EY
Building a better working world

How are your climate change disclosures revealing the true risks and opportunities of your business?

Global Climate Risk Disclosure Barometer
2018

The better the question. The better the answer. The better the world works.

Contents

Foreword

It is my pleasure to introduce the inaugural Global Climate Risk Disclosure Barometer. This paper provides a global snapshot, drawing on disclosures of over 500 companies, on the uptake of the Task Force on Climate-related Financial Disclosures (TCFD) across highly impacted sectors in 18 key markets.

Almost all sectors across economies will face major disruption from climate transition and its impacts over the coming years. Yet, as our findings reveal, there is a long way to go in getting clearer and more consistent disclosures of the extent of climate change-related risks and opportunities. The majority of companies in key economies are still not adequately engaging on these risks, or positioning themselves to take advantage of the opportunities that may arise. With investors paying increasing attention to the impacts of climate change, this is likely to affect their valuation even before they are fully realized.

It is important for businesses to be better informed on how they are managing their climate-related risks, including financial aspects. In doing so, this may help them to respond better to growing demands from investors and create sustainable, long-term value.

We hope this report will help you to better understand the state of your disclosures, and where you are positioned.

Mathew Nelson
EY Global Climate Change and Sustainability Services Leader

About this report

In June 2017, the TCFD, set up by the Financial Stability Board (FSB), finalized its recommendations on climate-related financial risk disclosures.

This report provides a global snapshot on the uptake of the recommendations across 18 markets, 11 key sectors and over 500 companies in the 2017–18 reporting period.

The purpose of this report is to provide companies and national regulators an understanding of the current state of global climate risk reporting. It also offers insights into the differences in reporting across regions and sectors, and suggests areas of improvement, both in terms of the quality and coverage of climate risk disclosures.

TCFD recommendations

The TCFD recommendations aim to improve an investor's understanding of the impact of climate risks on different corporations and reduce the risk of a systemic financial shock on the economy due to climate change. The recommendations provide a reporting framework for climate risks that can be integrated with current financial reporting disclosures. They define climate impacts in the following two distinct categories, which should both be addressed:

- **Transition impacts reflect the risks and opportunities associated with changes in the economy, including growth impacts, sector re-weighting and other macroeconomic factors.**
- **Physical impacts reflect the changes in the physical climate (e.g., altered rainfall amounts, intensities and timings) that may impact future business activities.**

The TCFD recommendations also provide specific guidance for certain higher-risk sectors in both the financial sector (e.g., banks, insurance companies, asset owners and managers) and other sectors (e.g., energy, transportation, material and real estate, buildings and construction, and agriculture, food and forest products).

The adoption of the TCFD recommendations are voluntary in most countries (although certain elements have been legislated in France). However, several national-level regulators and global investors have publicly supported the recommendations, and are driving early uptake on the disclosures. The increasing level of shareholder activism is driving companies operating in high-risk sectors to pay closer attention to their disclosures on climate change and climate risks, and familiarize themselves with the recommendations.

Drivers

Adoption of the recommendations by companies is being driven by both external and internal stakeholders. The rationale for companies to adopt them varies by country, industry group and stakeholder groups.

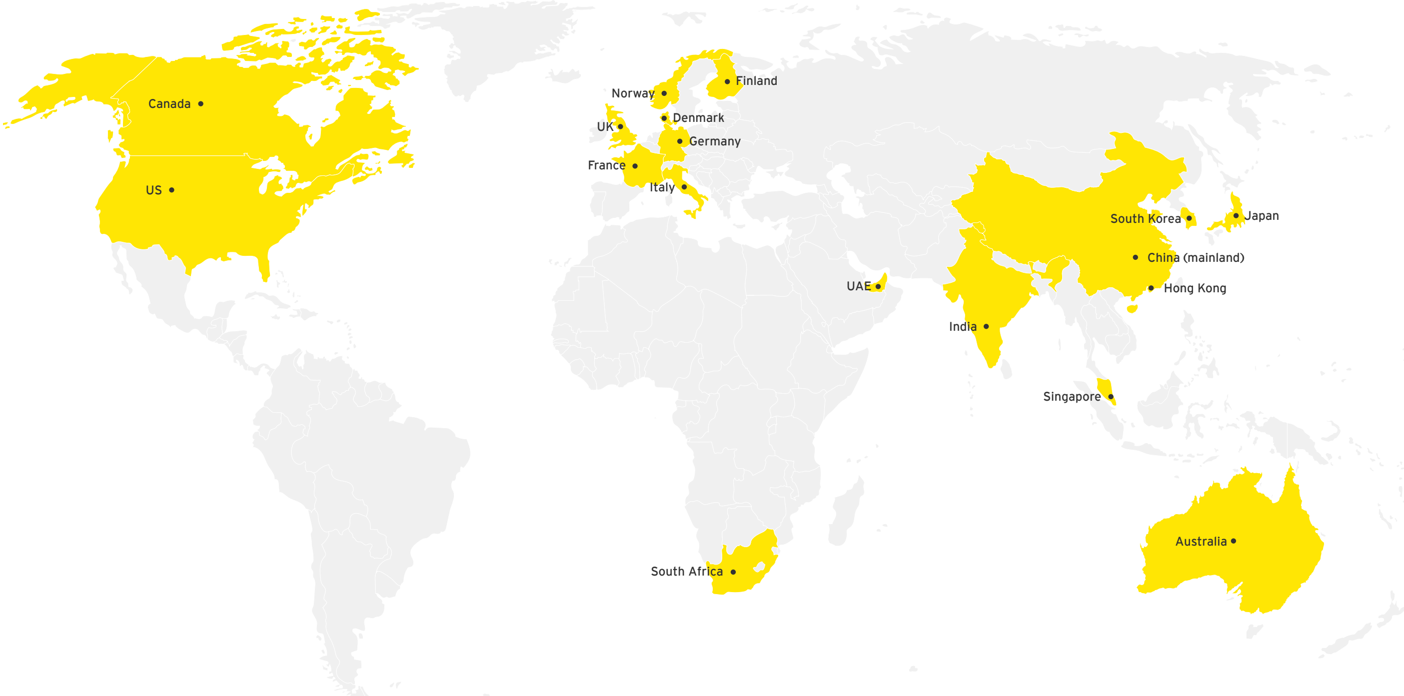
Stakeholder group		Drivers	Actions	Examples	Notable countries where stakeholder group actions are prominent
External	Investors	Concern about long-term value of investments Reputational concerns	Shareholder resolutions	A number of companies globally have had shareholder resolutions, requesting them to report on the impacts of a 2°C economy on their business. These companies include Australian and New Zealand Banking Group, BHP Billiton Ltd., British Petroleum (BP), Commonwealth Bank of Australia, ExxonMobil, QBE Insurance, Rio Tinto, Shell and Statoil.	Australia, Netherlands, UK
			Divestment	One of the world's largest sovereign wealth funds (Norges Bank) has divested from mining and power generation companies that derive 30% or more of their income or power from thermal coal. In 2017, the Norges Bank also proposed the removal of oil and gas stocks to avoid exposure to long-term asset commodity prices with volatility from climate risk.	Australia, France, Netherlands, Sweden
			Direct engagement with management	BlackRock, currently the world's largest asset manager, listed climate risk disclosure as one of its key engagement priorities in 2017-18. The company said, "In our view, the TCFD recommendations, which include sector-specific supplemental guidance, provide a relevant road map for companies. Over the course of the coming year, we will engage companies most exposed to climate risk to understand their views on the TCFD recommendations, and to encourage them to consider using this reporting framework as it is finalized and subsequently evolves over time."	US
	Others (e.g., governments, regulators, NGOs)	Reduce exposure of civil society to negative financial impacts relating to climate risk	Reports and external bodies encouraging adoption	Reporting guidance has been issued by regulatory authorities, such as the Australian Prudential Regulation Authority (APRA) and Canadian Securities Administrators (CSA), encouraging issuers to disclose on climate risks.	Australia, Canada, EU region, Japan, Norway, UK, US
			Legislation	Legislation or regulatory guidance, driving momentum for more detailed regulatory guidance on climate risk disclosure has been issued.	France
			Climate litigation	Legal actions have been taken by shareholders or local governments against companies on the ground that they had not estimated the impact of climate change on their business. Other reasons were that their financial filings misrepresented the financial risks to the business from climate change, and they failed to sufficiently disclose climate change risks in the annual report or their organization's contribution to climate change. This has been particularly the case in the US. More legal action of similar nature is expected as the impacts from climate change increase.	Australia, US, UK
Internal	Company Directors	Personal liability if climate risk not addressed	Legal opinions on Director duties	An influential legal opinion prepared by Noel Hutley, Queen's Counsel (QC) on Climate Change and Director Duties, and commissioned by the Centre of Policy Development, concluded that Australian company directors "who fail to consider 'climate change risks' now could be found liable for breaching their duty of care and diligence in the future." This has made company directors more aware of the potential personal liabilities of not addressing climate risk.	Australia
	Strategy team	Maintaining long-term business growth	Developing long-term business plans that include climate risk	A number of companies have released climate change position statements or something similar. These generally outline the company's view on climate change (whether they are aligning their business strategy to a 2°C outcome or not), and then discussing the implications and action plan to integrate this position into their long-term plans.	N/A – not country-specific

In October 2018, the Intergovernmental Panel on Climate Change (IPCC) released a special report on the impacts of global warming of 1.5°C and the emission pathways to achieve this goal. It is expected that the results of the report will put more pressure on policy makers across jurisdictions for timely changes to carbon and energy policies, and greater needs for investors to assess the impact on their investment portfolio. Thus, there is increased expectation from businesses to make better disclosures on their resilience to climate transition risks.

However, as the results show, the responsiveness to the recommendations differs significantly between countries. This can be attributed to the fact that the ambition and action to mitigate climate change still rely on country-led initiatives and in some cases, regional-level efforts. This can be seen from the 18 markets analyzed in this report, where a variety of local initiatives targeted at improving climate risk disclosures exist. The effectiveness of these drivers have directly impacted the responsiveness of companies to the recommendations, and are a primary reason this report finds varying results across different regions and countries. Notable country-level drivers, as they relate to TCFD-related disclosures are summarized in the Appendix.

Methodology

This report assesses the TCFD disclosures of publicly listed companies in high-risk sectors (as identified by the TCFD recommendations) across 18 major markets.



To provide a global perspective, over 500 companies were included in our analysis with a representative sample across all 18 markets.

Structure of the analysis

The analysis groups companies into categories that correspond to the sectors identified in the TCFD recommendations and other key sectors of the global economy.

Table 1

	Global Climate Risk Disclosure Barometer	Sectors identified by TCFD as most exposed to risk	Number of companies reviewed
Financial services sector	Banks	Banks	75
	Insurance companies	Insurance companies	49
	Asset owners and managers	Asset owners* Asset managers*	58
Other sectors	Agriculture, food and forest products	Agriculture, food and forest products	67
	Energy	Energy	77
	Manufacturing	Materials and buildings*	54
	Real estate, buildings and construction		47
	Mining		19
	Transportation	Transportation	65
	Retail, health and consumer goods	N/A	37
	Telecommunications and technology	N/A	11
	Total		559

Scoring

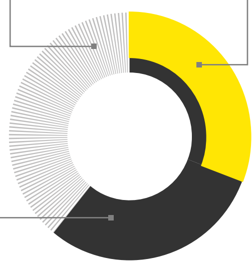
Companies were scored on two different metrics, being the coverage and quality of disclosures.

Coverage

Companies were scored on the basis of the percentage of the 11 TCFD recommendations addressed by them.

A score of 100% indicates that the company has addressed all the recommendations.

Companies that have no disclosures related to the core element.



Quality

Companies were given a rating (out of five) on the basis of the quality of the disclosure, expressed as a percentage of the maximum score should the company implement all 11 TCFD recommendations.

A score of 100% indicates that the company had adopted all the recommendations and the quality of the disclosure met all the requirements of the TCFD (i.e., gaining a maximum score of 5 for each of the 11 recommendations).

The quality of the disclosures was scored using the following scoring system:

0 – Not publicly disclosed

1 – Limited discussion of the aspect (or only partially discussed)

3 – Aspect is discussed in detail

5 – Addressed all features of the aspect in the disclosure

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 mange relevant climate-related risks and opportunities

* For the purposes of this report, these sectors were re-grouped where distinctions between categories could not be determined or where further sub-sector analysis was useful. Overall scoring results do not include companies from within the non-key TCFD sectors: retail, health and consumer goods; and telecommunications and technology. A further breakdown of this sample is provided in the Appendix.

Within each sector, the analysis is presented under the four core elements that reflect how companies operate – governance, strategy, risk management, and metrics and targets (shown in figure above).

Key findings

Our findings continue to raise questions about the depth of the disclosures being made on climate risk exposure and resilience. There is certainly room for improvement as these key findings illustrate — they relate to both coverage and quality of disclosures. This is particularly evident in the area of strategy.

Almost all sectors of the economy face major disruption from climate transition and climate impacts over the coming years. Yet, a majority of companies in key economies are still not engaging seriously with these risks, or positioning themselves to take advantage of potential opportunities. With investors paying increasing attention, this is likely to affect their valuation even before the impacts are fully realized.

The earlier companies embark on the journey, the better. Assessing climate-related risks and opportunities can be complex, and may require detailed analysis. However, disclosing information on climate change scenario planning not only addresses the TCFD recommendations, but also provides companies with new inputs into business strategy and planning, which enhances internal capability and processes.

Most companies are lacking high quality disclosures aligned to the TCFD recommendations.

The good news is that our analysis showed two out of three companies assessed have started to disclose climate change-related risks. However, the downside was that the quality of the disclosures was relatively poor, with the average score being 31%.

Across each of the TCFD elements, results show that, on average, companies reported better on "targets" and "metrics" (mainly driven by reporting on Scope 1 and 2 greenhouse gas (GHG) emissions) and "governance." Disclosures relating to "strategy" and "risk management" were the least developed. Arguably, as these components are more complex, they require detailed analysis on how climate change will impact a business and how the business is responding.

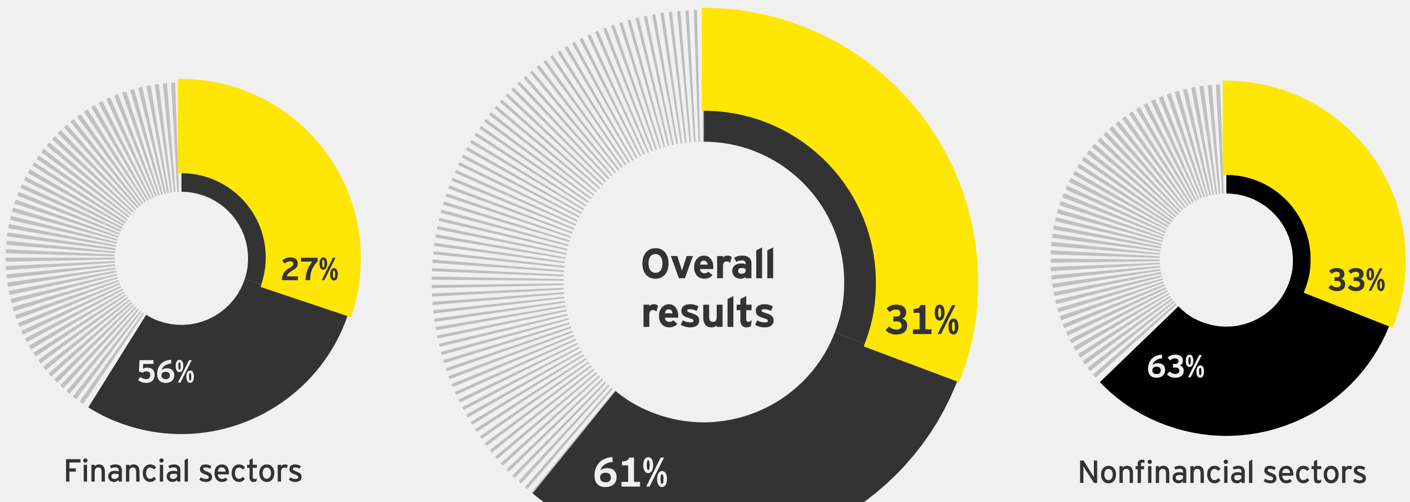
The sectors with the most significant exposure to transition risk (i.e., sectors with direct exposure to fossil fuel supply chains or with readily accessible low carbon substitutes), namely mining, manufacturing, transport and energy, generally scored higher. These sectors have faced the bulk of stakeholder activism around improved climate disclosures. Actions, such as lawsuits and shareholder resolutions relating to climate risk, have been directed toward the largest global organization within these sectors. These actions appear to have improved the level of disclosure compared with the other sectors in this analysis.

The manufacturing and transport sectors are large contributors to global fossil fuel emissions. Certain industries within these sectors are also exposed to competition from low-carbon technologies, such as electrification and resource-efficient manufacturing. Responding to the challenges from these disruptive technologies appear to have led to better risk management and strategy disclosures from some companies within these sectors. These sectors had better-defined climate risks and opportunities and, in some cases, they had included disclosures around time frames and quantification of the potential impacts.

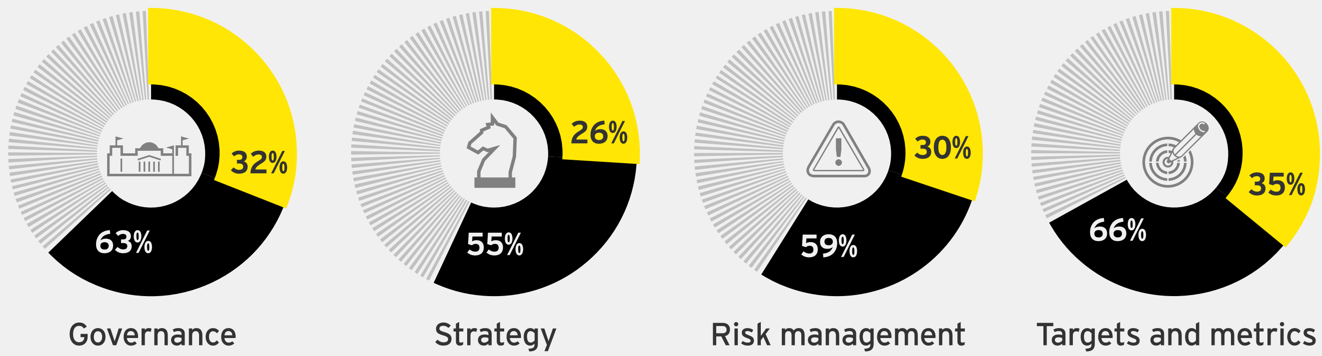
Interestingly, the telecommunications sector scored the highest for coverage and second-highest for quality. This may be because of the industry, more than any other, embracing the opportunities associated with an economy-wide low-carbon transformation, as well as the potential impacts on the sector's physical networks. Hence, the incentives for disclosure are as much about the upside as the downside.

At the other end of the spectrum, asset owners and managers were the underperformers. This finding is consistent with the findings of the EY *Australian Climate Risk Disclosure Barometer* report,[1] and highlights a global issue with the climate risk disclosures of companies within this sector. This is despite well-established initiatives targeted at investors, including the Montreal Pledge and the Portfolio Decarbonization Coalition. There are a number of potential reasons for this sector lagging behind others. A traditional focus on the disclosure of short-term risks and complexities in aggregating climate change risks across industries or organizations in a portfolio may have contributed to the sector's slow response. There may also be a view that the sector can more easily and rapidly respond to the risks. For example, it is easier to rebalance a portfolio for an asset manager than it would be for a fossil fuel-based power generator to shift to a lower carbon profile. However, the slower this sector is to respond to the systemic economic implications of climate change, the less likely it will be to manage the required transition. Asset owners and managers that respond early are more likely to derive value from this transition.

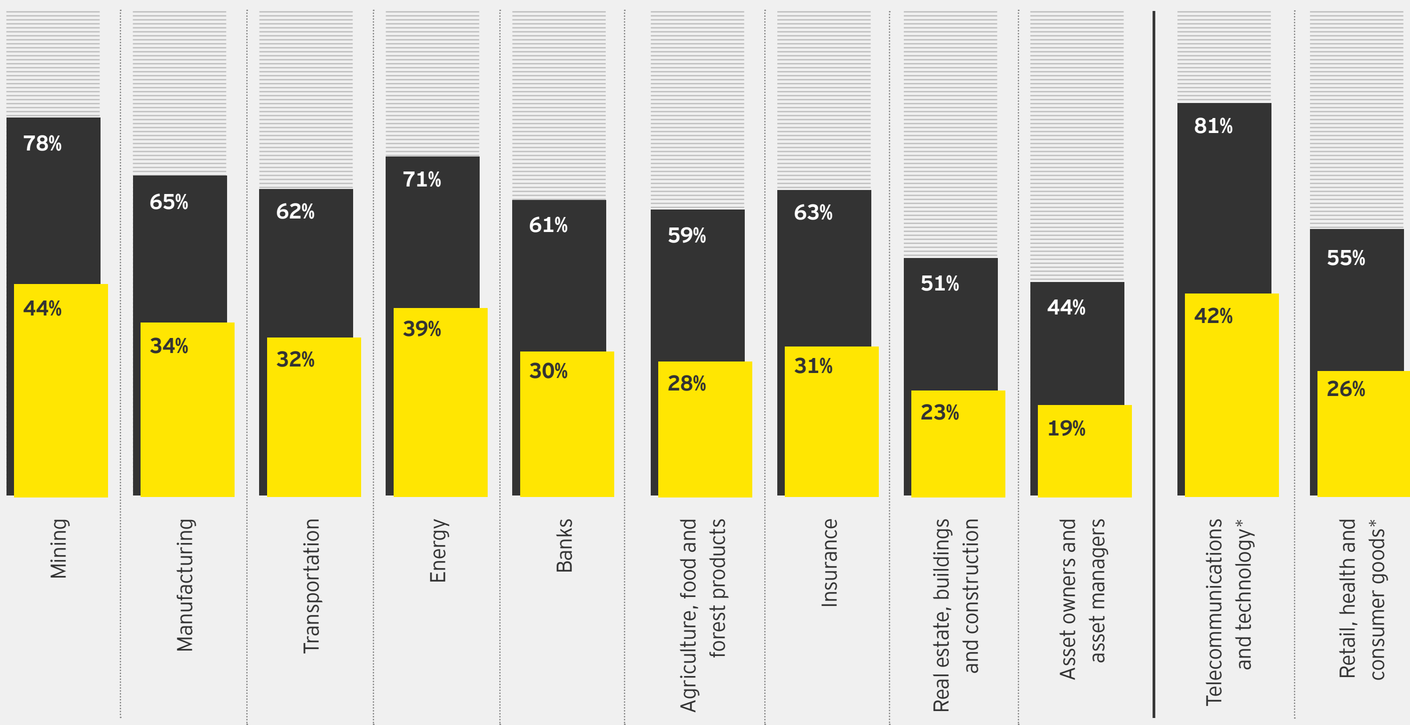
1 "EY Australian *Climate Risk Disclosure Barometer* report," EY website, www.ey.com/Publication/vwLUAssets/ey-carbon-risk-disclosure-barometer-2018/$File/ey-carbon-risk-disclosure-barometer-2018.pdf, accessed 29 October 2018.



Breakdown by TCFD component



Sector breakdown



* Overall scoring results do not include companies from within these non-key TCFD sectors

Coverage Quality

Quality of climate change disclosures varies significantly across different markets, with the best-performing markets generally having some level of regulation or government support for the TCFD recommendations.

On average, coverage scores for companies from markets where climate change disclosures are relatively mature, such as the UK, France, Germany, Switzerland and Australia, were the highest. Interestingly, the US scored highly, despite a lack of coordinated economy-wide policy directives.

One of the key questions coming out of the analysis is whether the high scores are primarily because of an economy being more developed, or whether there are other factors at play. The fact that Scandinavian countries scored noticeably lower, while South Africa scored comparatively higher suggests there is more to it than the maturity of the economy. UK, France, Germany, Switzerland and Australia have had mandatory reporting regulations in place for some time, while South Africa has also implemented mandatory integrated reporting requirements. Although the driver in the US hasn't necessarily been regulation, the prevalence of shareholder resolutions and the threat of class actions has had a similar impact.

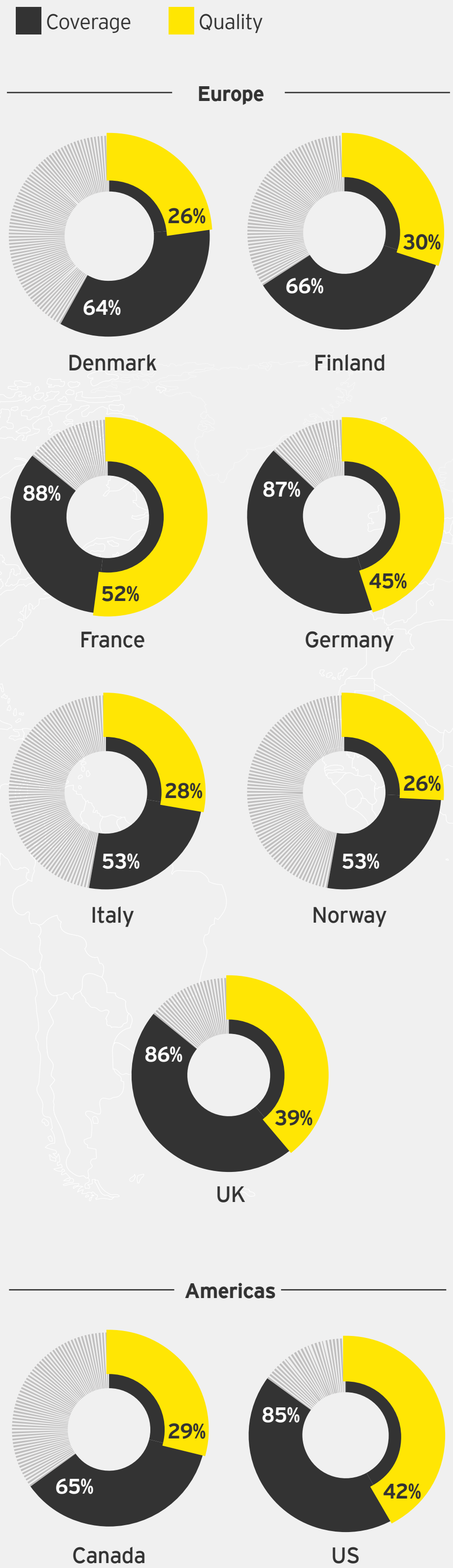
So, perhaps prior regulations for nonfinancial reporting is the critical factor. This is likely true in economies, such as India and UAE. However, this is perhaps not the full story.

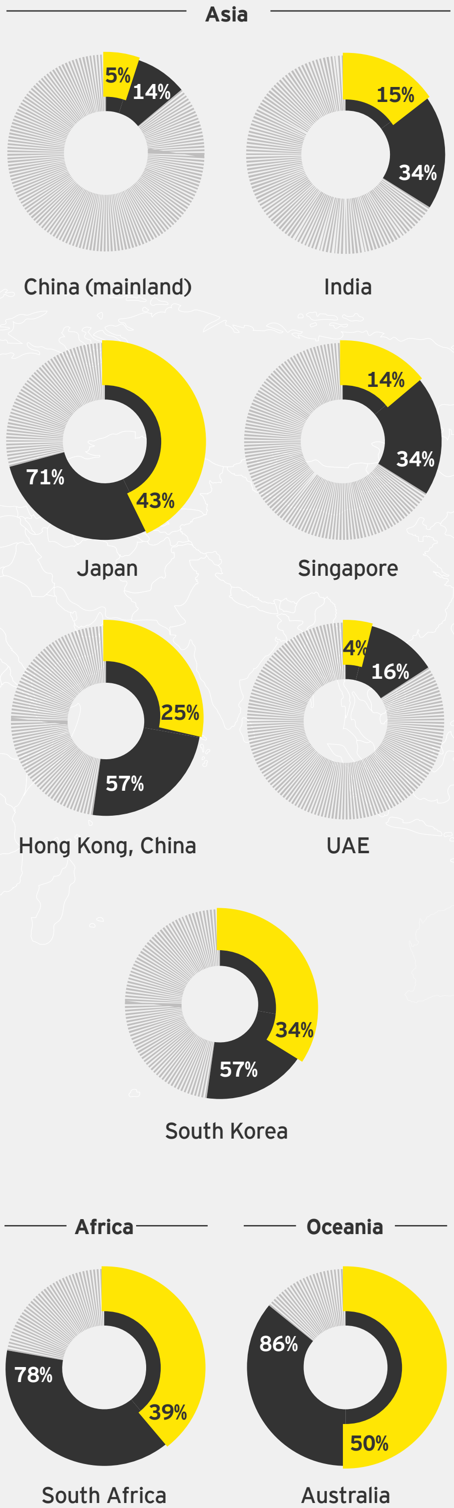
In markets, such as mainland China, Singapore, Hong Kong and South Korea, companies scored on average significantly lower than other regions, despite having some mandatory reporting requirements. It also doesn't explain why the Scandinavian countries' scores are lower. The reality is that other contributing factors include:

- The maturity of the regulation and whether it is specific to climate change (e.g., mainland China, Singapore and Hong Kong, where the mandatory reporting requirements are quite general)
- The maturity of reporting across companies, rather than just the market leaders (e.g., in Australia, France, UK and Germany, where there is more depth in maturity of reporting)
- The potential risk of litigation in an economy (e.g., why the litigation risk is high in the US and low in China)

The story for quality is not nearly as good as it is for coverage. Even in highest-performing countries, such as Australia and France, there is a long way to go for companies to meet the majority of the TCFD recommendations. The extremely low scores in critical countries, such as India, China and South Korea, as well as even lower scores in parts of Europe, US and Canada mean that investors are unlikely to have the information they need to make decisions for the bulk of their portfolios.

Market-level results





Physical risk disclosures fall behind transition risk.

The most common disclosures identified were related to the monitoring and management of an entity's own emissions. Many companies also identified transition risks that either directly impact their sector or the supply chains they rely upon. These transition risks were generally the risks modeled in scenario analysis (where undertaken). One of the key reasons for a more consistent consideration of transition risk is that the time-scales over which companies and sectors are likely to feel the consequences are more immediate. Transition risks are generally associated with "mitigation" action, which by definition means actions taken to reduce the likelihood and consequence of future physical consequences. So, although in some sectors, companies have considered the physical implications of a changing climate, they are yet to fully integrate these risks into their valuation models.

Our analysis identified, however, that the physical risks are not only overlooked in valuation models, but often completely omitted from forward-looking strategic and risk management disclosures. Physical risk is the key risk to many high-risk sectors over the long-term, and this lack of understanding and disclosure highlights a significant gap in the quality of current disclosures.

Scenario analysis was mentioned in the disclosures of many of the larger global entities. Nevertheless, it was mostly in the context that they expected to conduct the analysis in the future. In other cases, no detail was given around the scenarios analyzed or the results of the modeling. Several organizations also disclosed their support for a 2°C future, but did not state how their business aligned with such an economy. Where companies had undertaken detailed scenario analysis, generally, the scenarios only dealt with transition risks. These omissions reduced the scores for quality of strategic disclosures.

> "Around 12% of the companies assessed are disclosing information on climate change scenario planning. Undertaking climate change scenario analysis not only addresses the TCFD recommendations, it also provides companies with new inputs into business strategy and planning."
>
> **Alexis Gazzo, Partner**
> Climate Change Leader

Content and sources of disclosures have not yet been incorporated within "financial filings."

The TCFD recommendations ask for disclosures to be made in financial filings, alongside other financial disclosures. This element of the TCFD recommendations is yet to be widely implemented.

Some companies did include their disclosures within the annual report as part of a discussion on the business strategy, as part of the directors' report or within the operating and financial review (which includes a description of the future prospects of the business). However, the overwhelming majority reported within either nonfinancial reports, e.g., sustainability reports or Carbon Disclosure Project (CDP) reporting.

Despite the TCFD recommendations, there are a number of reasons why most companies have not taken the step to include disclosures in their annual reports or directors' reports. The relative immaturity of processes to capture and report on climate change risks is likely one reason, as well as the difficulty in setting timeframes on the potential implications of either transition or physical risks. It can also be difficult to translate these risks into financial implications. However, shareholder resolutions, enforcement of listing rules and regulator focus is likely to force companies to change this in upcoming reporting periods.

> "Over the last couple of years, our engagement with the business community indicates that board members increasingly understand the need for a change in reporting practices — and we're seeing improvements. However our analysis continues to raise questions about the depth of disclosures being made on climate risks exposures and resilience. There is still room for improvement."
>
> **Mathew Nelson, Partner**
> EY Global Climate Change and Sustainability Services Leader

Will your business conform to a "wait-and-see" approach or will it look to increase gains from disclosing climate-related risks?

Climate risks are more complex and long-term in nature than most traditional business risks, and this has contributed to a lack of understanding and measurement of their potential impacts.

If an organization does not have a clear understanding of the range and magnitude of the potential financial impacts from climate change, it may be increasingly detrimental to its financial performance.

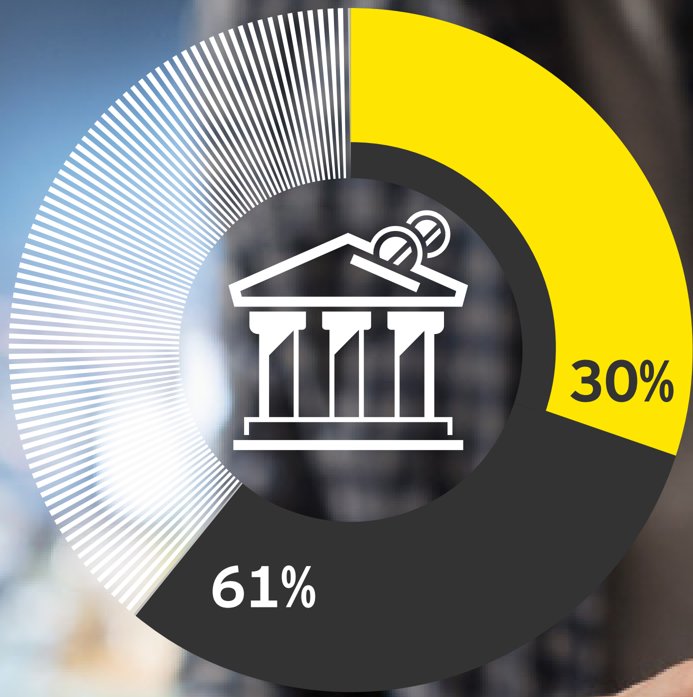
So, where to start?

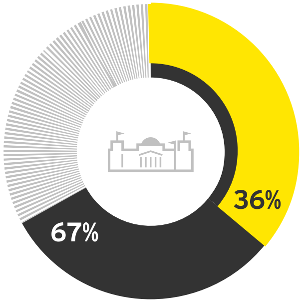
Disclosing climate-related risks likely requires changes to the governance and risk assessment processes (as per the TCFD recommendations). It may take several years for an organization to be in a position to generate valuable information for investors and shareholders to help them make informed decisions. The earlier your company embarks on this journey and provides a platform to help educate directors and management about climate risks, the better positioned your company will be to engage with investors and shareholders on the impacts and opportunities for your organization.

Banks

Sector overview

- Overall, the quality of banks' climate risk disclosures lagged behind leading sectors, such as telecommunications and energy, but received the highest score for quality in the financial sector.
- Australian banks' disclosures were substantially ahead of disclosures from banks in other regions, mainly because of their inclusion of disclosures around scenario analysis (noting that the banking sector is relatively consolidated in the Australian marketplace).
- Banks from Finland, China and UAE were the underperformers, scoring below 10% for the quality of their climate risk disclosures.
- The United Nations Environment Programme Finance Initiative's TCFD pilot project, targeted at banks, appears to have improved the disclosures of the members of the program compared with their peers.
- Most banks submitted CDP responses, which was the most common source of disclosures.
- The best-performing banks were those that included TCFD structured disclosures within standalone reports or sustainability reports.
- Disclosures generally excluded physical risks, which could be a significant risk to the banking sector, given their large mortgage portfolios.

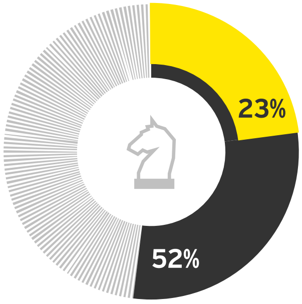




Governance

Sixty-seven percent of banks disclosed some level of governance related to climate change. The detail of governance structures were most frequently documented within CDP responses. In less-detailed disclosures, governance was treated along with sustainability or risk committee's reporting without any further delineation of climate risks. Best performers provided details about the governance arrangements for:

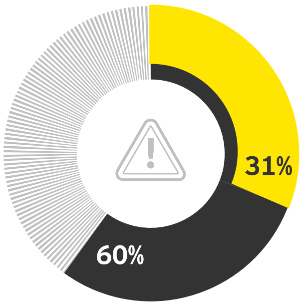
- Managing a bank's own carbon emissions
- Managing the transition risks of companies included in a bank's lending and investment portfolio
- Managing the physical risks of the assets funded through the bank's lending and investment activities



Strategy

Strategy disclosures were the most poorly developed of the four TCFD components for banks, scoring only 23% for quality. This is mainly because of the lack of disclosures relating to the results of scenario analysis. Some banks stated they intended to perform scenario analysis in the future and others suggested they had conducted scenario analysis, but did not disclose the results, which reduced the scores on quality for these companies. Of those companies that provided CDP responses, most banks identified some climate risks and opportunities, but only a few of such disclosures provided insights into their potential impact on the organization. Some of the better strategic disclosures discussed included:

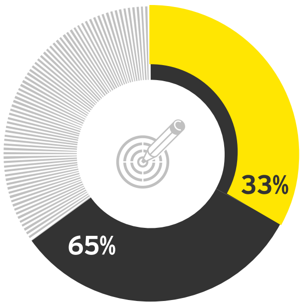
- Transitions risks to the lending portfolio from changes in regulation and demand
- Opportunities to assist in the financing of green growth sectors
- Physical risks to investments from climate change
- Reputational risks from not responding or proactively assisting customers on climate change



Risk management

A range of risk management strategies were disclosed. Less-detailed disclosures stated climate risks were assessed as part of established environment, social and governance (ESG) due diligence processes, conducted before making an investment decision, similar to the frameworks of the Equator Principles framework or ESG materiality assessments. The more-detailed disclosures identified the key sectors exposed to higher levels of physical and transition climate risks, and stated investments in these sectors were regularly monitored for changes in climate risks. These sectors commonly included energy, mining, manufacturing, property and infrastructure. Some banks also managed transition risks by monitoring the emissions of their investments or monitoring the level of lending to high-risk sectors.

Specific management strategies for monitoring physical risk to investment were not often described.



Targets and metrics

Sixty-five percent of banks disclosed some data in relation to targets and metrics – generally their Scope 1 and 2 GHG emissions and, in some cases, Scope 3 (such as those from travel and waste). Some banks also disclosed the use of an internal carbon price to drive Scope 1 and 2 emissions reductions. Australian banks also disclosed financed emissions from investments to some degree, mainly focusing on energy generation lending. Financed emissions disclosures were not common practice in other regions despite this being a more material risk to the sector.

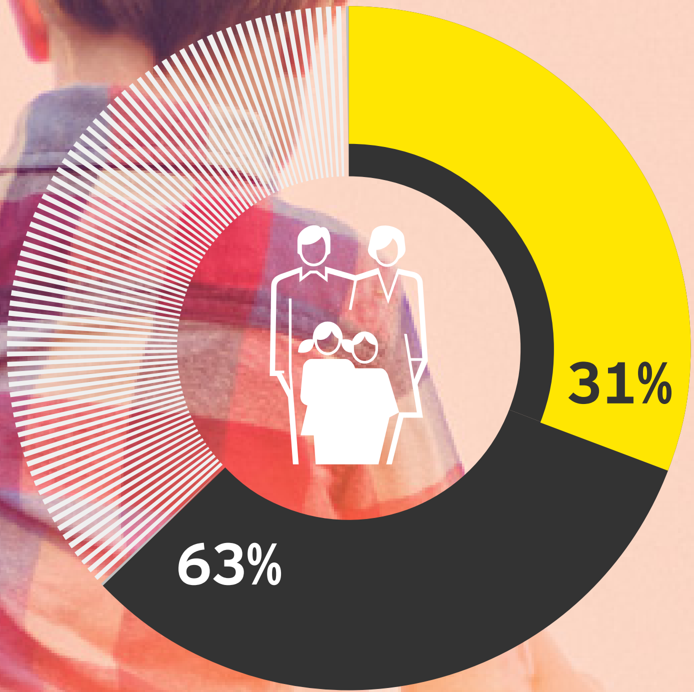
Climate-related targets predominantly focused on the banks' Scope 1 and 2 GHG emissions, which do not align to their key climate risks identified – those that are risks to investments. Wherever banks set targets to address transition risks to their investments, they were generally quantitative targets for green lending or qualitative lending restrictions in sectors with high emissions.

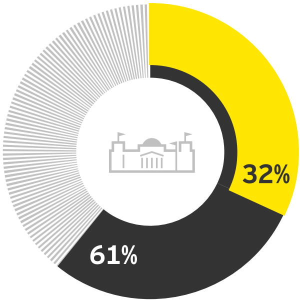
Coverage   Quality

Insurers

Sector overview

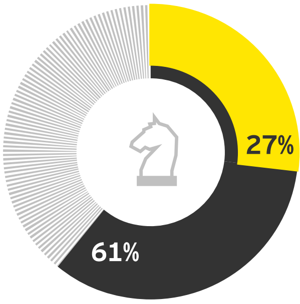
- Insurers' climate risk disclosure scores were, on average, similar to banks and below leading sectors, such as energy and telecommunications. However, insurers scored relatively high on strategy.
- Insurers from mainland China, Singapore, Hong Kong and India were the under performers, scoring below 10% for the quality of their disclosures.
- Insurers that received the highest scores for quality tended to have separate climate risk reports or webpages and were signatories to the TCFD recommendations.
- Physical risks disclosures were more commonly referenced than in other sectors, which is not surprising because of their materiality to the insurance sector. However, these disclosures generally provided very little detail into how the risks were monitored and managed.





Governance

Sixty-one percent of insurance companies included governance disclosures. Insurers with higher-quality governance disclosures were those with sustainability, social and ethical committees that reported to the CEO or the board on a frequent basis. Some insurers also had investment committees established to ensure funds invested by the entity also considered climate risk.

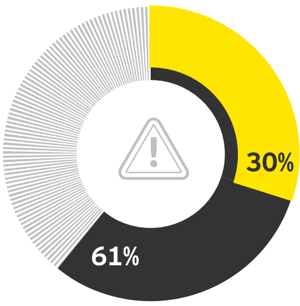


Strategy

The most common climate-related impacts identified by the insurance sector was the increasing number of extreme weather events. This was viewed as both a financial risk (because of higher payout levels and premium increases) and opportunity (because of growth in demand for insurance and reinsurance products). Some insurers also identified transition risks, from changing demand and increasing GHG emissions regulation, which could impact their investment portfolios. Reputational and liability risks were not frequently mentioned, though insurers' behavior after natural disasters gain negative publicity.

Scenario analysis was mentioned more frequently by insurers compared with other sectors, as this is already conducted to some degree to set insurance premiums. However, limited information existed on the modeled climate scenarios and their impacts. The methodologies of some of the analyses appeared to be based on historical trends, which omits the impacts of climate change. And in some cases, the analysis was limited to investment portfolios and not insurance products.

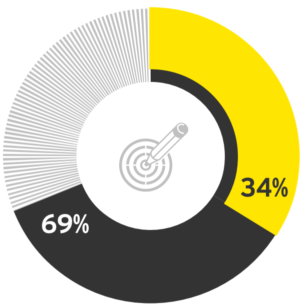
Some reporters focused their strategic disclosures on the management of Scope 1 and 2 emissions and becoming carbon neutral, which is not the key risk to the sector.



Risk management

Most risk management disclosures discussed how climate change fits within enterprise-wide risk management frameworks. Those with higher-quality disclosures have specific climate committees to oversee the management of physical risks on insurance products – and to manage changing premiums and product offerings.

Where insurers discussed the management of transition risks to their investment portfolios or the management of their own emissions, these issues were generally handled by separate groups at the operational level.



Targets and metrics

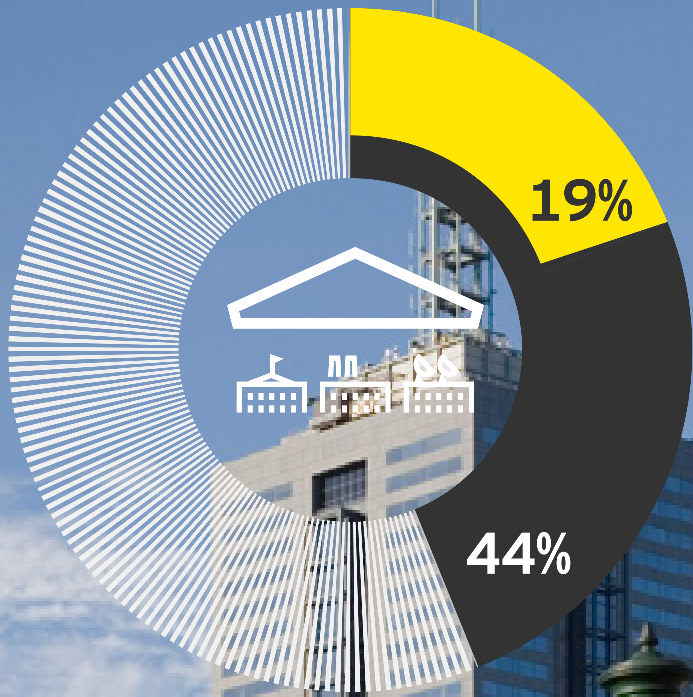
Scope 1 and 2 GHG emissions were commonly disclosed by the insurers. However, Scope 3 emissions, targets and historical trend disclosures were rarely revealed. Where targets were disclosed, they related back to Scope 1 and 2 GHG emissions. The TCFD Annex Report recommends that insurers should also provide metrics and targets relating to aggregated risk exposure to weather-related catastrophes. These disclosures were not common, nor were the metrics targets relating to transition risk on investments, such as portfolio footprinting or setting investment targets and restrictions on certain sectors.

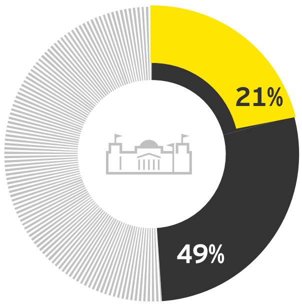
Coverage Quality

Asset owners and managers

Sector overview

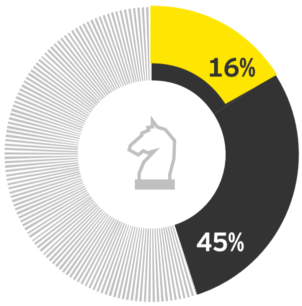
- Asset owners and managers scored the lowest on quality for climate change risk disclosures across all sectors assessed.
- Asset owners and managers from most countries received scores for quality between 20%-30%, with those from Finland, Italy, China, India, South Korea and the UAE scoring below 10% on average.
- Some large pension funds, mainly overseeing the pensions of public sectors, performed better on average than their peers. This may be because of increased pressure and awareness of their stakeholders and a longer-term outlook for investment strategies.
- The poor scores for both the coverage and quality for asset owners and managers is surprising, as the sector typically advocates for broader and more consistent disclosures. This has, however, not translated to reporting on their own risks and opportunities.
- Reporting on transition risks to investments and portfolio emissions, footprinting undertaken were referenced by the better performers.
- Physical risks to investments were seldom mentioned in the disclosures.





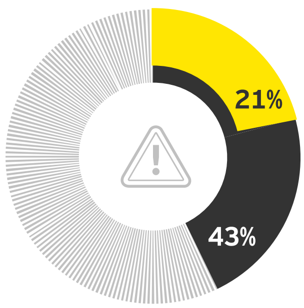
Governance

Forty-nine percent of asset owners and managers reported governance disclosures. The most commonly referenced governance structure was an ESG or sustainability committee that reported to the board or directly to the CEO. Climate change was not often mentioned as a specific focus for these committees and few stated how climate risk management was considered by the investment teams. Those few with the better quality governance disclosures had separate responsible investment committees.



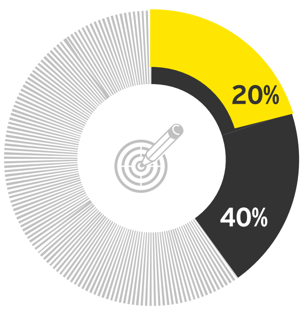
Strategy

Asset owners and managers received the lowest score on quality for strategy among the four TCFD components (16%). Where reporters disclosed strategic commentary, it was mainly focused on transition risks to investments, from increased regulation and changing demand for products. Physical risks to investments were rarely mentioned, with even some of the better performers stating that physical risks were too complex or long-term to be currently considered in strategic decision-making. A handful of asset owners and managers mentioned that scenario analysis had been undertaken, although results or risk management actions as an outcome of the analysis were not disclosed.



Risk management

Most risk management disclosures discussed enterprise-wide risk management processes. Where asset owners and managers had developed specific risk management strategies for climate risks, they varied in scope. More generic disclosures discussed the ESG considerations that were incorporated into investment decisions. More specific disclosures included sector-specific risk analysis for high-risk sectors. This included using shareholder advocacy and proxy voting to ensure companies assessed climate risks and development of climate-friendly investment options (such as negative screening of highly impacted sectors or investing in green products, companies and bonds). Some asset owners and managers reviewed high-risk assets for exposure to physical risks, although this was not common.



Targets and metrics

Similar to other financial sectors, the most commonly disclosed metrics of asset owners and managers were Scope 1 and 2 GHG emissions. Some of the better quality disclosures also contained carbon footprinting (although this was typically restricted to equity investments, rather than debt or direct investments). Other entities commented that carbon footprinting can be misleading and, instead, disclosed metrics related to the percentage of holdings in companies with material revenues from fossil fuel products. Leaders went beyond footprinting to the analysis of those investment sectors that aligned with a 2°C future.

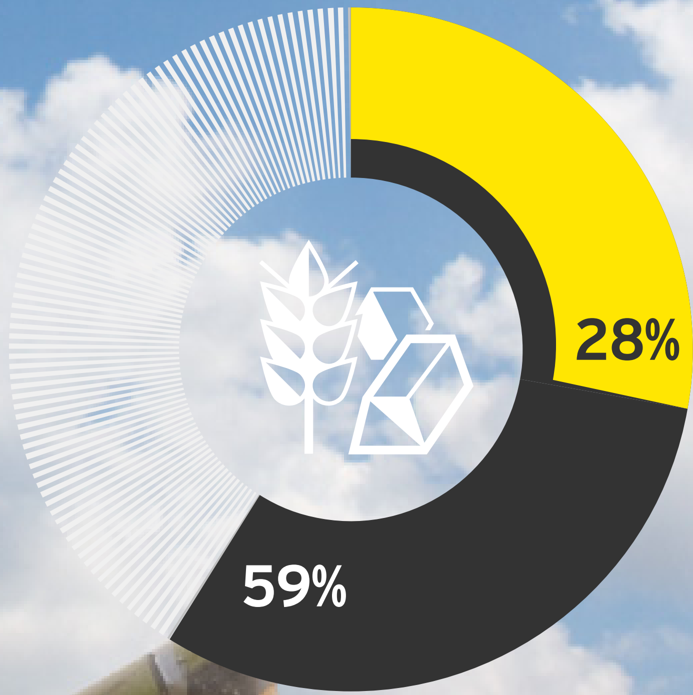
Targets were not regularly disclosed. Where they were revealed, such targets were mainly focused on carbon neutrality of operational emissions and were not related to investment portfolios. No metrics or targets set around physical risks were disclosed.

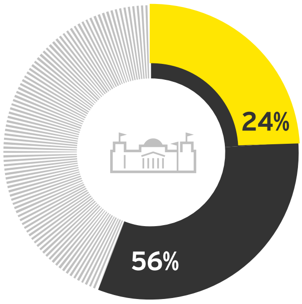
Coverage   Quality

Agriculture, food and forest products

Sector overview

- Overall, the agricultural sector showed good coverage of all four components of the TCFD recommendations (all above 50%). However, the overall level of quality was much lower, especially around the aspects of governance and strategy. The gap observed between coverage and quality can be partly explained by companies from countries, such as South Africa and Denmark who addressed most of the TCFD recommendations, with low quality of disclosure.
- Countries identified as top performers in this sector are Australia, France and Japan, which is likely because of the regulations in place for this sector in these economies.
- Most companies from Asia (South Korea, Hong Kong, India and mainland China) as well as Canada and Italy were the lowest-scoring performers with close to 10% or less in quality.





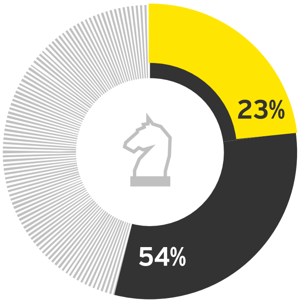
Governance

Over one-third of the assessed companies did not provide any disclosure on climate-related governance, resulting in a low score for quality overall.

A majority of companies disclosed information about the governance arrangements for sustainability issues, referencing that these covered climate change, but did not provide any further detail.

Only 15 companies provided detailed disclosures consistent with certain elements of the recommendations.

For those companies that did score well, it was because they had some level of disclosure in their CDP report. However this rarely translated into disclosures in the annual report on financial filings.



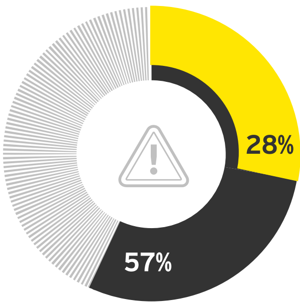
Strategy

Disclosures on strategy in the agricultural sector were the least aligned with the recommendations, scoring only 23% for quality (compared with the other three TCFD components).

Similar to some of the other sectors, this was mainly because of the lack of disclosures relating to scenario analysis. Low scores were also attributed to companies failing to estimate timeframes for their climate risks or to disclose any materiality processes to identify and prioritize the risks.

Most companies that achieved better scores described and outlined risks and opportunities, indicative timeframes, potential impacts and likelihoods, and materiality processes.

Only two companies described in detail and explained the implication of a 2°C scenario.



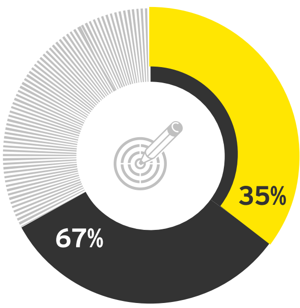
Risk management

The majority of companies were able to provide a description of their risk identification and management processes. However, a number of these companies did not provide any specific information on the management process for climate-related risks, which resulted in lower scores for quality.

A few higher performers disclosed their process in detail to identify, assess and mitigate climate risks, including physical climate risks (as well as their materiality process and how they are integrated into the global risk management process).

Best performers reiterated what their material physical risks were, and how they were prioritized and addressed at both the asset and company levels. The best identification and management processes included the following arrangements:

- Each division has its own risk management plan, reviewed by the board.
- Long-term climate risks and opportunities are identified at group level with the use of scenarios.
- Shorter-term risks and opportunities are identified through a stakeholder consultation at an asset level.
- Materiality is determined by assessing the potential consequences and likelihood of the different climate risks.



Targets and metrics

Almost half of the assessed companies reported their Scope 1, Scope 2 and Scope 3 GHG emissions, as well as other climate-related metrics, such as water and energy consumption, and waste generation. Hence the quality score for targets and metrics was the highest among all four TCFD components.

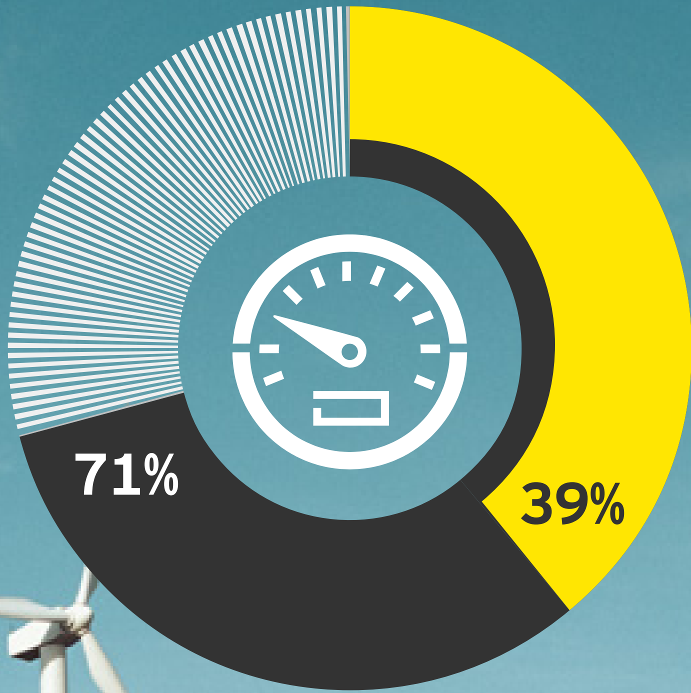
For the top performers, the most common source of information disclosed was in CDP reports, which drives companies to disclose targets and metrics that are aligned with the TCFD recommendations for KPIs and targets. However, this rarely translated into disclosures in the annual report on financial filings.

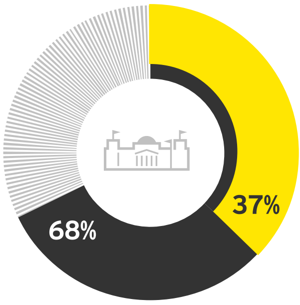
Coverage Quality

Energy

Sector overview

- Overall, energy is one of the best-performing sectors alongside mining, manufacturing and transportation sectors. It has the highest score for strategy in terms of coverage and second highest score for strategy in terms of disclosure (behind mining).
- Despite the scale of the risk to this sector, the quality scores were still comparatively low.
- France and Japan were clear leaders, but other good performers include Australia, South Africa and Italy. UAE and Singapore were the underperformers, scoring below 10% in quality.
- The overall good performance of the energy sector can be explained by the fact that this panel includes major oil and gas companies, as well as energy utilities, who have been increasingly challenged by investors and civil society on their exposure to climate risks. They have had to provide transparent information on their action to address climate-related risks (particularly, transition risks). These risks have affected their core business model for several years and, therefore, are quite mature on climate-related disclosure, with some of them even performing scenario analysis.



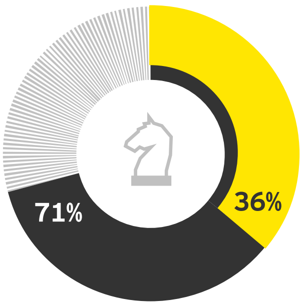


Governance

Over half of the companies assessed, disclosed some level of governance related to climate change. But among those companies, 40% mentioned the sustainability committee to be managing their climate change issues.

Some of the best performers disclosed detailed information on their governance process in their sustainability report or annual report, where they clearly described:

- The role of the board in managing climate-related issues, which included overseeing the company's objectives on climate change and energy transition, the GHG action plan, and all strategic agreements, including those related to climate change
- The relationship between the board and operational committees in charge of climate risk management



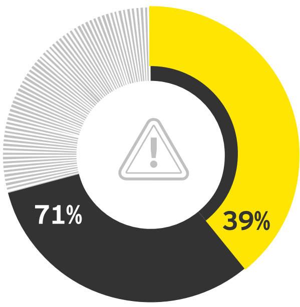
Strategy

For energy companies, the quality score in strategy was the lowest score among the TCFD components, as most of them had not yet developed a 2°C scenario. This was surprising, given the level of both transition and physical risks this sector faces in the short- and long-term. It is worth noting that although low, it was still comparatively higher than other sectors.

Only one company described the resilience of its strategy regarding climate risks, which was cited in its sustainability report.

Those who completed the CDP report tended to describe in detail their climate risks and opportunities, including the timeframe, potential impact and likelihood for each risk. Many identified extreme weather events as a material risk with a significant impact on the company's operations.

Companies that did not complete the CDP generally received lower scores in quality. This reflects the fact that they did not disclose any information on climate opportunities in any other external documentation. In addition, these companies often did not set a timeframe or estimate the potential impact for the identified climate risks.

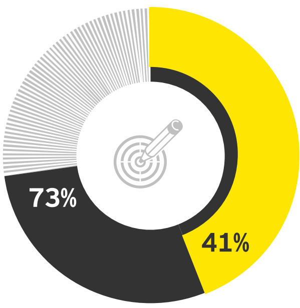


Risk management

Some of the better rated companies disclosed (mostly in the CDP report) their risk identification process at both asset and company level. They also described how climate risk identification and management are integrated in the company's risk management process.

Good performers described that their risk assessment is performed annually or twice a year, and how the board is regularly kept informed on policy and asset risks, including climate risks.

Companies that scored poorly either did not disclose any information of their climate risk identification and management process, or they described their global risks management system, with no reference to climate change.



Targets and metrics

Energy companies scored most in targets and metrics among the four TCFD components, in both coverage and quality. This is attributed to the fact that most companies disclosed Scope 3 (in addition to Scope 1 and 2) GHG emissions.

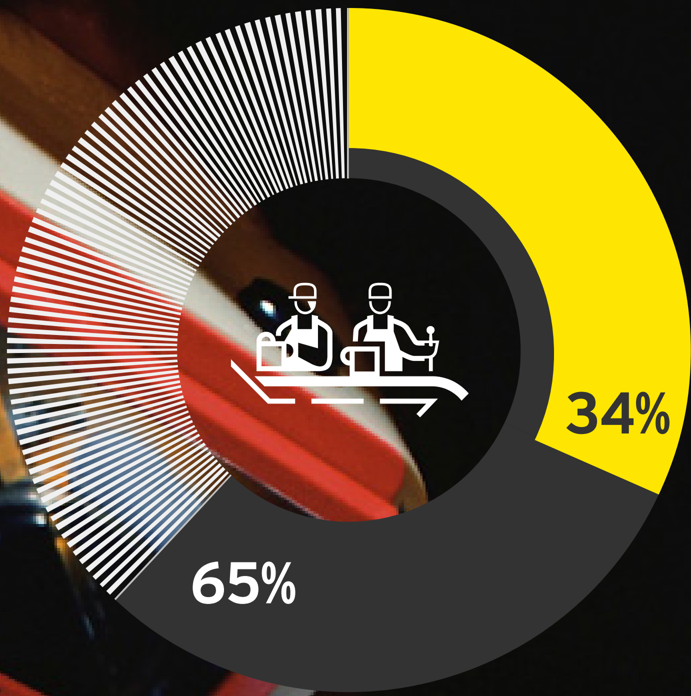
High-performing companies also indicated the methodology for measuring or calculating their GHG emissions, as well as the historical data for their KPIs.

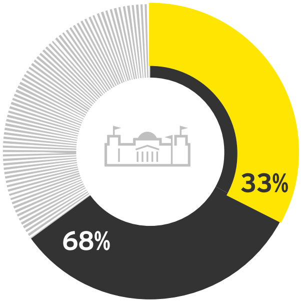
Coverage Quality

Manufacturing

Sector overview

- Overall, manufacturing has the third-best scores of the key TCFD sectors in terms of both coverage of the key TCFD recommendations and quality of disclosures, behind the mining and energy sectors.
- Companies from France and US were slightly ahead of the others in terms of quality of disclosures, and were the best aligned with the TCFD recommendations on the aspects of risk management, and targets and metrics.
- Manufacturing companies from mainland China, Hong Kong and Singapore are not advanced in their disclosures, and they have hardly addressed the TCFD Recommendations. Canadian companies also performed poorly in this sector, scoring below 5% for quality.

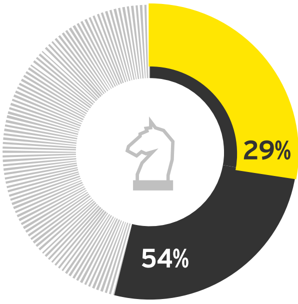




Governance

Over two-thirds of the assessed companies disclosed some level of governance related to climate change. However, the information revealed lacked detail, with most companies only including a description of the sustainability committee's roles – managing climate-related issues being one among them.

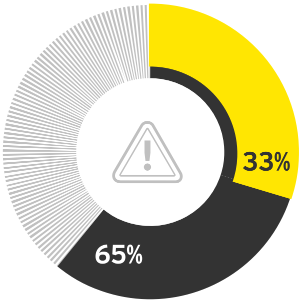
Only a few companies clearly explained how the sustainability committee reports to the board on climate-related issues, and how climate change is integrated in the company's overall strategy and objectives. Most, however, did not provide detail on the management's role in assessing, and managing climate-related risks and opportunities.



Strategy

Almost half of the manufacturing companies did not describe any risk or opportunity related to climate change over the short, medium or long-term (and no company had developed a scenario analysis).

Companies from Australia, France, Germany and the US scored close to 50% in quality and were the best performers in strategy disclosures. Companies from these countries mostly used the CDP report to describe the risks and opportunities they have identified over the short, medium and long-term. They also indicated the potential financial and operational impact for each of them, as well as the likelihood and process for prioritization.

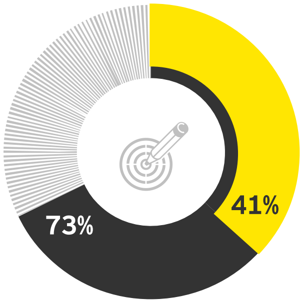


Risk management

The quality of disclosures in the manufacturing sector was the second best across the key TCFD sectors, behind mining. Australia, France and the US came out as leaders.

Top performers explained that the identified risks were analyzed on the basis of group-wide risk scenarios, and were prioritized according to their impact and their probability. The most commonly identified risks in this sectors were floods, tornadoes and hurricanes, most likely to result in a loss of production or damaged properties.

Most of the information regarding climate-related risks and opportunities were found within CDP reports.



Targets and metrics

France and Norway were substantially ahead of other regions in terms of the quality of the disclosures of targets and metrics. They disclosed information on several KPIs with at least one year of historical data, and their internal carbon price mechanism.

With the exceptions of Hong Kong, mainland China and Singapore, companies disclosed at least some KPIs, such as energy consumption; Scope 1, 2 and 3 of GHG emissions; waste; and water.

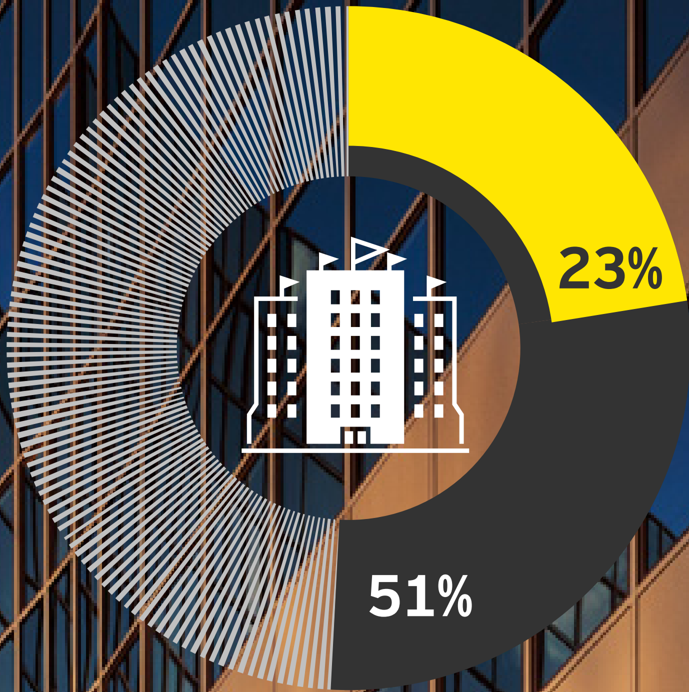
Information regarding targets were lacking in almost one-third of the companies' disclosures, with only some companies disclosing information completely aligned with TCFD recommendations.

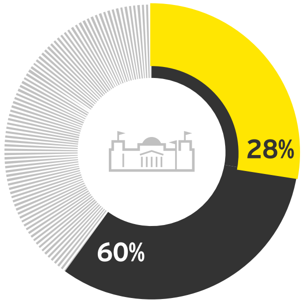
Coverage   Quality

Real estate, buildings and construction

Sector overview

- Overall, real estate, buildings and construction companies score the second lowest – both in terms of coverage and quality of responses (and of the nonfinancial sectors scored the lowest).
- France was the clear top performer with companies covering all TCFD recommendations and providing detailed, well-articulated information on climate-related risk management processes and strategy.
- Out of the 47 companies, 16 scored below 5% for the overall quality of their climate risk disclosure. These companies are mainly located in Singapore, Hong Kong, UAE, and mainland China.
- Some of the top scorers performed scenario analysis. CDP responses were typically the source of most of their climate risk-related information. Only a handful of companies in the panel explicitly mentioned physical risks, which could be significant to the buildings sector, with increasing needs for resilient buildings and infrastructure.



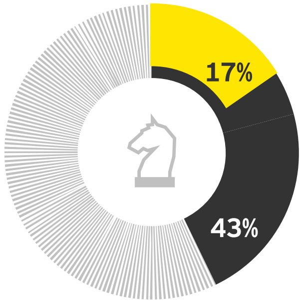


Governance

Nearly one-third of companies did not disclose any information on the governance of climate risks.

Among those who disclosed, top performers produced a detailed description of the board's oversight role on climate change risks, including an explanation of the roles and responsibilities of individual board members and top executives. Their governance department was also strongly linked to identifying and nurturing opportunities, such as energy efficiency, renewable energies and new technologies. The reporting and information processes were also well described and frequently mentioned so that the top management could adequately consider climate risks.

However, many disclosures mentioned governance bodies and processes in place to overlook general sustainability issues, without providing specific information on climate-related risks.

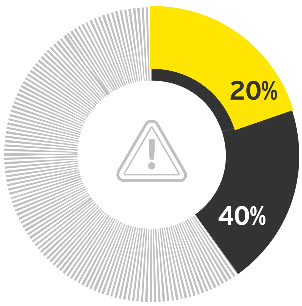


Strategy

As in other sectors, the quality score is low (below 20%) for companies in the buildings sector. Many companies did not reveal any information, or disclosed general statements on risk management strategies (with no reference to climate-related risks).

The risks identified in some of the better disclosures include energy security and rising energy costs, energy and carbon tax, and climate and energy regulations and standards. Other risks identified in these disclosures were extreme weather events (flood risks, heatwaves, etc.), impacting on asset value and insurance costs; and water security and cost increases linked with carbon-intensive construction materials.

Top performers were able to quantify the share of their standing portfolio at risk for the above-mentioned. However, most companies did not precisely describe or assess the impact and occurrence of the risks identified. They also systematically linked these risks to opportunities, such as delivering energy and carbon cost savings, generating onsite renewable energy and outperforming building regulations. In doing so, they were able to provide a statement on how the climate risks and opportunities identified affect their strategy, often linking it to scenario analysis. They also outlined how addressing climate risk and opportunity is a long-term guarantee of asset value.



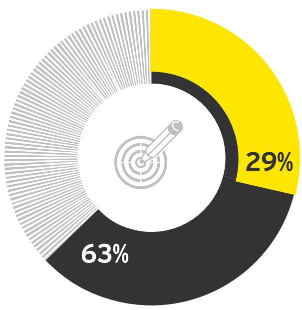
Risk management

With regard to risk management, the real estate, buildings and construction sector scored the lowest in the four TCFD components in terms of coverage. Nearly half of the companies in the sector disclosed no information regarding risk identification and management of climate risks.

The better disclosures included a detailed description of risk identification processes, including ownership and responsibilities at each organizational level. Commonly, ownership is meant to sit with the board, who reviews climate change risks as part of overall risk assessments. A company also commissioned an external study to help identify risks and opportunities, and develop mitigation plans. They also included climate risks in their innovation strategies.

More often, companies disclosed information on environment risk identification and management processes, mentioning that these apply to climate risks as well. Less-detailed disclosures mentioned that climate risks had been identified through general risk identification processes; however, not detailing those particular risks and the actions taken to mitigate them.

Risks identified were primarily transition risks, and few companies mentioned physical risks. Transition risks were addressed by monitoring emissions of the standing portfolio, and implementing actions to reduce energy consumption and GHG emissions.



Targets and metrics

Targets and metrics is the TCFD element for which real estate, buildings and construction companies scored the highest — both in terms of coverage and quality. Only a handful of companies did not disclose any KPIs related to climate change.

Most building companies disclosed at least some KPIs related to climate risks, reported on Scope 1 and Scope 2 emissions and referenced emissions reduction targets. But, most companies provided little detail on the methodology and boundaries of their targets and metrics. Few companies disclosed information on Scope 3 emissions, which are linked to building materials and leasing activities.

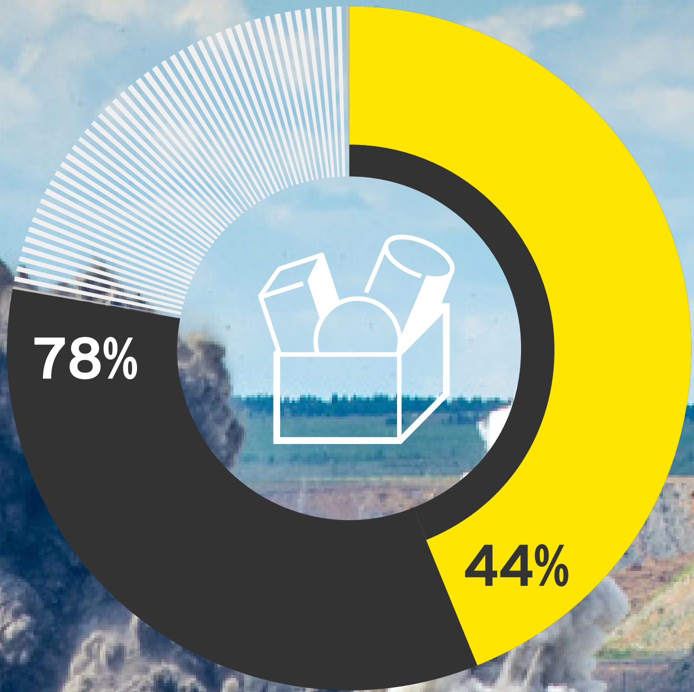
Top performers disclosed absolute and intensity KPIs and targets, and integrated them in a medium- or long-term road map, setting long-term targets with a detailed trajectory. Of those, a few mentioned that they have set science-based targets, using remuneration as a tool to incentivize top management and operational staff to actualize the road maps. They also declared using internal carbon pricing to support decision-making processes.

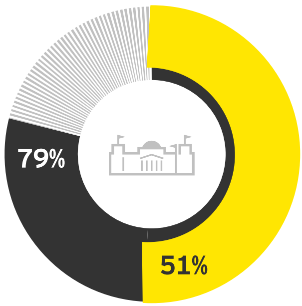
Coverage   Quality

Mining

Sector overview

- The mining sector was the top performer of the key TCFD sectors in terms of both coverage of the TCFD recommendations and the quality of disclosures.
- Companies from Australia and Canada obtained the highest scores in both quality and coverage, which is not surprising given the fact that the largest global mining companies are headquartered there. These companies scored particularly well compared with others in strategy, and targets and metrics.
- UK and South Africa also addressed the majority of the TCFD recommendations, achieving a high score in coverage. However, the quality of disclosure was lagging behind in comparison with Australia and Canada.
- Mining companies from Singapore and South Korea were the underperformers, scoring below 10%.





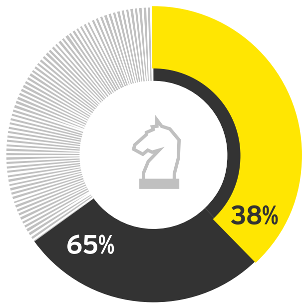
Governance

The majority of companies disclosed information regarding their governance structure related to climate change (only two organizations did not disclose anything at all).

These companies provided clear, detailed information regarding the aspect of governance that were well-aligned with the recommendations (and as result were rated 50% and above for the quality).

Companies from Australia and South Africa performed particularly well, disclosing the roles of all governance bodies involved in climate change issues. They included not only the sustainability committee, but also the board, and the audit and risk committee. Top performers also explained the interactions between these distinct structures, such as:

- The sustainability committee regularly reporting to the board on climate-related issues during meetings held by the members of the former
- The sustainability committee providing inputs to the audit and risk, and social, ethics and transformation committees on relevant safety and sustainable development objectives



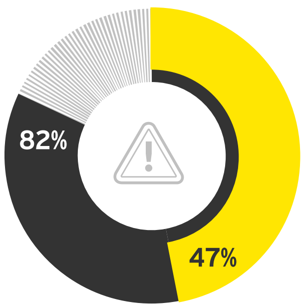
Strategy

Of all the sectors, mining companies aligned best with the TCFD recommendations, thus obtaining the best quality score of 38%.

However, like the other sectors, the quality of those strategy disclosures were lower than that of governance, risk management, and targets and metrics.

The better performers, mostly from Canada and Australia, listed climate risks and opportunities (but in their CDP report, not annual report or financial filings). They also set a timeframe for each of them, and estimated the potential impact (financial and operational) and likelihood.

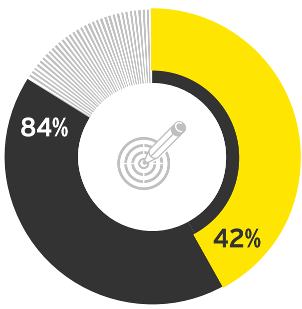
The top performers (both from Australia), have developed long-term scenarios to test the resilience of the portfolio and investment options, which they described in their sustainability report (again, not in their annual report or financial filings).



Risk management

Many of the assessed companies provided some information about their climate-related risks identification and management process, and indicated how these processes are integrated in the company's overall risk management.

The most-detailed disclosures indicated that climate risks were integrated in the group scenarios to understand the potential impacts on the company's portfolio.



Targets and metrics

Almost all companies disclosed at least some information regarding their targets and metrics, scoring 84% in coverage.

The majority of the Australian and Canadian companies disclosed Scope 3, as well as Scope 1 and 2 GHG emission reduction targets, and are the leaders in terms of disclosure quality for targets and metrics.

Top performers also specified the methodology used to calculate or measure GHG emissions, and indicated that they were using an internal price on carbon.

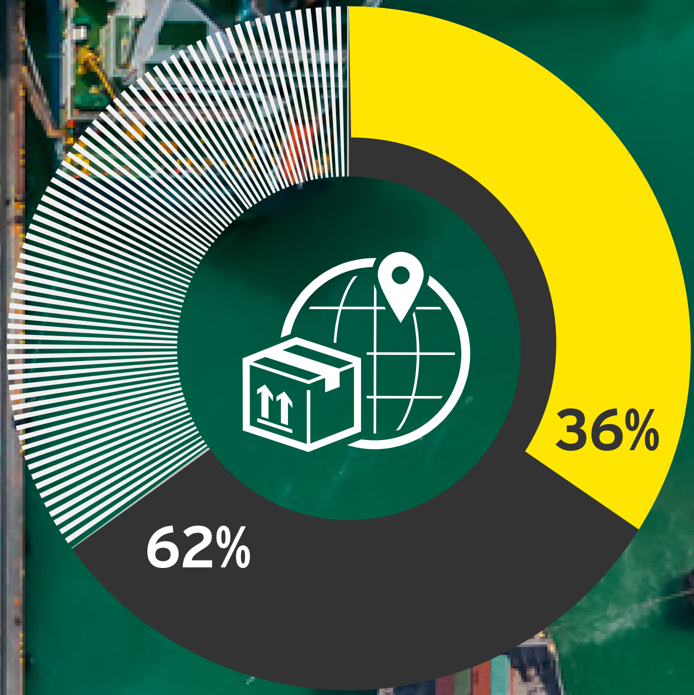
Companies from South Korea and Singapore did not disclose any information regarding carbon and metrics.

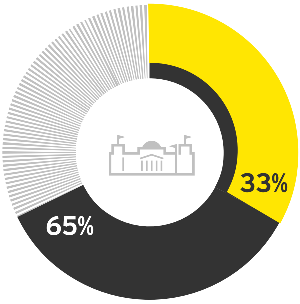
Coverage   Quality

Transport

Sector overview

- Overall, the transport sector was one of the highest key TCFD sector performers in quality, behind mining and manufacturing.
- France, Germany and the US appeared as leaders in this sector compared with other countries, achieving high scores in quality for the four TCFD components.
- Least-detailed disclosures came from companies in Asia (e.g., China, Singapore), with quality scores well below 10%.
- Half of the assessed companies responded to the CDP, and tended to obtain better quality scores compared with companies that did not respond.

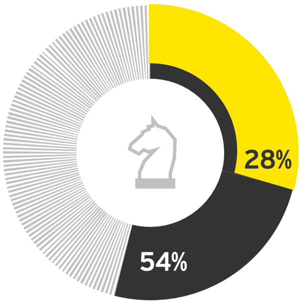




Governance

Sixty-five percent of the assessed companies disclosed some level of governance related to climate change. Top performers provided detailed information, mostly in their CDP report, such as:

- The composition of governance bodies responsible for operational management of climate change issues
- The frequency with which those committees report to the board on climate change issues
- How often climate-related issues are considered when the company's strategy or business plan is discussed



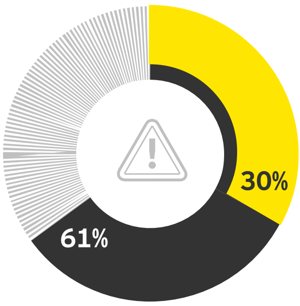
Strategy

As we have observed in other sectors, strategy disclosures scored the lowest in quality at 28%. This is, however, one of the highest scores across all sectors for the quality of strategy disclosures, behind energy.

Companies that obtained top scores on quality usually provided the most detailed explanations in their reporting, such as:

- Detailed lists of both risks and opportunities, sorted by type of risks and opportunities (physical, transition and regulatory)
- Indicative timeframe for each risk and opportunity
- Potential impact and likelihood of each risk and opportunity

However, overall scores were still low as there was limited discussion on how the strategies align with a 2°C scenario.

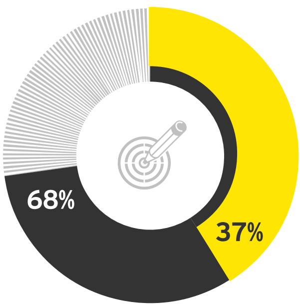


Risk management

The US, Germany and France were identified as leaders in their disclosures of risk management. Hong Kong, Norway, Singapore and mainland China were the underperformers, scoring below 10%.

Top performers often indicated:

- How they use a global risk analysis framework or an environmental management system (which references climate risks) and, therefore, how climate risks are integrated in the overall risk management of the company
- The materiality process used to prioritize the risks – some companies use a matrix between the potential economic impact of the risk (measured through its probability, importance and impact on long-term performance) and the importance for each stakeholder (depending on their level of legitimacy and influence on the topic)



Targets and metrics

For transport companies, the score on quality for targets and metrics was the highest among the four TCFD components, with almost one-third of the assessed companies scoring above 50%.

CDP reports, which included the best disclosures regarding targets and metrics, were the most common source of target and metric information.

Companies identified as top performers, mostly from France, the US, Italy, Japan and Norway, disclosed (in their CDP reports):

- A detailed information on their Scope 1, 2 and 3 GHG emissions
- The methodology used to measure or calculate the emissions, as well as the historical data
- Targets for the reductions of their GHG emissions, indicating the base year, target year and percentage of mitigation

Coverage   Quality

Non-key TCFD sectors

Two sectors were included in this report that were not identified in the TCFD recommendations as key sectors, which are: telecommunications and technology, and retail, health and consumer goods. These sectors were included in the analysis because of their importance to the economy in the regions examined.

Telecommunications and technology

Telecommunications and technology, while not a key sector under the TCFD recommendations, has emerged as a leading sector in response to climate change. This is attributed to a number of reasons.

- The sector has considerably large and rapidly growing companies that are significant users of electricity, and are increasingly exposed to media attention and reputational risk. The community expects these companies to be leaders in technology and to be driving innovation in areas, such as energy procurement. As such, climate change is expected to be a material issue for this sector.
- The sector has large physical networks that are exposed to extreme weather events. Our analysis shows this sector is already disclosing that the increase in extreme weather events is having an impact on their assets.
- Also of note, this sector is also positioning itself to be part of the solution as the economy transitions to a low-carbon future. The economy will digitalize functionalities using the technologies created by this sector, which will reduce emissions from transport and logistics. This means understanding climate change is integral to the strategies of these companies.

In assessing telecommunications and technology, we see this sector outperforming all others in two main areas.

1. Identification of climate risk: Telecommunications and technology companies commonly identify the key climate risks facing the sector – being regulatory risks leading to increased electricity costs – and physical risks from increased damage to networks. In some cases, companies quantify the impacts of these risks, which was rarely done in other sectors.
2. Emissions reduction targets: These companies generally disclose some form of emissions reduction target. This sector has been the focus of several initiatives aimed at reducing GHG emissions, such as RE100 (an initiative targeting 100% renewable energy procurement and generation by corporations) and science-based targets (an initiative requiring companies to adopt an emissions reduction target aligned with a 2°C future). The focus on this sector by such initiatives seems to be having an impact on the quality of target set by the sector.

Retail, health and consumer goods

Retail, health and consumer goods sectors, as we refer to it here, includes global pharmaceutical and retail companies. Although these companies don't produce huge volumes of direct emissions, they have been grouped together and included in the analysis of this report as they have complex supply chains that are exposed to both physical and transition climate change risks. These companies are also responsible for maintaining the consumer reputation of leading brand names, and increasing their exposure to sustainability issues, including climate change.

While the overall quality of this sector's climate disclosures was average, there were some leaders and rather weak performers worth highlighting.

- Leaders consist of French, German and UK retail and pharmaceutical companies. These companies have established governance processes to manage supply chain risk and developed significant strategies to manage climate risk in their supply chains (such as assisting and funding energy reduction, and adaptation projects for suppliers). These companies also did well in developing metrics and targets to incorporate ESG performance into remuneration calculations, and measure and manage the impact of their broader supply chains.
- Weak performers were mostly Asian domiciled companies, with several from China and India reporting no climate risk disclosures.

What next?

Climate risks are more complex and longer-term in nature than most traditional business risks, and this has contributed to a lack of understanding and measurement on their potential impacts.

As discussed earlier, if an organization does not have a clear understanding of the range and magnitude of potential financial impacts from climate change, this may be increasingly detrimental to its financial performance.

So, where to start?

Disclosing climate-related risks likely requires changes to the governance and risk assessment processes (as per the TCFD recommendations). It may require several years for an organization to be in a position to generate valuable information for investors and shareholders to help them make informed decisions. The earlier your company embarks on this journey and provides a platform to help educate directors and management about climate risks, the better positioned your company will be to engage with investors and shareholders on the impacts and opportunities for your organization.

Companies that seek to understand their climate risks exposure can ask themselves the following questions.

- What are the biggest emission sources in my value chain?
- What are the incentives, instruments or indicators that can help me align my strategy with the 2°C road map (e.g., internal carbon price on CAPEX and OPEX, and company-specific targets)?
- What are my stakeholders' expectations in terms of climate footprint and carbon performance (e.g., lead the development of low-carbon products and services, or disclose information required by investors)?
- What type of climate risks is my business exposed to in the long run?
- ?
- How will my products and services be affected by carbon policies and targets? What are the right anticipation and adaptation strategies?
- Are the international climate policies and national commitments integrated into my business strategy, supply chain or sourcing strategy?
- What is the potential exposure to new regulations (e.g., carbon taxation or carbon pricing)? What assets are at risk (e.g., supply chain, products or activities) and in which geographies?
- Are some of my products or activities at risk regarding the 2°C road map? How can I turn this into a competitive advantage?

EY Climate Change and Sustainability Services (CCaSS) teams can help organizations as they aim to be ready for a below 2°C economy with initiatives to:

- Assess their exposure to climate-related risks
- Build forward-looking scenarios
- Disclose the information requested by stakeholders
- Build future-proof strategies in countries of operation
- Take advantage of low-carbon market opportunities

EY can provide assistance to businesses as they develop and implement their climate risk strategies. There are many steps to this process, starting with understanding your risks and monitoring your impacts through developing and financing your strategy to expand the opportunities.

Assess your business climate challenges	Comply with climate regulatory reporting requirements	Meet extended stakeholder expectations	Provide risk and opportunities management	Develop your own strategy	Raise finance for low-carbon projects	Reduce your your climate risk exposure
Understand what 2°C means for your business (resources and technology road map).	Be compliant with reporting requirements. Understand your emissions (direct, indirect and induced).	Be prepared for new stakeholders requests.	Anticipate the regulatory and business risks, and capture the opportunities associated with a path to a low-carbon economy.	Set your targets and priorities, and benefit from your competitive advantage.	Access climate finance for low-carbon projects.	Implement climate reduction actions (e.g., energy efficiency, renewable energy on the full scope). Drive your climate strategy with appropriate tools (e.g., internal carbon pricing).

Why EY

Our multidisciplinary teams combine our experience in Assurance, Tax, Transactions and Advisory services with climate change and sustainability knowledge across industries. We have experience of working on climate and energy issues with governments, industrial corporations and investors. We are a leading provider of climate risk disclosures and green bond services, having worked with some of the largest emissions intensive and asset owners globally.

EY is involved in industry groups leading the way on climate disclosures and green finance, such as TCFD and the Climate Bond Initiative, where we are an approved verifier. Our involvement in these important drivers of climate action means that we have an understanding about the expectations of investors, and the process organizations have to go through to integrate climate change strategy into their business.

Our teams' knowledge and broad range of skills, such as data analytics and project financing, and sector-specific experience means that we can tailor our services and teams to your requirements to help you address your organization's climate change challenges.

Certain services and tools may be restricted for EY audit clients and their affiliates to comply with applicable independence standards. Please reach out to your EY contact for further information.

Appendix

Notable country-level drivers

Notable country-level drivers, as they relate to TCFD-related disclosures, are summarized in the table below:

Americas	Canada	Reporting guidance from the Canadian Securities Administrators (CSA) has existed for many years, encouraging issuers to disclose climate risks. However, many issuers have been content with disclosures in the boilerplate.
	US	‣ The US does not explicitly require companies subject to federal financial disclosure requirements to disclose impacts related to climate change in their financial filings. Instead, the regulator – the Securities and Exchange Commission (SEC) – issued guidance to assist such companies understand how climate risks could be considered to meet the standard of materiality that underpins mandatory financial risk disclosure generally. That guidance (the Commission Guidance Regarding Disclosure Related to Climate Change, or SEC Guidance) was issued in 2010. Since the introduction of the SEC Guidance, the SEC has also issued individual comment letters to specific companies on their climate-related disclosures. These have the purpose of providing a publicly available assessment of a particular company's disclosures. ‣ Large US-based investment funds (e.g., BlackRock, Vanguard, CALPERS, CALSTERS) have supported shareholder resolutions targeted at improving the climate risk disclosures of US corporations operating in fossil fuel sectors.
Europe	EU region	‣ The European Commission Action Plan on Sustainable Finance has provided a regulatory dynamic on climate finance, with many TCFD elements reflected in the legislative proposal that are generating debate and awareness on the recommendations within the finance sector. ‣ Since 2017, the EU Directive 2014/95/EU on nonfinancial reporting for large public interest entities (PIEs) was required to be legislated, requiring entities to report on environmental and social issues. ‣ Investor pressure groups, such as Shareaction and Institutional Investors' Group on Climate Change (IIGCC), have been very prominent during recent annual general meetings, driving awareness of the risks and, specifically, the TCFD recommendations at the board level.
	France	‣ In 2012, the French Law, Grenelle de l'Environnement, set the regulatory framework, requiring companies to report on environmental matters (as well as social and societal), including their GHG emissions and how they mitigate impact on climate change. This reporting has become part of the mainstream reporting culture in France. ‣ In 2015, the French Energy Transition Law was enacted, including Article 173, which sets reporting obligations for nonfinancial and financial companies, as well as institutional investors related to climate change. Nonfinancial companies are now required to disclose information on Scope 3 emissions and their main source of emissions across the value chain, while financial institutions have to report on both physical and transition risks to their activities and assets.
	UK	‣ Many influential financial organizations and associations, including Bank of England, Lloyd's of London, the City of London Corporation, and the London Stock Exchange have publicly voiced their support for the TCFD recommendations, which has resulted in a high number of UK-based TCFD signatories. ‣ The UK Government's Clean Growth Strategy has called on businesses to increase their responsibility for tackling climate change. This has increased companies' awareness to climate change issues.
	Norway	‣ The Government's National Committee on Financial Climate Risk, established in 2017, is evaluating the financial climate risk for the country, with results expected to be released in December 2018. The Committee's report is expected to include recommendations for Norwegian companies built around the TCFD recommendations. ‣ The Norwegian Environmental Agency has published detailed framework reports for climate risk, which provides guidance for companies on good practices around climate risk disclosures.
Oceania	Australia	‣ The Australian Prudential Regulation Authority (APRA) has spoken publicly about the systemic economic climate change risks and have suggested they will increase their focus on the implications of scenario analysis. ‣ In 2017, Report 539 of the Australian Securities and Investments Commission (ASIC) explicitly discussed climate risk stating, "Companies and their boards should proactively consider reporting on climate risk as part of their annual reports, particularly, within their operating and financial review." ‣ An influential legal opinion prepared by Noel Hutley, QC on Climate Change and Director Duties, and commissioned by the Centre of Policy Development concluded that Australian company directors "who fail to consider 'climate change risks' could now be found liable for breaching their duty of care and diligence in the future." This has made company directors more aware of the potential personal liabilities of not addressing climate risk.

Other	South Africa	‣ Mandated integrated reporting in South Africa has driven better disclosure of value creation, while also enhancing the disclosure of all material risks to companies – including climate risks. ‣ The Government has started taking steps toward meeting its commitments to the Paris Agreement. There is enhanced regulatory pressure through the GHG Reporting Regulations (mandatory reporting of GHG emissions by emitters), an incoming Carbon Tax (expected in early 2019), and the Climate Change Bill and Integrated Resource Plan, which aims to guide South Africa's transition to a climate-resilient society and economy.
	Japan	‣ The Government Pension Investment Fund (GPIF), the largest asset owner in Japan, announced that they would consider ESG aspects in their portfolio that have increased awareness and action on ESG risks by other large Japanese entities.
	Asia/India	‣ Disclosure is influenced by large India corporates and conglomerates with global operations, who are influencers of other companies.

Sample size

Notable country-level drivers, as they relate to TCFD-related disclosures, are summarized in the table below.

	Global Carbon Risk Disclosure Barometer	Number of companies reviewed	Number of countries covered
Financial services sector	Banks	75	18
	Insurance companies	49	17
	Asset owners and managers	58	16
Other sectors	Agriculture, food and forest products	67	18
	Energy	77	18
	Manufacturing	54	15
	Real estate, buildings and construction	47	11
	Mining	19	6
	Transportation	65	18
	Retail, health and consumer goods	37	10
	Telecommunications and techonology	11	11
	Total	**559**	

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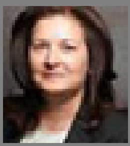

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