess opportunities in the carbon capture and storage, and carbon capture and utilisation areas.

TIMEFRAME - MEDIUM TERM (FROM 5-15 YEARS) CONTINUED

SCENARIO 1.5°C	2°C	4°C		RISKS		MITIGATION AND OPPORTUNITIES
✓	✓	✓	R	For our retail businesses: – they may need to respond to increasingly environmentally-conscious consumers; – the fast-fashion and electronics markets may transition to more durable products or products that are easier to reuse or recycle; and – certain products may evolve to support the replacement of components rather than the replacement of entire item.	PS M	Continue to build further circular and low carbon economy awareness in our business. For example, a continued focus on reducing plastic in product and packaging, and increased recycling rates as well as actively investigating circular economy opportunities to transition product lines where possible. Replacement of componentry can be problematic and a focus on durability and ability to repair, or where this is not possible, providing opportunities for recycling of products at end of life.
✓	✓		M T	Customer preference for less emissions-intensive products may impact demand for WesCEF Coregas products.	ES PS	Projects are designed and developed with the opportunity to change fuel source in mind. In the transport sector the move to hydrogen is an opportunity our Coregas business is well-placed to capitalise on.

Physical risk: A Acute, AC Acute and Chronic

Transition risk: PL Policy & Legal, M Markets, R Reputation, L Liability, ✓ = most relevant

Opportunities: RE Resource Efficiency, ES Energy Source, PS Products and Services, M Markets, R Resilience

TIMEFRAME - LONG TERM (FROM 15+ YEARS)

SCENARIO 1.5°C	2°C	4°C		RISKS		MITIGATION AND OPPORTUNITIES
	✓	✓	AC	For our WesCEF businesses, extreme weather and prolonged drought may impact the amount of arable land in the Western Australian wheatbelt or cause agriculture to relocate within Western Australia, reducing fertiliser demand or making alternative suppliers more competitive. Changes to farming practices to improve soil quality may impact fertiliser demand. Extreme heat and increased humidity may also reduce plant productivity, increase downtime and reduce product quality.	M PS	Explore alternative markets less affected by reduced precipitation. Investigating additional services, particularly in technology and data to assist farmers maximise value and efficiency. WesCEF is also investing in adjacent opportunities such as granular fertiliser that acts as a nitrification inhibitor to improve plant uptake and reduce nitrous oxide emissions.
✓	✓	✓	R	Our industrial businesses may need to respond to increasing stakeholder activism relating to the carbon intensity of their operations.	R	Continuing to evaluate and invest in emissions reduction technology and engage in industry collaboration to prioritise decarbonisation opportunities and greener product alternatives.
✓	✓	✓	M	Our businesses may need to adapt as the economy transitions to low carbon products and customer demand changes or costs increase.	M R	Continue to build on the capabilities and skills of our teams through recruiting and developing outstanding people to adapt to risks and to take advantage of the opportunities associated with climate change.

Wesfarmers discloses its risks, and mitigation and opportunities and splits them into 3 periods - short-term (1-5 years), medium-term (5-15 years) and long-term (15+ years). The risks and mitigation and opportunities are categorized as to whether they're relevant under each scenario.

Source: Wesfarmers, Climate-related financial disclosure annual report, 2021

Example from TCFD adopter

Energy | Example: Caltex Australia Limited, Australia

Caltex identifies risk types, description and time horizons (categorized into short, medium and long-term)

A

Risk Type	Description	Time Horizon	How we are responding
Transitional	Fossil fuel product redundancy Reducing demand for Caltex's products due to technology advances including the introduction of EVs, shifting market conditions and consumer preferences and policy changes that incentivise lower emission transport modes including alternative fuels.	Medium to long-term	Scenario analysis and embedding climate change considerations into strategic and business planning processes Investment in and piloting of low carbon solutions, e.g. EV charging stations and alternative fuels Development of an energy transition strategy focusing on business portfolio diversification opportunities including alternative fuels and the broader energy sector Gaining climate risk insights to better understand potential vulnerabilities to our business strategy including ongoing monitoring of policy, market and technology developments
Transitional	Asset impairment Caltex's assets such as the refinery, terminals and retail sites not realising their full value due to reduced demand for fossil fuel products.	Long-term	Scenario analysis and embedding climate change considerations into strategic and business planning processes Divestment/sale or repurposing of assets Development of an energy transition strategy focusing on business portfolio diversification opportunities including alternative fuels and the broader energy sector Gaining climate risk insights to better understand potential vulnerabilities to our business strategy including ongoing monitoring of policy, market and technology developments

Risk Type	Description	Time Horizon	How we are responding
Transitional	Financial market policy and regulation Increasing risk of shareholder divestment as asset managers take account of climate risk into decision-making, increasing market regulation resulting in reduced access and increased cost of capital.	Medium to long-term	Introducing an internal carbon price as part of capital investment evaluation process Scenario analysis and embedding climate change considerations into strategic and business planning processes Gaining climate risk insights to better understand potential vulnerabilities to our business strategy including ongoing monitoring of policy, market and technology developments Adoption of TCFD recommendations for reporting and disclosures Active stakeholder engagement, including with shareholders to explain Caltex's climate change approach
Transitional	Carbon pricing The introduction of a domestic carbon pricing mechanism or other similar instrument that results in a liability for Caltex for its operational emissions	Medium to long-term	Reducing operational carbon emissions inclusive of energy efficiency programs Investment in additional renewable energy for operational use
Physical	Supply disruption Extreme weather events causes supply disruption to sites and customers	Short, medium and long-term	Emergency response processes Embedding physical climate change considerations into design and development standards
Legal/reputation	Litigation and activism Increased risk of litigation and shareholder activism for failing to respond to the impacts of climate change.	Short, medium and long-term	Clear climate change public position statement Adoption of TCFD recommendations for reporting and disclosures Active stakeholder engagement, including with shareholders to explain Caltex's climate change approach
Legal/reputation	Reputational Failure to meet community and employee expectations to address climate change, resulting in the loss of social license to operate	Short, medium and long-term	Clear climate change public position statement Adoption of TCFD recommendations for reporting and disclosures Active stakeholder engagement, including with shareholders to explain Caltex's climate change approach

Source: Caltex, Sustainability Report, 2019

2.2

Impact of climate-related risks and opportunities

Companies should disclose the impact of climate-related risks and opportunities recommended by TCFD

S (b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning

- Organizations should discuss how identified climate-related issues have affected their businesses, strategy and financial planning
- Organizations should consider including the impact on their businesses, strategy and financial planning in the following areas: products and services, supply chain and/or value chain, adaptation and mitigation activities, investment in research and development, operations (including types of operations and location of facilities), acquisitions or divestments and access to capital
- Organizations should describe how climate-related issues serve as an input to their financial planning process, the time period(s) used and how these risks and opportunities are prioritized

+ Supplemental guidance for the non-financial sector (Energy; Transportation; Materials and Buildings; and Agriculture, Food and Forest Products)

- Organizations should consider discussing how climate-related risks and opportunities are integrated into their
(1) current decision-making and
(2) strategy formulation, including planning assumptions and objectives around climate change mitigation, adaptation, or opportunities such as:
  - Research and development (R&D) and adoption of new technology
  - Existing and committed future activities such as investments, restructuring, write-downs, or impairment of assets
  - Critical planning assumptions around legacy assets, for example, strategies to lower carbon-, energy- and/or water-intensive operations

Source: TCFD, Final Report Recommendations of the Task Force on Climate-related Financial Disclosures, 2017; TCFD, Status Report, 2021

Companies should disclose the impact of climate-related risks and opportunities recommended by TCFD

S (b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning

- Organizations' disclosures should reflect a holistic picture of the interdependencies among the factors that affect their ability to create value over time
- Organizations should describe the impact of climate-related issues on their financial performance (e.g., revenues, costs) and financial position (e.g., assets, liabilities)
- If climate-related scenarios were used to inform the organization's strategy and financial planning, such scenarios should be described

+ Supplemental guidance for the non-financial sector (Energy; Transportation; Materials and Buildings; and Agriculture, Food and Forest Products)

- How GHG emissions, energy, and water and other physical risk exposures, if applicable, are considered in capital planning and allocation; this could include a discussion of major acquisitions and divestments, joint-ventures, and investments in technology, innovation, and new business areas in light of changing climate related risks and opportunities
- The organization's flexibility in positioning/repositioning capital to address emerging climate-related risks and opportunities

Source: TCFD, Final Report Recommendations of the Task Force on Climate-related Financial Disclosures, 2017; TCFD, Status Report, 2021

Companies should disclose the impact of climate-related risks and opportunities recommended by TCFD

S (b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning

- Organizations that have made GHG emissions reduction commitments, operate in jurisdictions that have made such commitments, or have agreed to meet investor expectations regarding GHG emissions reductions should describe their plans for transitioning to a low-carbon economy, which could include GHG emissions targets and specific activities intended to reduce GHG emissions in their operations and value chain or to otherwise support the transition

\+ TCFD has also released supplemental guidance for the financial sector (Insurance, and Asset owners and Asset managers), please refer to TCFD resources for more information.

Source: TCFD, Final Report Recommendations of the Task Force on Climate-related Financial Disclosures, 2017; TCFD, Status Report, 2021

How can firms structure their disclosures on impact of climate-related risks and opportunities?

Baseline disclosures[1] — A

Identifying and quantifying impacts

Impacts including:

- **Operational footprint level impact** (e.g., GHG emission and renewable energy usage)
- **Business segment or product-level exposure** (e.g., financing, revenue, balance sheet, % of portfolio)

Managing impact

- Business segment (and region) projections using time horizons across the following dimensions:
  - Revenue
  - Net-interest income
  - Non-interest income
- Alignment of commitments to demonstrate progress to depict execution of firm's strategy

Advanced considerations[1] — B

Identifying and quantifying impacts

- In alignment to the Sectoral Decarbonization Approach, firms **perform enhanced financial analysis at the asset level** across business segments. For example:
  - Amount ($) and percentage (%) of green and brown financing by sector
  - Amount ($) of risk weighted assets (RWAs) by sector and/or portfolio
  - Amount ($) and percentage (%) of financed emissions
- Employee-level impact

Managing impact

- Firms describe climate-related risks and opportunities by business segment or geographical region
- Firms perform enhanced outcome-based analysis to quantify environment and social impacts
  - Avoided GHG emissions
  - Societal impact

Current disclosure practices of reporters:

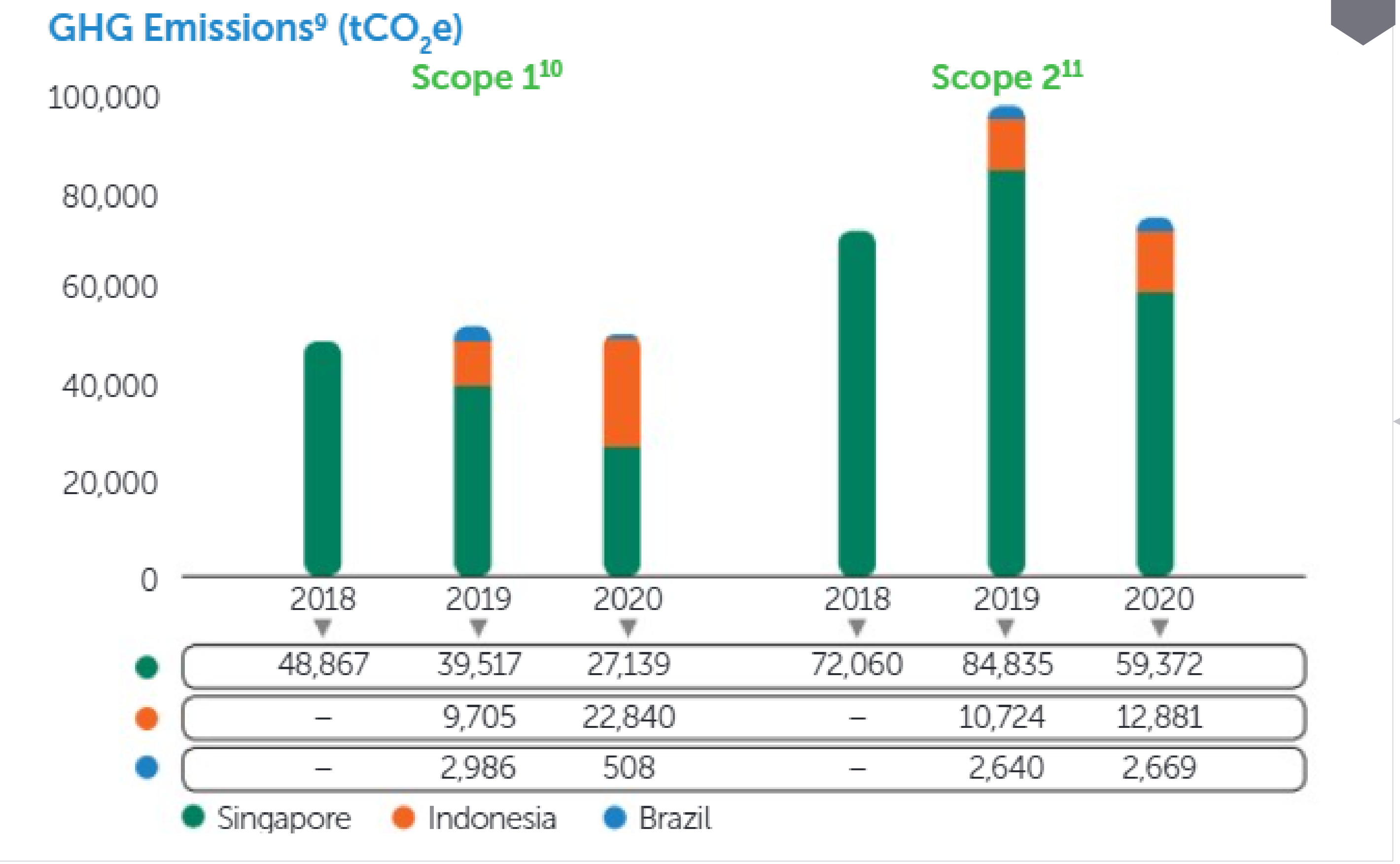
- Potential effects of risks on the firms' businesses, strategy and financial planning
- Climate-related impacts on operations and strategy such as new product and investment strategies
- Specific details related to strategic planning and partnerships

Source : [1]EY IIF UNEPFI, TCFD Report Playbook, 2020; [2]Institute of International Finance, Climate-related Financial Disclosures, Examples of Leading Practices in TCFD Reporting by Financial Firms, 2019; TCFD, Status Report, 2021

Example from TCFD adopter

Industrials | Example: Sembcorp Marine Ltd, Singapore

Identifying and quantifying GHG emissions to manage the risk of higher costs A



Sembcorp Marine uses a set of metrics and targets to manage and monitor its exposure to climate-related risks and opportunities.

Source: Sembcorp Marine, Sustainability Report, 2020

Example from TCFD adopter

Transport

Example: Transurban Limited, Australia

Identifying and quantifying impacts by emission scope

A

		FY17*	FY18*	FY19*
Total Scope 1 & 2 & 3	tCO_2e	148,516	144,110	738,120
Total Scope 1 & 2	tCO_2e	120,529	120,837	120,617
Scope 1	tCO_2e	2,746	3,697	3,540
Scope 2 ("market-based")	tCO_2e	117,783	117,139	117,077
(GreenPower emissions savings)	tCO_2e	2,745	2,708	2,632
Scope 2 ("location-based")	tCO_2e	120,528	119,848	119,709
Scope 3	tCO_2e	27,986	23,274	617,503
Purchased goods and services	tCO_2e	NR	NR	186,296
Capital goods (major projects)	tCO_2e	NR	NR	410,680
Upstream fuel and energy related activities	tCO_2e	19,289	17,798	16,196
Waste	tCO_2e	4,889	1,668	1,769
Business travel	tCO_2e	3,808	3,808	2,562
Customer travel emissions	tCO_2e	1,372,482#	993,268	993,961

Transurban Limited discloses its operational footprint level impact (e.g., GHG emissions).

Source: Transurban Limited, FY19 Sustainability Data and Climate Change Disclosures

Example from TCFD adopter

Energy | Example: BP Group (BP), United Kingdom

Operational footprint level impact (e.g., GHG emission and renewable energy usage) A

Greenhouse gas emissions

Metric	Unit	2015	2016	2017	2018	2019
Operational control[a]						
Scope 1 (direct) greenhouse gas emissions	$MteCO_2e$	51.2	51.4	50.5	48.8	**49.2**
Scope 1 (direct) carbon dioxide emissions	$MteCO_2e$	48.5	48.4	47.8	46.4	**46.8**
Scope 1 (direct) methane emissions	Mte	0.11	0.12	0.11	0.09	**0.10**
Methane emissions intensity[b]	%		0.2	0.2	0.16	**0.14**
Sustainable GHG emissions reductions	$MteCO_2e$	0.2	0.7	0.5	1.3	**1.4**
Scope 2 (indirect) emissions	$MteCO_2e$	7	6.2	6.1	5.4	**5.2**
Flaring[c]	kt	1863	1896	1987	1634	**1395**
Equity[d]						
Scope 1 (direct) greenhouse gas emissions	$MteCO_2e$	49.0	50.1	49.4	46.5	**46.0**
Scope 1 (direct) carbon dioxide emissions	$MteCO_2e$	45.1	46.1	45.8	43.3	**43.0**
Scope 1 (direct) methane emissions	Mte	0.16	0.16	0.15	0.13	**0.12**
Sustainable GHG emissions reductions	$MteCO_2e$	0.1	0.3	0.4	0.6	**0.8**
Greenhouse gas intensity	–	–	–	–	–	**–**
Upstream	tCO_2e per thousand boe	32.7	34.7	30.4	27.8	**25.9**
Refining	tCO_2e per utilized equivalent distillation capacity	944	951	923	915	**916**
Petrochemicals	tCO_2e per thousand tonnes	290	287	304	289	**291**
Scope 2 (indirect) emissions	$MteCO_2e$	6.9	6.2	6.8	5.7	**5.7**
Emissions from the carbon in our Upstream oil and gas production[e]	$MteCO_2e$					**357.3**
Average emissions intensity of our marketed energy products[f]	gCO_2e/MJ					**79.7**
Refined energy products emissions intensity	gCO_2e/MJ					**93.7**
Gas products emissions intensity	gCO_2e/MJ					**71.6**
Bio-products emissions intensity	gCO_2e/MJ					**28.8**
Power products emissions intensity	gCO_2e/MJ					**43.8**
Marketed emissions[g]	$MteCO_2e$					**1012.5**
CO_2 avoided through our renewables business[h]	$MteCO_2e$	3.3	2.8	2.7	2.8	**2.3**

BP presented a consolidated overview of BP's nonfinancial performance including greenhouse gas emissions. The data covers both business activities operated by BP (Operational Control) and BP's subsidiaries (Equity).

Source: BP, Environmental, Social and Governance (ESG) datasheet, 2019

2.3

Resilience of organization's strategy

Companies should disclose on the resilience of their strategies using different climate scenarios

S (c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario

- Organizations should describe how resilient their strategies are to climate-related risks and opportunities, taking into consideration a transition to a lower-carbon economy consistent with a 2°C or lower scenario and, where relevant to the organization, scenarios consistent with increased physical climate-related risks
- Organizations should consider discussing:
  - Where they believe their strategies may be affected by climate-related risks and opportunities
  - How their strategies might change to address such potential risks and opportunities
  - The potential impact of climate-related issues on financial performance (e.g., revenues, costs) and financial position (e.g., assets, liabilities)
  - The climate-related scenarios and associated time horizon(s) considered

+ Supplemental guidance for the non-financial sector (Energy; Transportation; Materials and Buildings; and Agriculture, Food and Forest Products)

- Organizations with more than one billion U.S. dollar equivalent (USDE) in annual revenue should consider conducting more robust scenario analysis to assess the resilience of their strategies against a range of climate-related scenarios, including a 2°C or lower scenario and, where relevant to the organization, scenarios consistent with increased physical climate-related risks
- Organizations should consider discussing the implications of different policy assumptions, macro-economic trends, energy pathways, and technology assumptions used in publicly available climate-related scenarios to assess the resilience of their strategies

Source: TCFD, Final Report Recommendations of the Task Force on Climate-related Financial Disclosures, 2017; TCFD, Status Report, 2021

Companies should disclose on the resilience of their strategies using different climate scenarios

S (c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario

+ Supplemental guidance for the non-financial sector (Energy; Transportation; Materials and Buildings; and Agriculture, Food and Forest Products)

- For the climate-related scenarios used, organizations should consider providing information on the following factors to allow investors and others to understand how conclusions were drawn from scenario analysis:
  - Critical input parameters, assumptions, and analytical choices for the climate related scenarios used, particularly as they relate to key areas such as policy assumptions, energy deployment pathways, technology pathways, and related timing assumptions
  - Potential qualitative or quantitative financial implications of the climate-related scenarios, if any

+ TCFD has also released supplemental guidance for the financial sector (Insurance and Asset owners), please refer to TCFD resources for more information.

Source: TCFD, Final Report Recommendations of the Task Force on Climate-related Financial Disclosures, 2017; TCFD, Status Report, 2021

How can firms structure their disclosures on climate resilience?

Baseline disclosures[1] A

Scenario analysis

- Scenario
  - 3+ types of scenario (e.g., 1.5°C, 2°C)
  - Description of scenario (e.g., in-house vs. industry collaboration, vendor)
  - Source of scenario
  - High-level outcome by scenario
- Variables
  - Explanation on alignment with existing or in-flight regulatory initiatives
- Assumptions and methodology
  - Depiction of key scenario assumptions
  - Depiction of segmentation methodology used across business segments
- Results
  - Firm-specific overlays, limitations or adjustments

Advanced considerations[1] B

Scenario analysis

- Assumption and methodology
  - Exposure by sector and/or geography at year-end by defined time horizons (short, medium, long)
- Results
  - 4°C investment scenario analysis
  - Disruptive non-linear scenarios and correlation of climate risk variables to macroeconomic variables

Current disclosure practices of reporters:

- Scenario testing exercise on different types of risks
- Results of scenario analysis and assumptions and methodologies
- Limitation of methodologies
- Considerations regarding the company's economic impact

Source : [1]EY IIF UNEPFI, TCFD Report Playbook, 2020); [2]Institute of International Finance, Climate-related Financial Disclosures, Examples of Leading Practices in TCFD Reporting by Financial Firms, 2019; TCFD, Status Report, 2021

How can firms structure their disclosures on climate resilience? (cont'd.)

Baseline disclosures[1] A

Resilience strategy

- Definition of operational resilience strategy
- Outcomes of climate-based stress test scenarios and high-level details of performance under scenarios
- Summary of scenario analysis results in the context of financial commitments and recent year progress
- Description of resiliency of business model and strategic decisions that occurred over the past 12 months

Advanced considerations[1] B

Resilience strategy

- Detail of considerations on client/customer resilience through stress test scenarios
- Detail on communities of operation's performance through stress test scenarios
- Firm-specific description on sector resilience through stress test scenarios and how the firm is responding
- Investment/lending portfolio (or asset level) performance under selected scenarios

Current disclosure practices of reporters:

- Scenario analysis results in relation to their portfolios
- Assessment of how different scenarios would affect their assets and investments
- Analysis of key strategy e.g., strategic performance implications under the various scenarios considered, potential qualitative or directional implications for the organization's value chain and capital allocation decisions

Source : [1]EY IIF UNEPFI, TCFD Report Playbook, 2020; Institute of International Finance: Climate-related Financial Disclosures: Examples of Leading Practices in TCFD Reporting by Financial Firms, 2019; TCFD, Status Report, 2021

EY

Example from TCFD adopter

Automotive and components

Example: Denso Corporation, Japan

Denso discloses the scenarios used, including the critical input parameters and assumptions

A

		Stagnant (decelerating global warming countermeasures)	Promotional (promoting global warming countermeasures at a steady pace)	Ambitious (accelerating global warming countermeasures)
Transition risks	Hypothesized scenarios	CPS	STEPS	SDS
	Status of hypothesized global warming progression	Uninterrupted trend of rising CO_2 Temperature increase of over 2℃	Current CO_2 levels maintained Temperature increase of over 2℃	CO_2 increases curtailed Temperature increase of less than 1.5℃
	Quantitative business-related indicators	CO_2 emissions 47 Gt (by 2050)	CO_2 emissions 36 Gt (by 2050)	CO_2 emissions 25 Gt (by 2030) → 10 Gt (by 2050)
		EU carbon tax US$38/t-$CO_2$ (by 2040)	EU carbon tax US$43/t-$CO_2$ (by 2040)	EU carbon tax US$140/t-$CO_2$ (by 2040)
		Crude oil US$134 per barrel (by 2040)	Crude oil US$103 per barrel (by 2040)	Crude oil US$59 per barrel (by 2040)
		No progress with the introduction of renewable energy	Ratio of renewable energy 23% (2030) → 29% (2050)	Ratio of renewable energy 30% (2030) → 61% (2050)
		Slight increase in ratio of BEVs among new vehicles from the 2018 level of 2%	BEVs comprising 15% of new vehicles (2030) → 27% (2050)	BEVs comprising 47% of new vehicles (2030) → 72% (2050)
Physical risks	Hypothesized scenarios	RCP8.5	RCP6.0	RCP2.6
	Qualitative business-related indicators	Damage from meteorological disasters Damage from rising sea levels Damage due to deteriorating ecosystems Damage from food and water shortages	Damage not as significant as RCP8.5 but expected to be more significant than its current level	Damage remains at its current level but potential for significant impact during transition period

Denso uses external scenarios from International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC) to understand the impact of physical and transition risks on their business by establishing three scenarios: "stagnant", "promotional" and "ambitious".

Source: Denso integrated report, 2021

Example from TCFD adopter

Banking

Example: Barclays, United Kingdom

Disclosures on scenario, variables and assumptions

A

Scenario narrative

The scenario commences with a severe escalation of physical climate events across Europe, US and India, causing a sharp withdrawal of liquidity from financial markets. Public opinion rapidly shifts in response leading to a sharp revaluation of assets, with carbon-intensive sectors particularly impacted. These combine to force governments to introduce wide ranging, but fragmented policy changes, which lead to broader macroeconomic impacts.

A range of economic variables were sourced from the PRA's 2019 Life Insurance stress test.

Key assumptions

This stress testing exercise was exploratory in nature, we made a number of key assumptions partly to simplify the exercise, but also where they were consistent with the severity and plausibility of the scenario narrative. Sensitivity analysis of key climate-based assumptions highlighted the below as the most notable:

- No material climate events occur outside of our key physical locations;
- The Thames Barrier is sufficient to prevent wide-spread flooding across the City of London; and
- Major household insurance providers remain solvent throughout the forecast horizon.

Barclays aligned their stress testing approach to the RCP2.6 pathway. The illustration provides scenario narratives and how each scenario could impact Barclay's portfolios and principal risks.

Outcome of scenario analysis in financial context

A

Climate risk	P&L contribution by risk type
Physical	**4%**
Transition	**49%**
– of which relates to higher Corporate downgrades and defaults in elevated-risk sectors	20%
– of which relates to market-related movements	22%
– of which relates to other impacts, such as higher operating costs	7%
Connected	**47%**
Total	**100%**

As at 31 December 2019	Description	Gross loans and advances
Barclays UK		
High risk	Each year, there is a chance of flooding of greater than 1 in 30 (3.3%).	479
Medium risk	Each year, there is a chance of flooding of between than 1 in 30 (3.3%) and 1 in 100 (1%).	1,691
Low risk	Each year, there is a chance of flooding of between than 1 in 100 (1%) and 1 in 1000 (0.1%).	2,701
Very low risk	Each year, there is a chance of flooding of less than 1 in 1000 (0.1%).	6,097

Barclays discloses the impact of climate risk to its profit and loss and gross loans and advances.

Source: Barclays Plc, ESG Report, 2019

Example from TCFD adopter

Materials and buildings

Example: Lendlease, Australia

Lendlease has disclosed its climate scenario used

A

Scenario	Climate Related Impact	Residual Sensitivity: Development	Residual Sensitivity: Construction	Residual Sensitivity: Investment
Polarisation scenario (>3°C) Our Polarisation Scenario sees a world where climate action is delayed by the polarisation of climate action. This delay results in a world where physical climate change risks are the greatest across our three scenarios. The integration of 'Leadership in Sustainability' as a strategic priority and our Net and Absolute Zero Carbon targets sees high levels of positive sensitivity in both leadership in decarbonisation and a shift in consumer preference to secure and create resilient communities. Continued integration of physical climate risk assessments into our investment and business processes is essential to reducing negative sensitivities and building resilience to physical climate change risk.	Impact of climate change on assets and communities			
	Impact of climate change on the way we work			
	Shift in consumer preference toward secure and resilient communities			
	Industry leadership in decarbonisation valued			
	Impact of climate change on cities			
Paris Alignment scenario (2–3°C) Our Paris Alignment Scenario sees a market led transition to a lower carbon future through global government commitments to the Paris Agreement, resulting in higher regulation to climate action and with lower physical impacts of climate change compared to our Polarisation scenario. There are many 'difficult to decarbonise' products and materials in our supply chain, including cement, steel and aluminium. The cost of decarbonisation in our supply chain creates negative sensitivities for future development opportunities. Our commitment to Absolute Zero Scope 3 emissions will drive action in our supply chain, creating resilience in our strategy. Our leadership in sustainability and carbon targets creates similar positive sensitivities to decarbonisation as per our Polarisation scenario.	Increase speed of change in climate related impacts			
	Increase cost of carbon			
	Demand for decarbonisation of supply chain			
	Increased scrutiny over actions versus branding			
	Industry leadership in decarbonisation valued			

Lendlease discloses the climate scenarios used, including the climate related impact and sensitivity in three areas (i.e. development construction and investment).

The integrated climate risk assessment will be combined with the investment decision making process of Lendlease.

Source: *Lendlease, annual report 2021*

Question time

Which of the following are related to TCFD's strategy recommendations?

Please use the poll to give your answer.

Content

About this topic

3

Disclosure on metrics and targets

3.1 Metrics used to assess climate-related risks and opportunities

- Understand how environmental sustainability metrics could be used to assess climate-related risks

3.2 GHG emissions and the related risks

- Methodologies related to the calculation and estimation of GHG emissions

3.3 Targets to manage climate-related risks and opportunities

- Explore approaches to set key climate-related targets and the methodologies that can be used in the process

3.1

Metrics used to assess climate-related risks and opportunities

Environmental sustainability metrics could be used to assess climate-related risks and opportunities recommended by TCFD

S (a) Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material

- Organizations should provide the key metrics used to measure and manage climate related risks and opportunities, as well as metrics consistent with the cross-industry, climate-related metric categories described in the TCFD recommendations
- Organizations should consider including metrics on climate-related risks associated with water, energy, land use and waste management where relevant and applicable
- Where climate-related issues are material, organizations should consider describing whether and how related performance metrics are incorporated into remuneration policies

+ Supplemental guidance for the non-financial sector (Energy; Transportation; Materials and Buildings; and Agriculture, Food and Forest Products)

- For all relevant metrics, organizations should consider providing historical trends and forward-looking projections (by relevant country and/or jurisdiction, business line or asset type)
- Organizations should also consider disclosing metrics that support their scenario analysis and strategic planning process and that are used to monitor the organization's business environment from a strategic and risk management perspective
- Organizations should consider providing key metrics related to GHG emissions, energy, water and other physical risk exposures, land use, and, if relevant, investments in climate adaptation and mitigation that address potential financial aspects of shifting demand, expenditures, asset valuation and cost of financing

Source: TCFD, Final Report Recommendations of the Task Force on Climate-related Financial Disclosures, 2017; TCFD, Status Report, 2021

Environmental sustainability metrics could be used to assess climate-related risks and opportunities recommended by TCFD

S (a) Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material

- Where relevant, organizations should provide their internal carbon prices as well as climate-related opportunity metrics such as revenue from products and services designed for a low-carbon economy
- Metrics should be provided for historical periods to allow for trend analysis.
- Where appropriate, organizations should consider providing forward-looking metrics for cross-industry, climate-related metric categories, consistent with their business or strategic planning time horizons.
- Where not apparent, organizations should provide a description of the methodologies used to calculate or estimate climate-related metrics

+ Supplemental guidance for the financial sector

Banks

- Banks should provide the metrics used to assess the impact of climate-related risks on their lending and other financial intermediary business activities in the short, medium and long term
- Banks should also provide the amount and percentage of carbon-related assets relative to total assets as well as the amount of lending and other financing connected with climate-related opportunities
- Banks should describe the extent to which their lending and other financial intermediary business activities are aligned with a well below 2°C scenario
- Banks should also indicate which financial intermediary business activities (e.g., loans to specific sectors or industries) are included

+ TCFD has also released supplemental guidance for the financial sector (Insurance and Asset owners and managers), please refer to TCFD resources for more information.

Source: TCFD, Final Report Recommendations of the Task Force on Climate-related Financial Disclosures, 2017; TCFD, Status Report, 2021

How companies can disclose the metrics used to assess climate-related risks

Baseline disclosures[1] A

Metrics structure

- Key risk metrics
  - Metrics used to assess the impact of (transition and physical) climate-related risks on their lending and other financial intermediary business activities in the short, medium and long term, including
    - Balance sheet – credit exposure, equity and debt holdings, trading positions
    - % of total portfolio, % by sector
    - $ of financing provided and revenue earned over a specified horizon
    - $ of capital commitments
  - Break down by: industry, geography, credit quality, tenor
  - Amount and percentage of carbon-related (or climate sensitive) assets relative to total assets
- Key alignment metrics
  - Amount of lending and other financing connected with climate-related opportunities
- Common Own Operations metrics
  - Scope I carbon emissions
    - Total emissions
    - Air travel per employee

Baseline disclosures[1] A

- Energy use
  - Total electricity consumption
  - Share of renewable energy
- Waste, water and materials consumption
- Real estate footprint
  - Share of office space in LEED-certified buildings

Advanced considerations[1] B

Metrics structure

- List of selected metrics and rationale, linked to strategic initiatives tracking progress to-date

Current disclosure practices of reporters:

- Measurement methodologies are clearly defined and in line with recognized guidance
- Quantified targets to reduce GHG emissions in relative or absolute terms (Scopes 1,2 and/ or 3) and performance against each

Source: [1]EY IIF UNEPFI, TCFD Report Playbook, 2020; [2]Institute of International Finance, Climate-related Financial Disclosures: Examples of Leading Practices in TCFD Reporting by Financial Firms, 2019; TCFD, Status Report, 2021

Example from TCFD adopter

Banking

Example: Citibank, USA

Disclosure of energy use

A

Operational data of Citibank

	2005	2014	2015	2016	2017	2018	2019
Operating Sq. Ft.	71,978,507	54,888,730	52,399,026	50,354,101	48,051,230	45,137,587	45,116,344
Headcount	344,650	225,750	224,740	219,056	208,043	199,458	188,779

Absolute Indicators

Energy							
Electricity (GWh)	1,964	1,657	1,586	1,516	1,447	1,374	1,311
District Heating (Steam & Chilled Water)	87	60	62	61	58	57	46
Energy Purchased (GWh) – Scope 2	2,050	1,717	1,648	1,577	1,505	1,431	1,356
Natural Gas (GWh)	145	83	76	70	63	80	71
Fuel Oil (GWh)	51	37	37	32	29	28	32
Energy Consumed (GWh) – Scope 1	197	120	113	102	92	108	103
Total Energy (GWh)	2,247	1,836	1,761	1,679	1,597	1,539	1,459

Citibank has disclosed its energy use for the period of 2005, 2014 - 2019.

Source: Citibank, Global ESG Report, 2019

Example from TCFD adopter

Transportation

Example: Deutsche Lufthansa AG, Germany

Deutsche Lufthansa AG discloses its resource consumption as well as absolute and relative emissions

A

ENVIRONMENTAL DATA[1,2]		2020	2019	Change
Resource Consumption				
Fuel consumption[3]	Million tonnes	3.6	10.4	-66%
Fuel consumption, specific, passenger transportation	l/100 pkm	4.18	3.67	+14%
Fuel consumption, specific, freight transportation	g/tkm	214	213	+0.5%
Emissions				
CO_2[3, 4]	Million tonnes	11.4	33.1	-66%
CO_2, specific, passenger transportation	kg/100 pkm	10.52	9.22	+ 14%

Lufthansa also monitors the split of CO_2 by passenger and freight as well as other emissions (NO_x, CO and UHC).

CO_2-EMISSIONS 2019[1,2,3]
in tonnes

	Passengers	± 2018	Freight	± 2018	Total	± 2018
CO_2	26,506,143	+3.9%	6,365,129	-6.3%	32,871,272	+1.8%

NON-CO_2 EMISSIONS[1] 2019
in tonnes

	Passengers	± 2018	Freight	± 2018	Total	± 2018
NO_x	132,335	+4.2%	33,333	-3.2%	165,668	+2.6%
CO	20,397	+3.9%	3,528	-1.3%	23,925	+3.1%
UHC	1,973	+1.5%	353	-3.8%	2,326	+0.7%

Deutsche Lufthansa AG discloses its environmental data, which consists of resource consumption and emissions with 2-year history and year-on-year percentage change.

Source: Lufthansa Group, TCFD Report 2020

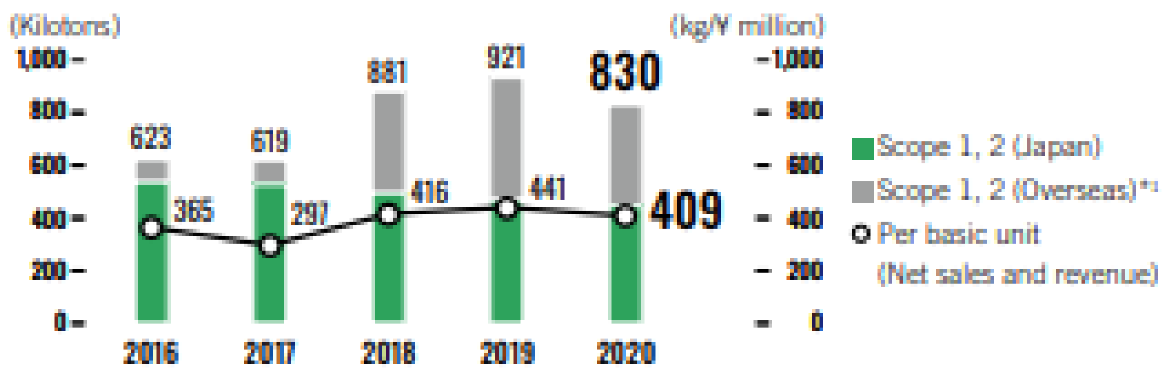
Example from TCFD adopter

Consumers Staples

Example: Asahi Group Holdings, Japan

Asahi discloses its Scope 1 and 2, including Japanese based and Overseas locations

A



Asahi discloses Scopes 1 and 2, categorized by location (Japan and overseas). Also, the diagram shows the intensity (kg per net sales and revenue).

ESG:					
Number of employees at year-end	16,712	16,759	17,956	18,001	21,177
Number of directors (Total) (At year-end)	13	11	10	11	9
Number of directors (Outside) (At year-end)	2	3	3	3	3
Water consumption (Thousand m³)*3	19,130	18,966	19,532	23,664	23,615
CO_2 emissions (Kilotons)*5, 6	740	728	815	855	613
CO_2 emissions (Scope 3) (Kilotons)*7	—	—	—	—	—

Asahi discloses its water consumption and CO_2 emissions.

Source: Asahi, Scenario Analysis, 2020

3.2

GHG emissions and the related risks

Companies should disclose their methodologies related to the calculation and estimation of GHG emissions

S (b) Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 GHG emissions and the related risks

- Organizations should provide their Scope 1 and Scope 2 GHG emissions independent of a materiality assessment and, if appropriate, Scope 3 GHG emissions and the related risks
- All organizations should consider disclosing Scope 3 GHG emissions
- GHG emissions should be calculated in line with the GHG Protocol methodology to allow for aggregation and comparability across organizations and jurisdictions
- As appropriate, organizations should consider providing related, generally accepted industry-specific GHG efficiency ratios
- GHG emissions and associated metrics should be provided for historical periods to allow for trend analysis
- Where not apparent, organizations should provide a description of the methodologies used to calculate or estimate the metrics

+ Supplemental guidance for the financial sector

Banks

- Banks should disclose GHG emissions for their lending and other financial intermediary business activities where data and methodologies allow
- These emissions should be calculated in line with the Global GHG Accounting and Reporting Standard for the Financial Industry developed by the Partnership for Carbon Accounting Financials (PCAF Standard) or a comparable methodology

+ TCFD has also released supplemental guidance for the financial sector (Insurance and Asset owners and managers), please refer to TCFD resources for more information.

Source: TCFD, Final Report Recommendations of the Task Force on Climate-related Financial Disclosures, 2017; TCFD, Status Report, 2021

How can firms structure their disclosures on impact of climate-related risks and opportunities?

Baseline disclosures[1] A

Methodology of GHG calculation

- Split into Own Operations and External
- Standards used to calculate Scope 1 and 2 emissions
- Breakout of Scope 1 emissions by C02, CH4, N20 and HFCs
- Breakout of Scope 1 and 2 emissions by geography, sector and business activity
- Scope 3 emissions metrics by portfolio and/or asset class, including the TCFD identified metrics (link to calculation in the practical examples list below)
  - Weighted average carbon intensity
  - Total carbon emissions
  - Carbon footprint
  - Carbon intensity
  - Exposure to carbon related assets
- Explanation of changes in Scope 1, 2, 3 emissions over time

Advanced considerations[1] B

Methodology of GHG calculation

- Annual assurance of emissions, which includes the scope (e.g., limited or reasonable assurance) and the verification standard used
- Materiality assessment and methodology to quantify Scope 2 emissions
- Intensity ratios with unit by total revenue and/or full-time employees as the denominator

Current disclosure practices of reporters:

- Industry-specific relative GHG emissions (e.g. GHG per MWh produced for the electricity sector, GHG / m^2 / month for the real estate sector)
- For the financial sector: Weighted average carbon intensity of their portfolio (e.g. tCO_2 / $ M Sales) in addition to their own GHG emissions

Source: [1]EY IIF UNEPFI, TCFD Report Playbook, 2020; [2]Institute of International Finance: Climate-related Financial Disclosures: Examples of Leading Practices in TCFD Reporting by Financial Firms, 2019; TCFD, Task, Status Report, 2021; CapitaLand Global Sustainability Report 2020

Example from TCFD adopter

Industrials

Example: FLSmidth, Denmark

FLSmidth disclosures its scope 1, 2 and 3 emissions including carbon intensity and water withdrawal

B

	2018	2019	2020	2020 target	2021 target	2030 target
ENVIRONMENT						
Scope 1 greenhouse gas emissions (in tonnes CO_2-equivalents)	29,875	18,775[1]	10,888	15,995	10,234	Carbon-neutral
Scope 2 greenhouse gas emissions (in tonnes CO_2-equivalents) – location-based calculation	34,395	34,425[1]	25,943	27,970	24,386	
Scope 2 greenhouse gas emissions (in tonnes CO_2-equivalents) – market-based calculation[2]			30,267		28,451	Carbon-neutral
Business travel (part of Scope 3) (in tonnes CO_2)	47,864	42,066	11,887			
Carbon intensity, Scope 1 & 2 (greenhouse gas emissions in tonnes CO_2-equivalents/DKKm revenue) - Scope 2 location-based[3]	3.43	2.58[1]	2.24			
Carbon intensity, Scope 1 & 2 (greenhouse gas emissions in tonnes CO_2-equivalents/DKKm revenue) - Scope 2 market-based[2]			2.50			Carbon-neutral
Water withdrawal (m^3)	227,272	221,613	197,346	217,181	187,479	
Water withdrawal in high water-stressed areas		58%	61%			

FLSmidth discloses its CO_2 emissions split into absolute scopes 1,2 and 3 with historical timeline and 1-year and 10-year targets. Carbon intensity (scopes 1 and 2 / revenue) is also reported.

Source: FLSmidth, Sustainability Report 2020

Example from TCFD adopter

Insurance

Example: Swiss Re, Switzerland

Disclosure of CO_2 emissions per full-time employee

B

CO_2 emissions per employee (full-time equivalent, FTE), Swiss Re Group

		2013 kg/FTE	2018 kg/FTE	**2019 kg/FTE**	Change in % since 2018	Change in % since 2013
Scope 1	Heating	378	244	**210**	–13.8	–44.4
Scope 2	Power[1]	824	584	**472**	–19.1	–42.7
Scope 3	Business travel	3 713	3 892	**3 842**	–1.3	3.5
	Copy paper	40	16	**13**	–15.7	–66.3
	Waste	50	33	**28**	–13.7	–43.1
	Water	12	11	**8**	–23.7	–30.1
	Technical gases	27	6	**52**	764.3	92.1
	Commuting[2]	1 250	1 000	**1 000**	0.0	–20.0
Total		6 294	5 786	**5 627**	–2.7	–10.6

Swiss Re discloses its CO_2 emissions per FTE with comparative timeline by showing percent change.

Source: Swiss Re, Financial Report, 2019

Example from TCFD adopter

Healthcare

Example: GSK, United Kingdom

GSK disclosures its scope 1, 2 and 3 emissions and intensity metrics

B

Carbon emissions[4] plus intensity ratios (as per regulations)[5]

'000 tonnes CO_2e	2020	2019	2018
Scope 1 emissions	773	795	825
Scope 2 emissions	228	522	535
Scope 3 emissions	Available in 2021 report	14,260	16,335
UK Scope 1 & 2 emissions	142	195	203
Energy used	**2020**	**2019**	**2018**
Scope 1 and 2 emissions/ sales revenue (tonnes CO_2e/£m)	29.4	39.0	44.2
Scope 1 and 2 emissions/ FTE (tonnes CO_2e/FTE)[4]	10.6	13.3	14.3
Scope 3 emissions/£bn revenue (million tonnes CO_2e/£bn revenue)	Available in 2021 report	0.6	0.53
Total energy used (GWh)	3,884	4,079	4,187
UK energy used (GWh)	940	975	1,081

GSK discloses its CO_2 emission in term of scopes 1,2 and 3 dating back 3 years, along with intensity metrics by revenue and FTE. Also, the company has reported its group operational footprint in Scopes 1,2 and 3.

Table 5. Group operational footprint

Emissions source (tCO_2e)	Jan–Dec 2019	Jan–Dec 2018
Total CO_2e (scope 1, 2, 3)*	46,164	48,744
Scope 1 – fuel	15,226	12,447
Scope 2 – all electricity (amount from a renewable source)	23,716 (20,922.71)	28,982 (24,428.85)
Scope 3 – business travel including grey fleet	7,223	7,316

Source: GSK, Annual Report, 2020

Example from TCFD adopter

Consumer

Example: The Coca-Cola Company, USA

Coca-Cola disclosure on GHG emissions (Scopes 1, 2 and 3)

A

Table 1
CCEP – TOTAL

Tonnes of CO_2e		2020	2019
Scope 1	Direct emissions (e.g. fuel used in manufacturing, own vehicle fleet, as well as process and fugitive emissions)	196,919	229,713[A]
Scope 2 (market based approach)	Indirect emissions (e.g. electricity)	4,815	6,051[A]
Scope 2 (location based approach)		144,011	170,245[A]
Scope 3	Third party emissions, including those related to our ingredients, packaging, CDE, third party transportation and distribution, waste in our operations and business travel	3,144,035	3,561,980[A]
GHG emissions Scope 1, 2[B] and 3 (Full value chain)		**3,345,769**	**3,797,744[A]**

Energy use		
Direct energy consumption (Scope 1) (kWh)	708,998,235	804,677,475
Direct energy consumption (Scope 2) (kWh)	575,929,963	644,114,285

Coca-Cola published its first disclosure against the TCFD recommendations. Coca-Cola discloses its GHG emissions in term of Scopes 1, 2 and 3 using location and market based approach.

Source: *Coca-Cola, Integrated Report and Form 20-F, 2020*

3.3

Targets to manage climate-related risks and opportunities

Approaches to set key climate-related targets

S (c) **Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets**

- Organizations should describe their key climate-related targets such as those related to GHG emissions, water usage, energy usage, etc., consistent with the cross-industry, climate-related metric categories where relevant and in line with anticipated regulatory requirements or market constraints or other goals
- Other goals may include efficiency or financial goals, financial loss tolerances, avoided GHG emissions through the entire product life cycle, or net revenue goals for products and services designed for a low-carbon economy
- In describing their targets, organizations should consider including whether the target is absolute or intensity based, timeframes over which the target applies, base year from which progress is measured and key performance indicators used to assess progress against targets
- Organizations disclosing medium-term or long-term targets should also disclose associated interim targets in aggregate or by business line, where available
- Where not apparent, organizations should provide a description of the methodologies used to calculate targets and measures

Source: TCFD, Final Report Recommendations of the Task Force on Climate-related Financial Disclosures, 2017; TCFD, Status Report, 2021

Approaches to set key climate-related targets

Baseline disclosures[1] A

Features of targets

- Subset of metrics that management has assigned forward-looking targets
  - Own operations targets
  - Risks/portfolio targets
  - Opportunities – commitment to sustainable financing
- Common "own" operations targets include:
  - Greenhouse gases
    - Emissions reduction
    - Decrease in air travel per employee
  - Energy use
    - Increase in amount of renewable energy used
    - Decrease in electricity consumption
  - Waste
    - Decrease in paper consumption
    - Increase in recycled waste
    - Increase in waste diversion from landfill
  - Decrease in water consumption
- Targets tracked with graphs/tables showing year-over-year progress with accompanying explanation and rationale for use of metrics and targets (including those that are removed and/or added)

Advanced considerations[1] B

Features of targets

- Explanation on the linkage to science-based targets timeline

Current disclosure practices of reporters:

- Comparison of performance of climate-related risks against the targets
- Description of green investments with reference to the goals recommended by the United Nations encouraging signatories of the Principles for Responsible Investment (PRI) to invest 1% of their assets in clean technologies and renewable energy by 2020

Source : [1]EY IIF UNEPFI, TCFD Report Playbook, 2020; [2]Institute of International Finance: Climate-related Financial Disclosures: Examples of Leading Practices in TCFD Reporting by Financial Firms, 2019; TCFD, Status Report, 2021

Example from TCFD adopter

Industrials

Example: Hitachi Group, Japan

Disclosure of climate-related targets

A

Key ESG-Related KPIs

✓ Achievement of goal, or progress being made toward achievement
× Goal not achieved (for fiscal 2020 goals)
[ ] Bracketed items in the Achievements column show initial fiscal 2020 target

	KPI	Achievements in FY 2020	Progress made toward the goal and achievements in made	Target		Relevant Page
Environment	Business Sites (Factories and Offices) Reduction rate of CO_2 emissions (base: FY 2010)	39%	✓	FY 2021	20% or higher	P031
				FY 2030	100% (carbon neutrality)	
				FY 2050	(Maintain 100%)	
	Reduction rate in water use per unit (Hitachi Group) (base: FY 2010)	24%	✓	FY 2021	26% or higher	P057
				FY2050	50%	
	Reduction rate in waste and valuables generation per unit (Hitachi Group) [Base: FY 2010]	14%	✓	FY 2021	12% or higher	P062
				FY 2050	50%	

Hitachi discloses its targets for 2021, 2030 and 2050 including progress and achievement in the past year.

Source: Hitachi, Hitachi Sustainability Report, 2021

Example from TCFD adopter

Information Technology

Example: Canon, Japan

Disclosure of key climate-related targets and achievements

A

Environmental Targets and Achievements

	2019–2021 Medium-Term Environmental Targets	2019 Achievements
Lifecycle	3%-per-year average improvement in lifecycle CO_2 emissions improvement index per product	Avg. improvement: 4.7% p.a. (2008–2019)
Products	3%-per-year average improvement in raw materials and use CO_2 emissions improvement index per product	Avg. improvement: 2.9% p.a. (2008–2019)
	2019 Environmental Targets	**2019 Achievements**
Operational Sites	Improve energy consumption per basic unit at operational sites* (excluding marketing sites) by 1.2% (compared to 2018)	4.5% improvement over 2018
	Improve total waste generation per basic unit at operational sites* (excluding marketing sites) by 1% (compared to 2018)	4.4% improvement over 2018
	Improve water usage per basic unit in production* by 1% (compared to 2018)	0.2% improvement over 2018
	Improve emissions of controlled chemical substances per basic unit at operational sites* (excluding marketing sites) by 1% (compared to 2018)	7.9% improvement over 2018

* The basic unit denominator is decided according to the characteristics of each operational site (production volume, effective floor area, workforce, etc.)

Canon discloses its short-term targets across its products and operational sites, along with historical (2019 compared to 2018) improvements.

Source: Canon, Sustainability Report 2020

Example from TCFD adopter

Asset Management

Example: Standard Life Aberdeen, United Kingdom

Disclosure of climate-related targets

A

Targets and pledges	Scope	Status
50% reduction in operational emissions by 2025	Scopes 1 and 2 and Scope 3 (business travel, working from home, T&D)	55% reduction
Energy reduction	50% reduction in energy use	42% reduction
50% reduction in tCO2e/FTE by 2030	Scopes 1 and 2	50%
Carbon neutral	Scopes 1 and 2 and Scope 3 (business travel, working from home, T&D)	Achieved as of 2020
100% renewable electricity	For locations where we procure	98%

Standard Life Aberdeen discloses its targets for each scope with its current status.

Source: Standard Life Aberdeen, TCFD and Environment Report, 2020

Short break (5 mins)

Sharing session by Dr. Teerapon Tanomsakyut: Experience and challenges faced when implementing TCFD

Interactive Q&A

Question time

What are your business drivers to align your disclosure with TCFD?

Please use the poll to give your answer.

Question time

Do you think that aligning with TCFD recommendations would improve your company disclosure to your investors and other stakeholders? Is it necessary?

Please use the poll to give your answer.

Question time

Within what timeline do you think your organization will adopt TCFD?

Please use the poll to give your answer.

Question time

When you begin to adopt TCFD recommendations, what are the main challenges that you anticipate running into?

Please use the whiteboard to give your answer.

Question time

What are the first steps that you would take to incorporate climate-related issues into your governance structure?

Please use the whiteboard to give your answer.

Question time

What are the first steps that you would take to identify climate-related risks and opportunities in the short, medium and long term?

Please use the whiteboard to give your answer.

Question time

How would your organization attempt to identify and quantify the financial impact from your climate risks and opportunities?

Please use the whiteboard to give your answer.

Question time

What are the first steps you would take to select the climate-related metrics and targets that are appropriate for your organization?

Please use the whiteboard to give your answer.

Question time

In your perspective, what are the key metrics to assess climate risks and opportunities in your sector? In your response, please include ‘sector name - metrics’

Please use the whiteboard to give your answer.

Webinar feedback

Was the workshop presentation clear and comprehensive?

Please use the poll to give your answer.

Webinar feedback

Was the workshop useful in increasing your understanding of climate-related disclosures?

Please use the poll to give your answer.

Our contact details

For any questions and comments in relation to the slides or ASEAN Low Carbon Energy Programme, please contact:

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