



Do asset prices fully reflect climate risks and opportunities?

The complexities, uncertainties and data gaps facing investors and reporting issuers make it difficult for capital markets to efficiently deal with climate change

Are capital markets adequately pricing climate risks and opportunities? As the transition to a low carbon economy rapidly accelerates against a backdrop of increasingly severe climate-related events, this is not an academic question.

The mispricing of future climate-related impacts could make it harder for companies and investors to manage climate risks, hinder efforts to transition to a low-carbon economy, and expose businesses and investors to the risk of a disruptive repricing of traded instruments.

Opinions vary as to whether climate risk is being adequately priced, and the empirical evidence is mixed. In the meantime, governments and regulators are developing standardized methods for modeling climate risks, and striving for greater transparency by companies regarding their exposure to these risks and the strategies they're using to identify and mitigate them.

Currently, there is no generally accepted methodology for incorporating climate risks and opportunities into company valuations. Every investor does their own fundamental research or runs their own quantitative strategies. The resulting public share prices are derived from aggregate supply and demand. In exploring this further, empirical evidence suggests that to date there have been limitations in factoring climate change into share prices.

The empirical evidence

To determine whether the markets are adequately pricing climate risk, the International Monetary Fund (IMF)¹ studied aggregate stock market data for 68 economies—representing 95 percent of world GDP—over 50 years to

2018. They concluded that the “impact of large climate disasters on equity prices has been modest in the past,” and that, as of 2019, “climate change physical risk does not appear to be reflected in global equity valuations.”

There is evidence that more recently the markets may be doing a better job of pricing climate transition risks and opportunities. An MSCI study of data² from 2013 to 2021 found evidence in developed markets of both a premium for more carbon-efficient companies and those with exposure to green revenue, and simultaneously, a discount for more carbon-intensive companies.

Opinions vary

If the empirical evidence is mixed, so too are the opinions of investment professionals. KPMG International in its recent *Can Capital Markets Save the Planet?*, surveyed CEOs, CIOs and senior investment strategists representing a cross-section of institutional asset owners from 20 jurisdictions managing US\$34.5 trillion of investments.

Only one of seven respondents believe public equity prices fully reflect climate risks, only one of 10 respondents believe alternative investment prices fully reflect climate risks, and only one of 12 respondents believe bond prices fully reflect climate risks.

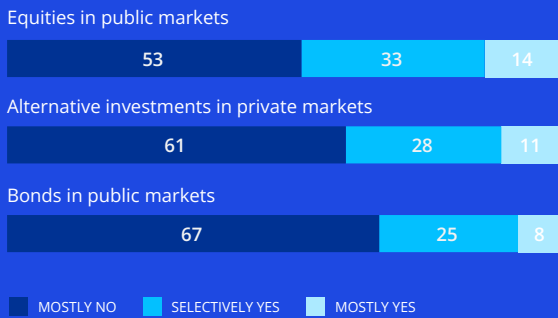
Within their own organizations, many respondents are working towards more effectively pricing climate risk.

¹ *Global Financial Stability Report, Markets in the Time of COVID-19*, April 2020, International Monetary Fund, IMF Library

² Eastman, M, Klug, A, Lee, L, *2021 ESG Trends to Watch*, December 2020, MCSI Inc.

Figure 1

In your experience, are global capital markets adequately factoring climate risks in securities prices currently?



% of respondents

Roughly half of respondents have already adopted a mature approach to pricing climate risk across their passive and active portfolios. However, more than one-fifth of organizations are just in the early stages of raising awareness or assessing options.

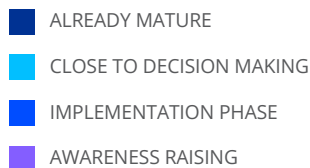
Where climate risks are currently being factored into the investment processes by respondents, they address transition risk from stranded assets, physical risk from extreme weather events, litigation risk from collateral damage and systemic risk from asset mispricing. These risks are seen as affecting all asset classes, industries and economies.

From grey to green

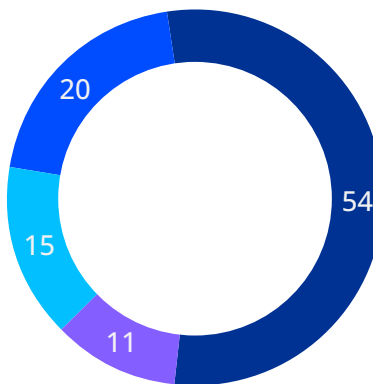
A growing trend for institutional investors is to invest in the transition of heavier-emitting companies and industries ‘from grey to green’ rather than potentially divesting such companies. For example, in September 2021, Caisse de Depot et Placement du Quebec³ announced it would establish a \$10-billion transition investment envelope to focus on decarbonizing the main industrial carbon-emitting sectors. Similarly in December 2021, CPP Investments⁴ introduced a new investment approach that will identify, fund and support companies in their efforts to transition to a low carbon future,

Figure 2

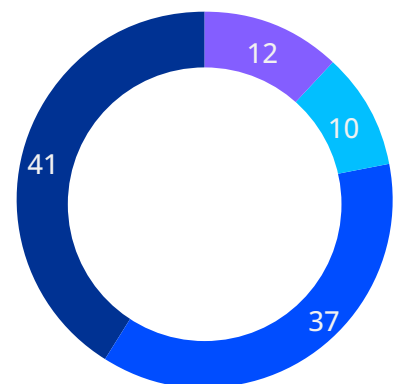
In which stage is your organization currently with respect to pricing climate risk in your two broad investment portfolios?



% of respondents



Active funds



Passive funds

³ CDPQ announces its new climate strategy, September 28, 2021, Caisse de dépôt et placement du Québec

⁴ Investing to enable an economy-wide evolution to a low-carbon future, December 15, 2021, CPP Investments

focusing on strategic sectors that will continue to be essential, but currently have high emissions that are hard to abate.

Part of the rationale for these approaches, in addition to seeking financial returns from potentially underpriced sectors, is a concern that precluding 'grey' companies from accessing traditional sources of capital could in fact further exacerbate climate issues. These organizations may seek alternative unregulated financing from sources that won't require transparent disclosure or low-carbon transition commitments. As well, financing constraints could lead such companies to apply cost-cutting to areas such as maintenance and pollution reduction.

To track the positioning of investment portfolios along the pathway from 'grey to green', various low-carbon transition categorization methodologies and taxonomies are being developed. The overall approach could involve classifying firms along a scale from 'near zero' (for companies requiring little decarbonization) to 'stranded' (for industries such as electricity generation from coal that cannot be brought into line with global warming targets).

Barriers to pricing climate risk

Respondents to the KPMG survey believe the pricing of climate risks is being hindered by (i) slow and only partially effective policy actions by governments and financial regulators to date, (ii) the capital markets' focus on the short-term and (iii) the lack of standardized disclosures of corporate climate risk and performance. Seven out of 10 respondents believe that pension regulators have been too slow to act on carbon risks in portfolios and almost six out of 10 respondents believe that banking regulators have been too slow to curb lending to polluters.

In fact, a recent report published by the Bank of Canada and OSFI⁵ on their scenario analysis pilot project highlighted that the timing of government policy is extremely important, with delayed action requiring more aggressive transition policies that would result in larger macroeconomic impacts. The report notes that as global efforts to combat climate change rise, there will be lower foreign demand for traditional products and global commodity prices could decline. For commodity-exporting countries like Canada, this transition may well have a material impact on gross domestic product (GDP).

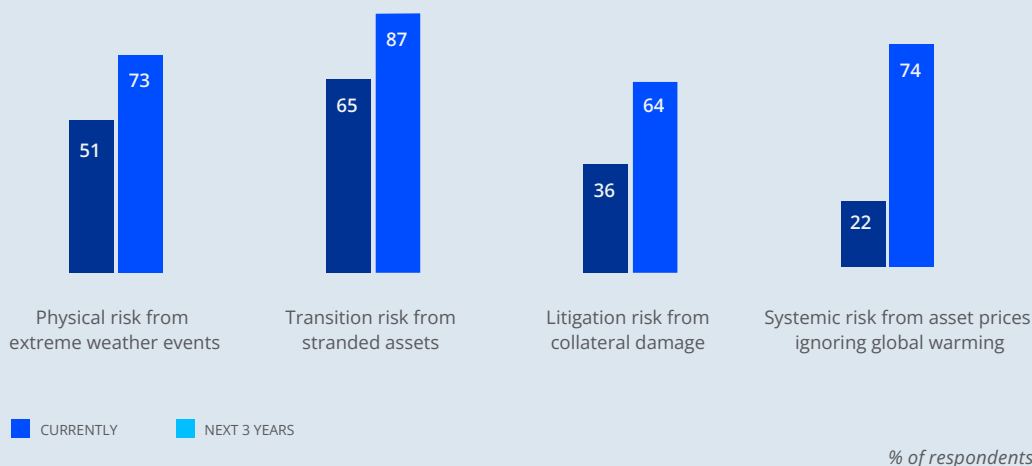


Figure 3

Which of the four climate risks in your organization currently factor into the investment process, and which ones will be factored in over the next three years?

⁵ Using Scenario Analysis to Assess Climate Transition Risk, 2022, Bank of Canada and Office of the Superintendent of Financial Institutions

The corresponding shock to projected earnings and expenses in many sectors could affect the debt repayment capacity and collateral of borrowers, thereby increasing credit risk for banks and other financial institutions. A sudden revaluation of equity in those sectors would also expose investors and financial institutions to significant market losses. The speed at which such asset repricing would occur is uncertain, but its impacts could be important for overall market and financial stability.

Policy constraints

It is important to highlight that the capital markets alone cannot effectively address climate risks and opportunities. Their incentive to reallocate capital towards a low-carbon economy is limited without government policy certainty. To ensure integration of climate issues into the capital supply chain, it is necessary for governments to respond with firm and effective carbon tax and emission credit systems.

These policies would make it increasingly expensive to use fossil fuels and therefore trigger rapid change in business and consumer behaviour towards adoption of more sustainable sources of supply. However, 65 percent of respondents to the KPMG survey agree that the 'cap-and-trade' schemes that have been put in place to date are too generous for polluters and 68 percent believe carbon taxes are set too low to meaningfully incent emissions reductions.

Time horizon issues

Adequate pricing of climate change by the markets is also hindered by the misalignment of timeframes and incentives between market participants. 71 percent of respondents to the KPMG survey believe capital markets have rewarded short-term profits at the expense of long-term value creation. Management may be motivated to operate in a timeframe that aligns more closely with their short-term monetary incentives and duration of their tenure, rather than the much longer-term value of the business. As a result, investment in resource efficiencies, the development of sustainable products, and the advancement of human capital can be downplayed. The physical and economic impacts of these delays will only become evident over decades unless an improved climate risk pricing method that allows capital markets to act as an early warning system is developed.

Figure 4

In the policy context, what are the factors currently constraining capital markets from pricing in climate risk?

Slower policy actions from governments and regulators

Pension regulators slow to act on carbon risks in portfolios

70

Carbon taxes set too low to tackle emissions

68

'Cap-and-trade' schemes too generous for polluters

65

Banking regulators too slow to curb lending to polluters

57

Governments too worried about 'stranded' assets

43

Insurance regulators too slow to curb the insuring of polluters

24

% of respondents

Disclosure and data availability challenges

Market participants trying to factor in climate risk are often hamstrung by the lack of consistent, reliable data available on the climate risks faced by companies, the related performance in mitigating these risks and corporate carbon emissions profiles across the value chain. Respondents to the KPMG survey believe the main causes of this challenge are a lack of common definitions and standards for climate-related data, limited regulatory requirements for companies to disclose their analysis of climate risks, and the difficulty for companies

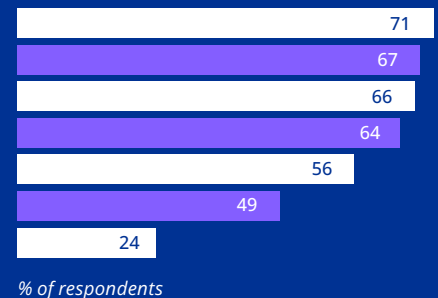
to assess the financial materiality of climate risks given the complexity and uncertainty of future impacts. In the same way that investment analysts do deep research and build pricing models for various other corporate risks and opportunities, similarly rich detail in areas such as emissions forecasts, anticipated changes to markets and products, and new technology investments will be required to achieve full market price efficiency. However current climate disclosure recommendations and proposed securities regulatory requirements tend to be at a more summarized, corporate-wide level.

Figure 5

In the policy context, what are the factors currently constraining capital markets from pricing in climate risk?

Capitalism has a problem with the long term

- Capital markets put short-term profits over long-term value creation
- Capital markets are poor at pricing negative externalities
- Capital markets remain heavily distorted by ultra loose policies of central banks
- Incentives for key players are aligned to short-term targets
- Lack of a long-enough performance track record on climate investing
- Difficulty in targeting double bottom line benefits
- Environmental risk is already captured by other risk factors



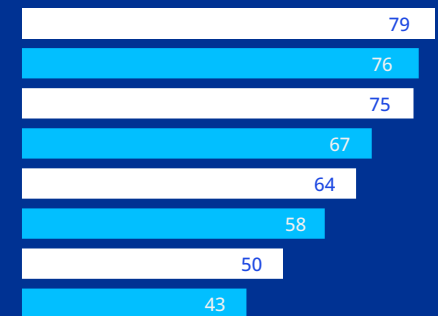
% of respondents

Figure 6

In the data context, what are the factors currently constraining capital markets from pricing in climate risks?

Lack of credible public metrics of the impact of climate change

- Lack of common definitions and standards of climate-related data
- No legal requirement on companies to report their climate risks
- Hard to assess the materiality of climate risks for companies
- Lack of good data on carbon emissions of companies
- Hard to assess how companies intend to respond to climate risks
- Voluntary disclosure is not consistent across issuers and time
- Greenwashing resulting from the repurposing of old funds
- Unclear understanding of transition pathways by sector and region



% of respondents

Despite these current hurdles, there's positive change happening. When asked if they expect capital markets to start factoring in climate risk on a notable scale over the next three years, 42 percent of respondents to the KPMG survey said 'yes' and 30 percent said 'maybe'.

Positive changes are coming

Eight out of 10 respondents believe that equity markets will advance further toward pricing climate risks over the next three years, three-quarters believe alternative investment markets will advance and six out of ten 10 believe bond markets will advance.

On a broader economic scale, the low carbon transition is expected to gain strength from the re-entry of the U.S. into the Paris Agreement, new policy commitments by governments, net zero commitments by market participants arising from the COP26 conference in November 2021, and 'green' measures embedded in policy stimulus implemented by various governments in response to the pandemic.

These forces can be expected to bolster the efficient pricing of climate risks and opportunities by capital markets through increased certainty in carbon pricing trajectories, better capital reallocation signals between asset classes and sectors from large financial players, and the move to more standardized climate reporting.

The risk to companies and investors

The primary risk that public companies and their investors face from the inadequate pricing of climate risk is a disruptive repricing of shares when investor expectations

adjust sharply. This has the potential to destabilize the entire financial system, if vulnerabilities in the markets further amplify the climate-related shock. Investors will be faced with not only the effects of the repricing but also the effects of how policymakers might respond.

Within the institutional investment community, there is a tendency to underestimate physical climate risks due to the assumption that these risks won't materialize within traditional investment time horizons. However, this ignores both the accelerated pace at which physical climate risks are already materializing, and the potential for these risks to be priced into the market by the time the holdings will be sold. To overcome this mindset and reduce these risks, institutional investors should implement formal physical climate risk scoping and assessment methodologies across company value chains for all asset classes and sectors using guidance and resources provided by organizations like Investor Leadership Network.⁶

At a virtual banking conference⁷ in January 2022, OSFI stated that it would expect federally regulated financial institutions to build up their capital buffers in the 2020s to be able to protect against a volatile low-carbon transition pathway in the 2030s and increasing physical climate risks. As banks progress in their capability to measure the emission profiles of their loan portfolios, this will have a downstream impact on the availability and cost of capital for corporates in many sectors.

⁶ *Climate change physical risks toolkit*, Investor Leadership Network (<https://investorleadershipnetwork.org/>)

⁷ *RBC Capital Markets Canadian Bank CEO Conference*, Remarks by Superintendent Peter Routledge, January 10, 2022

Guidance on company valuation approaches

At the individual company level, efforts to reflect climate risk impacts in the business valuation process are focused on incorporating these risks into the discounted cash flow model.

Recent guidance has been published by the Canadian A4S CFO Leadership Network: Essential Guide to Valuations and Climate Change.⁸ This publication outlines a five-step climate change valuation methodology that can be used to incorporate climate change risks and opportunities into business valuation analyses. The five steps outlined in the framework help to identify the company's key value drivers, assess sources of climate change risks and opportunities, filter these sources into those that should be addressed, integrate the risks and opportunities into the valuation models and triangulate the valuation impacts for the company against its peers.

The A4S guidance suggests that when the financial impacts of climate risks and opportunities are visible, quantifiable and certain, adjustments can be made to the estimated cash flows and terminal values. These adjustments will need to include consideration of alternative time horizons for climate risks to materialize in estimating terminal values.

When the financial impacts of climate risks and opportunities are not directly estimable, the discount rate can be adjusted to account for the uncertainty. In taking this approach, one will need to determine if, and to what degree, climate risks are already priced into observed discount rates, and sensitivity analysis may be needed to determine the range of possible rate adjustments.

Fresh policy momentum towards curbing carbon demand

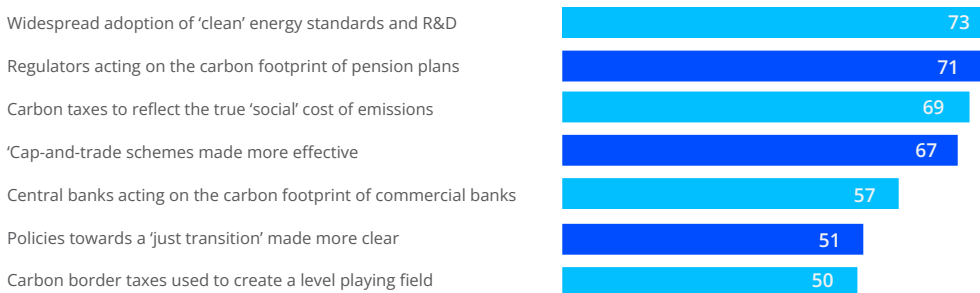


Figure 7

In the policy context, what factors will be driving global capital markets towards pricing in climate risks over the next three years?

⁸ *A4S essential guide to valuations and climate change, A framework to assess the impact of climate change on business valuations*, Chartered Professional Accountants Canada

⁹ *Climate Risk - Technical Bulletin*, April 12, 2021, Sustainability Accounting Standards Board

provides a materiality map broken down by climate risk type, a breakdown of financial impact channels by industry, an overview of current disclosure practices and a full table of SASB's recommended climate-related metrics and associated risks across 77 industries.

In an effort to converge ESG and climate reporting frameworks, the IFRS Foundation has established an International Sustainability Standards Board (ISSB). In conjunction with the November 2021 launch of the ISSB, a prototype climate disclosure standard was published that is based on the TCFD recommendations combined with selected SASB metrics. This prototype has no official standing, but provides directional insight into what the ISSB may promulgate in 2022.

Today, in the absence of clear regulations and standards, we see climate disclosure appearing in various locations such as in annual reports (including potentially the front end, the MD&A section, and the financial statements), in ESG and sustainability reports, in standalone climate and TCFD reports, in company websites and in submissions to organizations such as the CDP (an investor-based organization that aggregates detailed corporate climate information). This has resulted in varying levels of detail

being available across industries and companies, with limited comparability and often significant time lags.

The significant majority of existing disclosures appear outside of the financial statements. However, preparers and auditors of financial statements are increasingly focused on relevant climate-related matters. Guidance on how climate-related matters should be taken into account when applying existing IFRS accounting standards within financial statements can be found in the IFRS Foundation educational material, *The effects of climate-related matters on financial statements*,¹⁰ published in November 2020. KPMG has also created a climate change financial [reporting resource centre with additional guidance](#). Companies are often now facing a barrage of information requests for detailed climate disclosures from investors, lenders, insurers, and major customers, who are aggressively pursuing their own low carbon transition commitments and targets. As such, the need for companies to rapidly accelerate their efforts in producing detailed and effective climate-related disclosure is paramount. By incorporating the guidance from multiple sources discussed above into their climate analyses and disclosures and analyses, investors and companies can be proactive in getting ahead of the curve.

Helping markets efficiently price climate risks and opportunities will bolster efforts to achieve a low-carbon transition of the global economy, and reduce the risk of future market disruptions. While the evidence suggests markets have been challenged in fully pricing climate risks and opportunities to date, renewed awareness and efforts by market participants may already be changing this.

¹⁰ *Climate Risk – Technical Bulletin*, Value Reporting Foundation, SASB Standards

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