

# The Effects Of Weather Events On Corporate Earnings Are Gathering Force

June 11, 2018

With climate change and severe weather events increasingly making headlines, lenders and institutional investors are becoming more interested in how these events are hitting the bottom lines of companies around the world. To answer this question, S&P Global Ratings collaborated with Bermuda-based climate risk management specialist Resilience Economics to determine the prevalence and materiality of climate risk for companies in the S&P 500 index.

We examined public corporate research updates and earnings call transcripts from April 2017 to April 2018 (financial year 2017) to identify where a particular weather event had a material impact on earnings. This research complements our environmental and climate look-back analysis "How Environmental And Climate Risks And Opportunities Factor Into Global Corporate Ratings - An Update," published Nov. 9, 2017.

Climate change will continue to increase the incidence and severity of both chronic and acute weather events, which could lead to a more material impact on companies' earnings. We excluded from our research the entire financial institutions sector, which includes insurance companies.

## PRIMARY CREDIT ANALYSTS

**Jessica Williams**

London  
(44) 20-7176-3884  
jessica.williams  
@spglobal.com

**Michael T Ferguson, CFA, CPA**

New York  
(1) 212-438-7670  
michael.ferguson  
@spglobal.com

**Miroslav Petkov**

London  
(44) 20-7176-7043  
miroslav.petkov  
@spglobal.com

**Michael Wilkins**

London  
(44) 20-7176-3528  
mike.wilkins  
@spglobal.com

## Key Takeaways

- In financial 2017, 73 companies (15%) on the S&P 500 publicly disclosed an effect on earnings from weather events, but only 18 companies (4%) quantified the effect.
- The average materiality on earnings for the small number of companies that quantified it was a significant 6%.
- Climate risk is a surprisingly prevalent topic of discussion for the CEOs of publicly traded companies, and management teams are becoming increasingly accountable for understanding and mitigating the impact of climate risk.
- Evidence of the impact of climate risk is found across all sectors, geographies, and seasons.

The results of our analysis show that in financial year 2017, 73 companies (15%) in the S&P 500 publicly disclosed an effect on earnings from weather events, but only 18 companies (4%) quantified the effect (see table 1). However, the average materiality on earnings for the small number of companies that quantified it was a significant 6%. In S&P Global Ratings' view, the effect of climate risk and severe weather events on corporate earnings is meaningful. If left

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unmitigated, the financial impact could increase over time as climate change makes disruptive weather events more frequent and severe.

## The Materiality Of Weather On Corporate Earnings In Financial Year 2017

Table 1

	All public companies	S&P 500
Number of companies for which a weather event had a material effect on earnings	708	73
Number of companies for which the material effect on earnings was negative	644	66
Number of companies that quantified the material effect on earnings	77	18
Average materiality on earnings	5%	6%

Sources: Bloomberg Finance, L.P.

## Climate Risk And Weather Events Are Top Topics Among The CEOs Of Publicly Traded Companies

A review of the earnings call transcripts of S&P 500 companies in the past ten years revealed that "climate" and "weather" combined were among the most frequently discussed topics among executives, even more common than "Trump", "the dollar", "oil", and "recession".

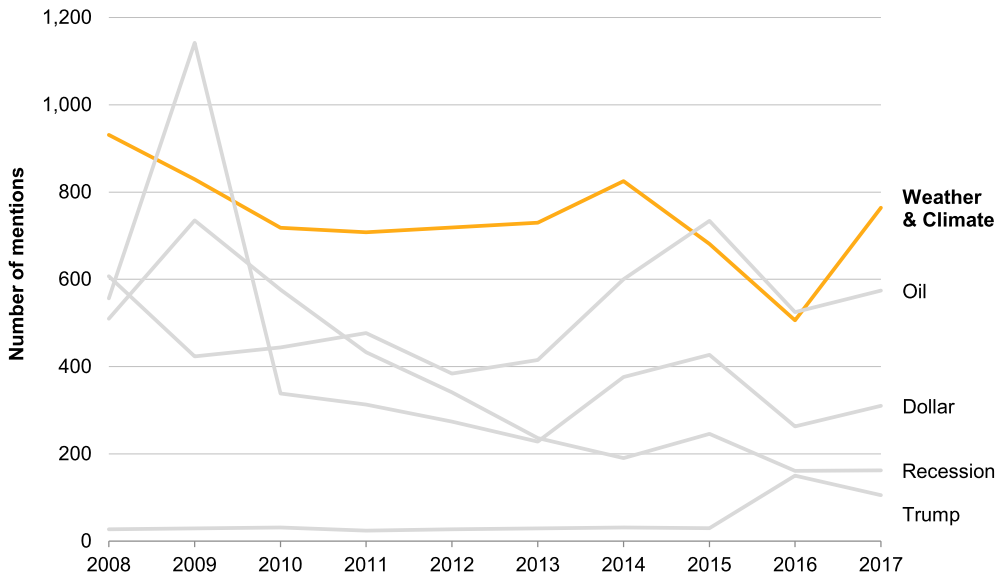
Discussions of climate risk and its effect on companies' earnings are now reaching the CEO's office. Of the earnings calls in financial year 2017 where weather was mentioned as having a material effect on corporate earnings, more than half (53%) of these disclosures were made directly by the CEO. The CEO and CFO combined made 86% of all disclosures of climate-related impact on earnings.

Moreover, CEOs and other top company executives often cite climate and weather as a risk factor beyond the control of management.

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Chart 1

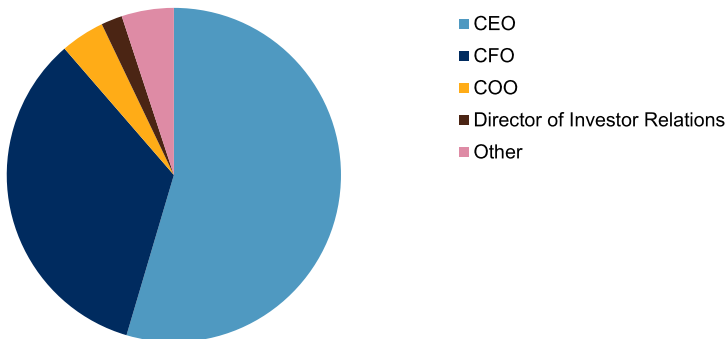
**Weather and Climate Are High On The Agendas Of S&P 500 Executives' Earnings Calls**



Sources: Bloomberg Finance, L.P.  
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Chart 2

**55% Of Weather Disclosures Were Made By CEOs**



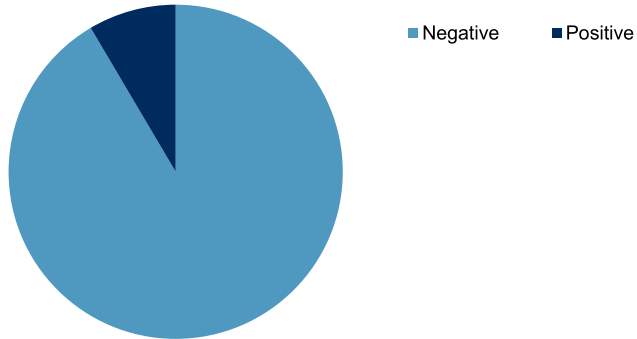
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Chart 3

### Outperformance Is Rarely Attributed To Climate

Was the mention of weather positive or negative?



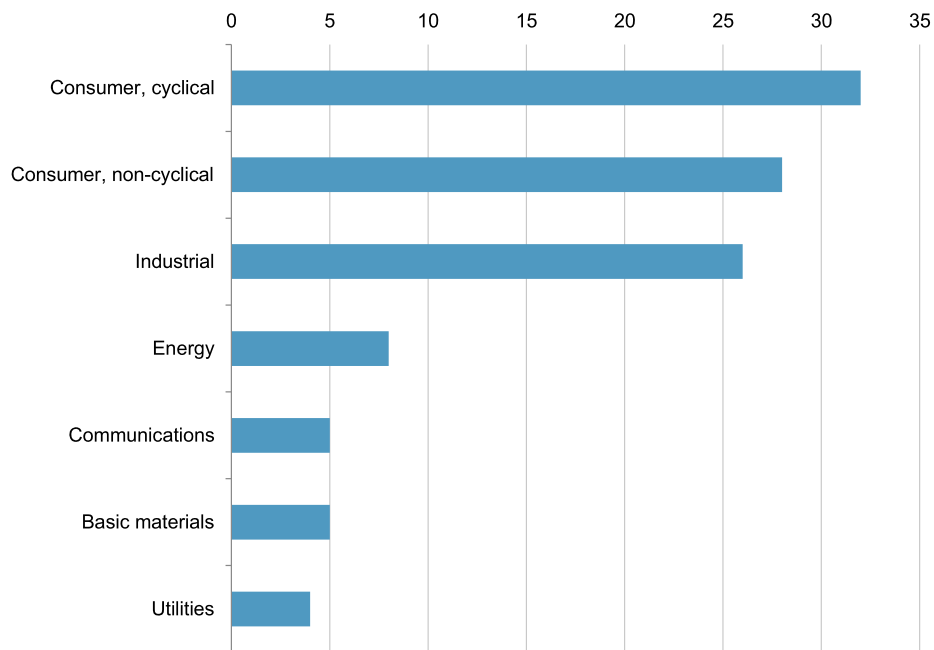
Sources: Bloomberg Finance, L.P.

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Chart 4

### Consumer Industries Received Most Questions About Weather/Climate

Number of questions asked by industry



Sources: Bloomberg Finance, L.P.

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To measure engagement on this topic, we looked at the number of questions that equity analysts

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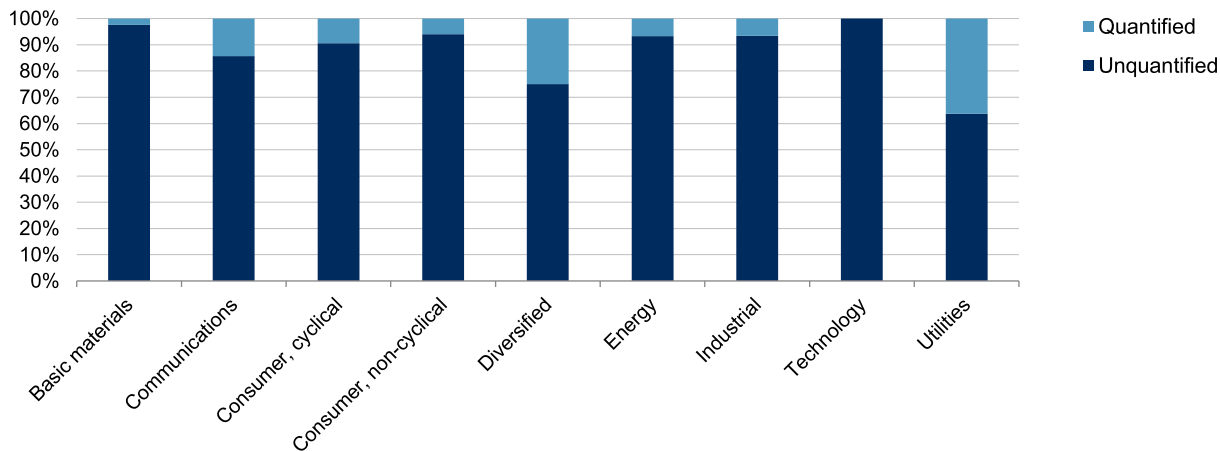
asked management about the effect of weather on earnings in financial year 2017. We found that equity analysts asked most questions in the consumer sector, with 60 separate questions asked, followed by the industrials sector, with 26 questions asked. It appears that the impact of weather in other sectors is generally less of a priority for equity analysts, although as awareness grows among lenders and institutional investors, we expect to see more engagement in sectors such as materials and utilities.

## The Need For Management Teams To Understand And Mitigate The Impact Of Climate Risk Is Increasing

In the majority (89%) of weather-related disclosures in financial year 2017, the value of the effect was unquantified: 89% of the time, management attributed to weather an effect on earnings without putting a monetary value on the effect.

Chart 5

### The Majority (89%) Of Company Disclosures Were Unquantified



Sources: Bloomberg Finance, L.P.

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The utilities sector had the highest level of quantification in financial year 2017, with 36% of the companies that attributed a negative earnings effect to weather quantifying the monetary impact in the disclosure.

We understand that quantifying the effect can be difficult. In the airline industry, for example, the cost of delays can be complex as it depends on the location, time, class of aircraft, and the value of passenger time if this is included. According to the Federal Aviation Administration, the cost to airlines of just a one-hour delay could range from \$1,400 to \$4,500, and the inclusion of the value of passenger time can add an additional \$35-\$63 per hour for every person on board. The main causes of arrival delays include convective weather (rain or thunderstorms), low visibility, and airport winds. The effects of weather on airlines' revenues are even harder to measure. Any deviation from normal weather can cause lawsuits, major aircraft repairs and maintenance, lack of functionality of aircraft parts, passenger rebates, and aborted take-offs.

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Despite the complexity in quantifying the impact of weather on earnings for reporting purposes, we did find cases of airlines making efforts to do so in 2017 and earlier years.

One driving force for quantifying the impact of weather comes from the Financial Stability Board's Taskforce on Climate Related Financial Disclosures (TCFD), a group of industry experts commissioned by Mark Carney, Governor of the Bank of England. The TCFD has outlined a set of recommendations for companies to produce climate-related financial risk disclosures for investors, lenders, insurers, and other stakeholders. (See "How The Recommendations Of The Task Force On Climate-Related Financial Disclosures May Figure Into Our Ratings," published Aug. 16, 2017).

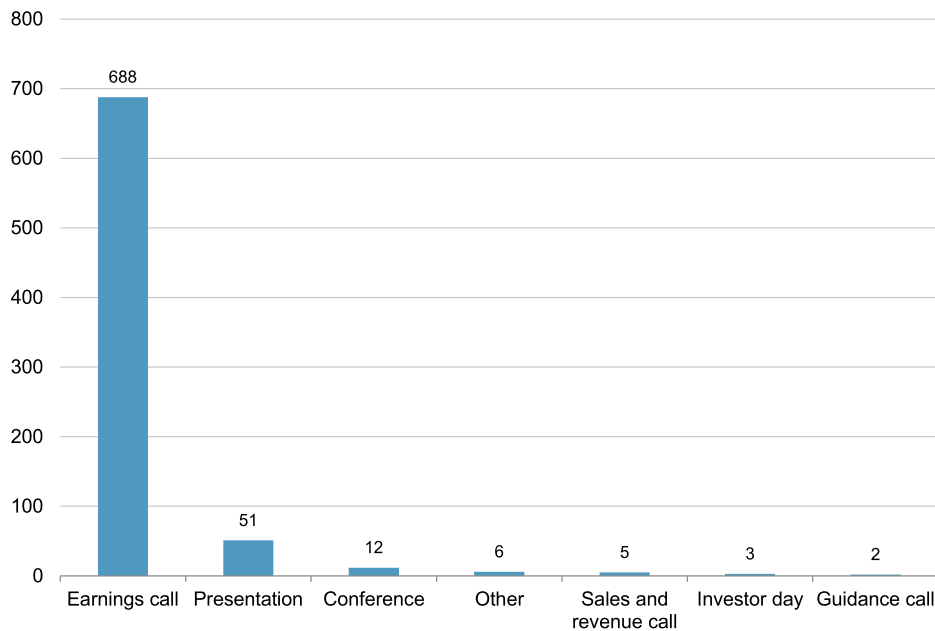
The framework that the TCFD has proposed suggests disclosure of the aspects of an organization's financial performance that may be affected by changes in water availability, sourcing, and quality; food security; and extreme temperature changes affecting organizations' premises, operations, supply chain, transport needs, and employee safety.

As management teams become more accountable for understanding the financial impact of weather events, we expect to see more companies increase reporting on this issue. In financial year 2017, the majority (87%) of mentions of climate risk factors came from quarterly earnings call transcripts as opposed to more formal methods of reporting.

Chart 6

### Most Climate Risk Disclosures Were In Earnings Calls

Type of source of climate disclosure



Sources: Bloomberg Finance, L.P.

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As more companies join more than 250 that have already signed up to support the TCFD's recommendations, we expect to see more reporting of the quantified impact of climate and

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weather in annual and quarterly financial reports and investor day presentations.

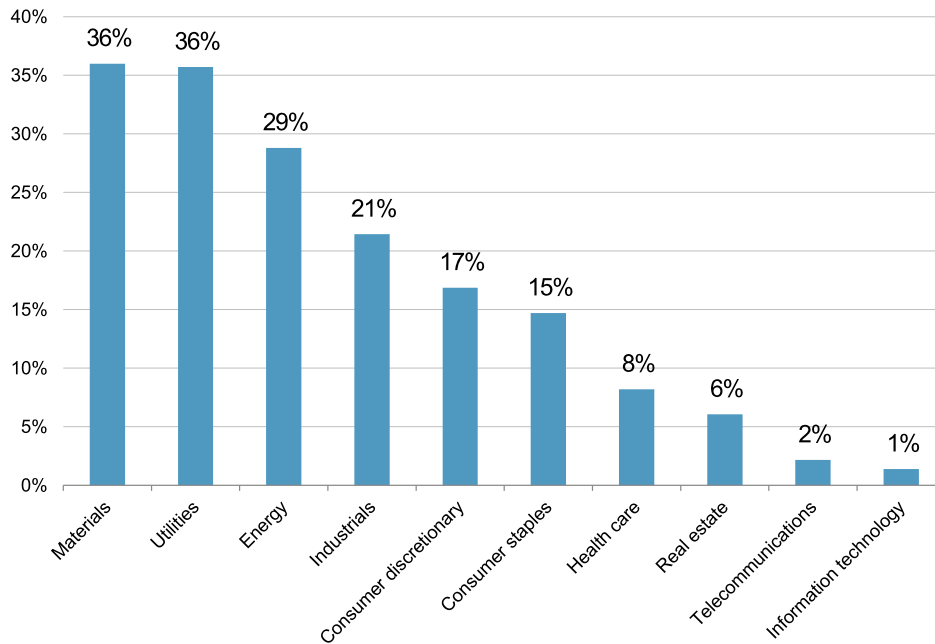
Lenders and institutional investors, who are increasingly focused on climate risk, will no doubt welcome such a development.

Quantifying and reporting climate risk has far-reaching consequences for companies. For example, we may begin to see institutional investors build climate risk factors into their portfolio selection processes, thereby placing greater emphasis on climate when directing investments. While we found that no one institutional investor holds more than 50% of the companies that have disclosed weather impact, we did find that some of the largest global institutional investors hold meaningful stakes in the 708 companies that have disclosed a weather impact on earnings.

## Evidence Of Climate Risk Appears Across All Sectors, Geographies, And Seasons

Chart 7

### S&P 500 Companies That Disclosed A Material Impact On Earnings Due To Climate--By Industry



Sources: Bloomberg Finance, L.P.

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We believe that the concentration of weather disclosures in the consumer and industrials sectors could be primarily due to a better understanding of the impact within these sectors. However, we expect to see the distribution of disclosures level out across sectors as more companies begin to quantify and disclose climate risk.

Weather can affect both the demand and supply aspects of a company's operations, and exposure

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to climate can increase the volatility of corporate cash flows in a variety of ways (see table 2).

Table 2

### Examples Of Climate Exposure

#### Electric and gas utility

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Warm winters (and mild summers) reduce demand for residential energy consumption required for space heating (or cooling).

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Drought reduces available water for hydroelectric power generation.

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Summer heat waves cause electricity demand and spot price spikes, which impair load serving entities.

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Extremely hot ambient temperature increases risk of electricity transmission outage.

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Winter cold snap causes natural gas and electricity demand spike, resulting in shortage and creating need for expensive alternatives.

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#### Agriculture

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Any one or a combination of drought, excessive rainfall, extreme heat or frost increases the risk of crop failure.

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#### Renewable energy

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Seasonal and annual variability of wind speed, rain or stream flow introduce volatility into renewable energy generation hence revenue for generators and off-takers.

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Intermittent nature of wind causes mismatch between energy demand and supply in power markets with high wind capacity, which in turn leads to negative electricity prices and grid problems.

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Extreme climate leads to construction delays for wind farm projects, onshore (due to high wind speed) and offshore (due to high wave height and wind speed).

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#### Sports and entertainment

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Excessive rainfall or snow storm leads to event cancellation or disruption of access to event venues.

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#### Mining

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Extreme rainfall events cause mine floods or disrupt access to mine.

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#### Retail

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Unseasonable climate leads to reduced demand for seasonal products such as apparel.

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Snow storm disrupts store operations (especially impactful during holiday sales periods).

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#### Snow removal

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Fewer than normal snow events reduce demand for snow removal service.

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Unexpectedly high number of snow storms cause budget overruns for municipalities and building operators.

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#### Construction

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Sustained extreme cold or frost days impact winter construction activities, causing project delays.

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Excessive rainfall causes work cancellation.

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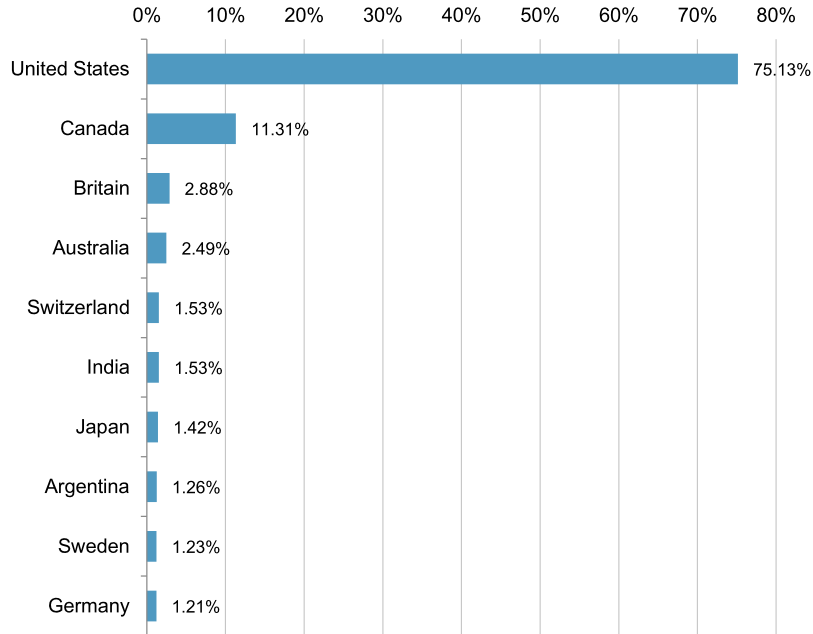
Sources: Bloomberg Finance, L.P.



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Chart 8

### The U.S. Dominates In Weather-Related Financial Disclosures About Impact On Earnings



Sources: Bloomberg Finance, L.P.

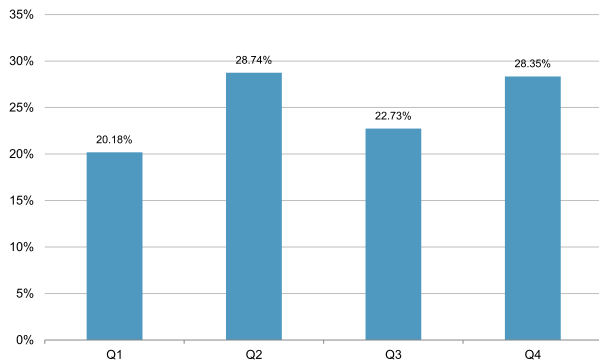
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By country, the U.S. made the most mentions of weather impact on earnings during financial year 2017. Outside North America, however, we see incidences of companies reporting an impact on earnings due to weather across Europe and in Australia, India, Japan, and Argentina.

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Chart 9

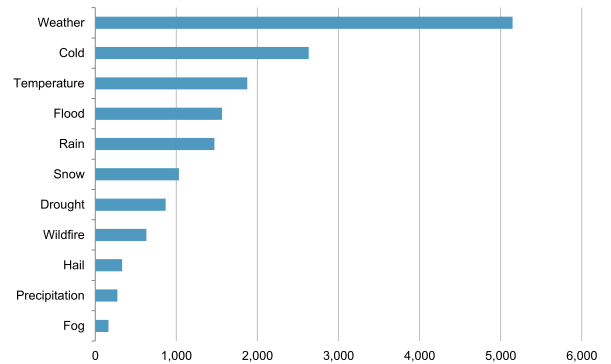
Distribution Of Disclosures By Quarter



Sources: Bloomberg Finance, L.P.  
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Chart 10

Weather Variable Breakdown

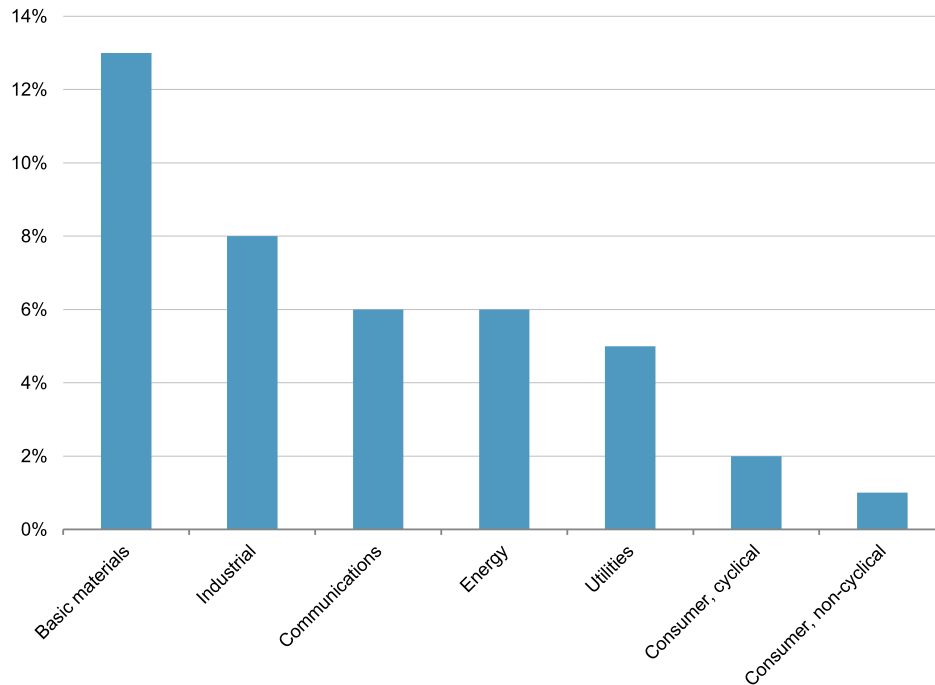


Sources: Bloomberg Finance, L.P.  
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Eleven companies disclosed a quarterly climate impact on earnings of more than \$35 million in financial year 2017. To understand the materiality of the effect of weather events on earnings, we divided the quantified loss value that the companies disclosed as a percentage of either sales, expenses, or EBITDA, depending on how the impact was referenced. The average materiality across all companies was 5% and the average materiality for S&P 500 companies was 6%.

Chart 11

### Average Materiality Of Climate Impact By Sector



Source: Bloomberg Finance, L.P.  
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In total, 77 companies quantified impact, but only 50 disclosed specific monetary values in a way that allowed us to determine the materiality of the impact. The remaining 27 disclosures were quantified, but in terms of company-specific metrics that we were unable to accurately extrapolate to sales, earnings, or EBITDA.

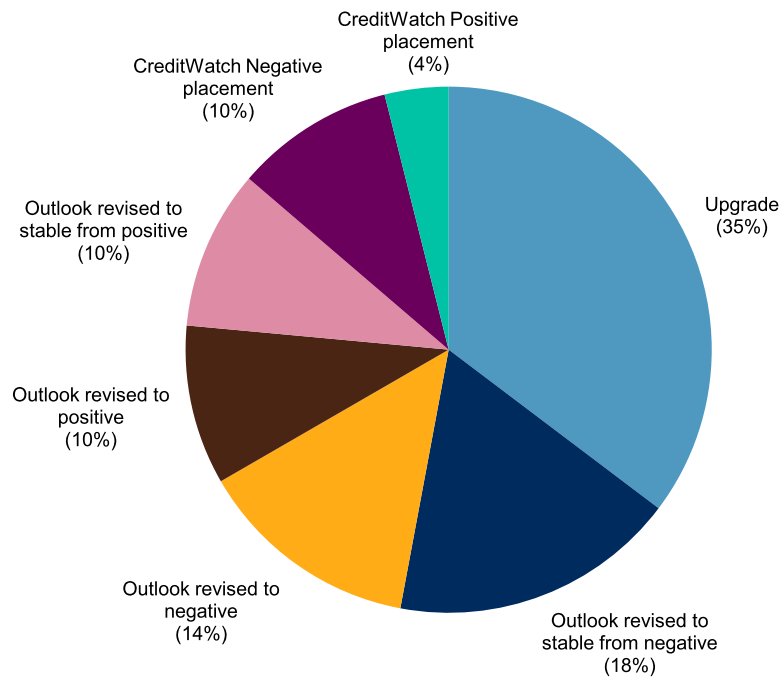
## The Increasing Impact Of Climate On Corporate Earnings Has Led To Rating Actions

Understanding the potential magnitude of the effects on earnings of weather events will become more critical as these events become more regular and possibly have more influence on credit quality. Of the nearly 9,000 research updates we published from July 2015 to August 2017, climate factors were a key driver of a rating action in 43 cases. This is a significant number given the range of different risks that can have an impact on credit quality.

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Chart 12

### Ratings Actions Related To Climate Risk



Source: S&P Global Ratings.

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Of the 43 ratings actions between July 2015 to August 2017 where climate factor was a key driver, 65% were downgrades (see table 3). It's difficult to draw definitive conclusions as to why this is, partly due to the small sample size. However, two contributory factors could be that more companies are becoming vulnerable to climate change and severe weather events, but few are proactively mitigating the effects on both earnings and credit ratings.

Table 3

### Ratings Actions Where Climate Risk Factor Was Key

Positive Rating Actions		Negative Rating Actions	
CreditWatch positive placement	1	CreditWatch negative placement	2
Outlook revised to positive	2	Outlook revised to negative	3
Outlook revised to stable from negative	4	Outlook revised to stable from positive	2
Upgrade	8	Downgrade	21
Total	15	Total	28
% total positive rating actions	35%	% total negative rating actions	65%

Source: S&P Global Ratings.

### **Case Study: SeaWorld Parks & Entertainment Inc.**

On Nov. 8, 2016, we lowered the issuer credit rating on SeaWorld Parks and Entertainment Inc. to 'B+' from 'BB-'. The downgrade reflected our lowered forecast for 2016 S&P Global Ratings-adjusted EBITDA, driven by continued declines in international attendance at Florida parks, adverse weather events, and wage increases across the portfolio reported in the third quarter of 2016.

Although weather was just one of a number of key drivers of the downgrade, we believe the theme park industry is more vulnerable to seasonality and weather-related risk than other leisure-based industries.

### **Case Study: Spanish Olive Oil Bottler Deoleo S.A.**

On Aug. 9, 2017, we lowered the issuer credit rating on Deoleo to 'CCC+' from 'B-'. The downgrade reflected our view that Deoleo's profitability and cash flow generation over the next 12 months were likely to be lower than our previous base-case projections. This in part reflected on our assumption that global olive oil prices would remain volatile in the short term, based on divergent volume and yield trends in major olive-producing countries, including expectations of a weaker olive crop in Spain and Italy in 2017 due to drought and high spring temperatures.

At the time, the European Commission's Directorate-General for Agriculture and Rural Development forecast that olive production levels in Italy would reach dramatic lows, with an expected 57% decrease in 2017 from the average of the past five years. It also forecast that Spain, which is the biggest producer of olives, with 45% of global production, would see its production decrease by less than 10% in 2017. The main reasons behind these low yields were drought and high spring temperatures.

Because Spain and Italy remain the first- and second-largest olive producers, respectively, their expected crop yields are the main driver behind fluctuations in global prices. This supply risk has exacerbated the volatility that propelled prices toward record highs in 2015. Extra virgin olive oil reached €4,316 per ton on July 31, 2015, compared with €3,154.5/ton on the same date in 2016. The price reached €3,794.7/ton at end-July 2017 following additional uncertainties, such as weather conditions, on the upcoming October harvest.

### **Why It Is Difficult To Analyze The Impact Of Climate Change**

In this analysis, we decided not to look for climate change risks because of the difficulty of attributing any given weather event to climate change alone. We know that climate change will increase the incidence and severity of both chronic and acute weather events, such as hurricanes and droughts. It's much more difficult, however, to determine whether climate change caused a specific weather event.

Hurricane Harvey, for example, could have happened even if greenhouse gases were still at preindustrial levels, albeit at a smaller magnitude. Although climate change makes events like Hurricane Harvey significantly more likely to occur, they would not be impossible without it. As climate change continues, it could generate more weather risks germane to our analyses.

## Climate-Related Factors Are Becoming More Significant In Our Credit Analysis

The impact of climate and severe weather events on corporate earnings, as well as on credit ratings, is meaningful. If left unmitigated, the impact could grow over time as climate change makes severe weather events more frequent and severe.

Although it's difficult to draw concrete conclusions at this stage, the increase in negative rating actions due to climate risk signals that companies are being adversely affected by climate risk. The number of instances where climate factors feature in our analysis and are key drivers of rating actions (both positive and negative) indicates that climate issues are becoming increasingly important in terms of their influence on credit ratings.

The effect on corporate earnings is also becoming more visible. There is growing demand among both equity and fixed-income investors for better reporting and disclosure of climate-related risks. As such, we expect that investors will focus even more on determining which companies, sectors, and geographies are most exposed to climate risks, and how management teams plan to manage such risks. At the same time, we continue to maintain, monitor, and improve the transparency of climate factors in our credit ratings.

## Research Methodology

The research on corporate earnings involved using the advanced search function on the Bloomberg platform to identify corporate research updates where particular words relating to climate risk factors had been used. The data were filtered for non-catastrophe climate factors and an analyst determined whether the climate factor had been a material driver of the corporates' earnings results.

We excluded from our results incidences where the search word was incorporated in a name (either of a company or a criteria article) but did not feature in the analysis. We also excluded from the results instances where the search word was used in a context that did not qualify as a climate risk or opportunity. We acknowledge that some instances where climate factors were incorporated into earnings results could have been missed using this approach if the search words below did not feature. However, we believe that the 22 words used capture the vast majority of incidences where climate factors influenced corporate earnings.

Table 4

### Search Words Used In Analysis

Cold	Hail	Rainfall	Temperature	Wildfire
Colder	Hailstorm	Rains	Temperatures	Wind speed
Drought	Heat	Snow	Warm	
Flooding	Precipitation	Snowfall	Warmer	
Fog	Rain	Storm	Weather	

The report was written in collaboration with Michael Coles from Resilience Economics, with assistance from Leah Brookes.

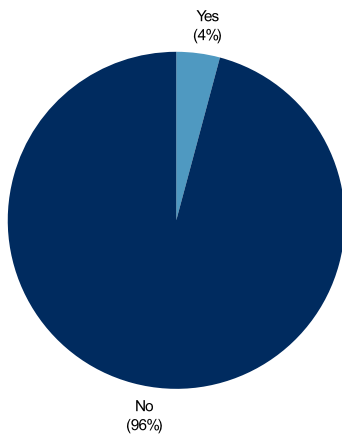
## Appendix

Here we provide an industry breakdown of the percentage of references to weather that were quantified, the title of the person who made the disclosure, and the distribution of the disclosures by country and by quarter.

### Airlines

Chart 1

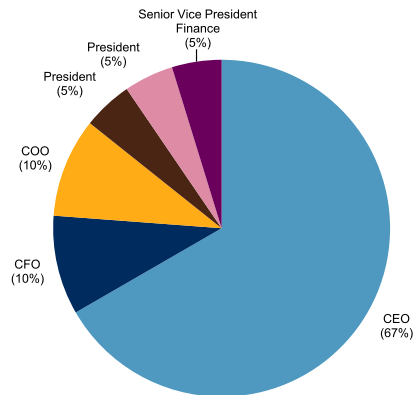
Airlines--Percentage Of Weather References That Were Quantified



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Chart 2

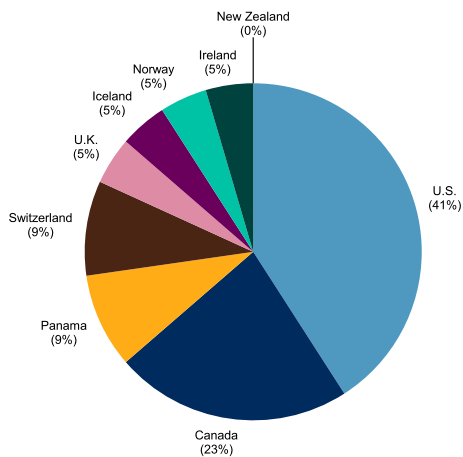
Airlines--Title Of Person Who Made The Disclosure



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Chart 3

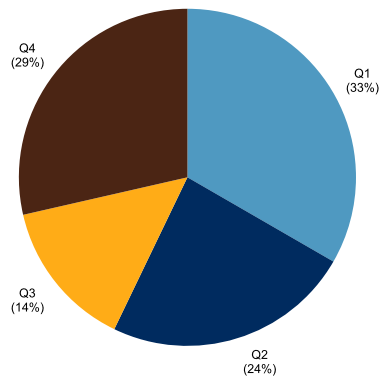
Airlines--Distribution Of Disclosures By Country



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Chart 4

Airlines--Distribution Of Disclosures By Quarter

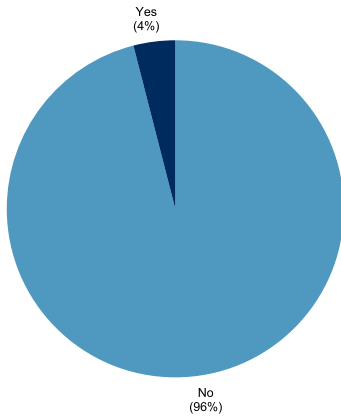


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## Transportation

Chart 5

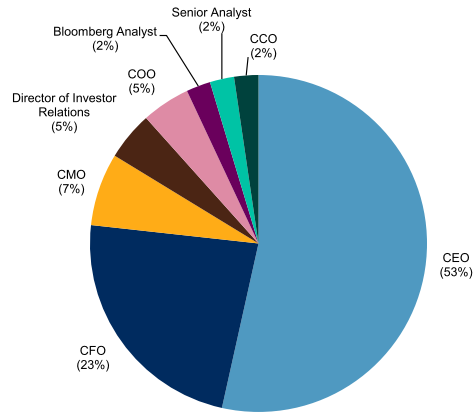
Transportation--Percentage Of Weather References That Were Quantified



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Chart 6

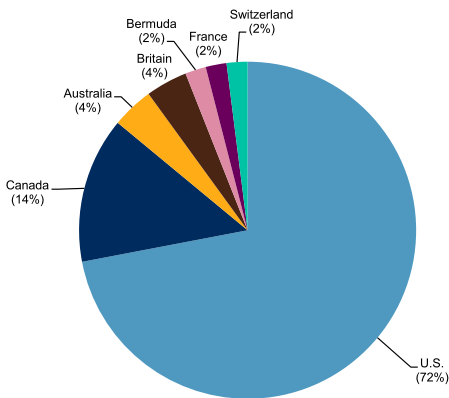
Transportation--Title Of Person Who Made Disclosure



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Chart 7

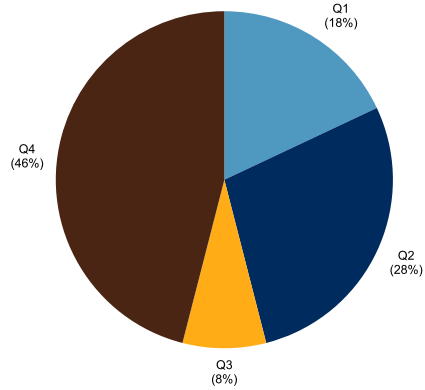
Transportation--Distribution Of Disclosures By Country



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Chart 8

Transportation--Distribution Of Disclosures By Quarter



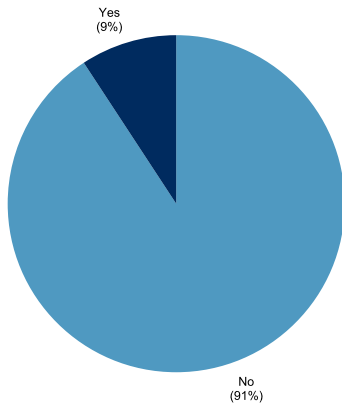
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## Retail

Chart 9

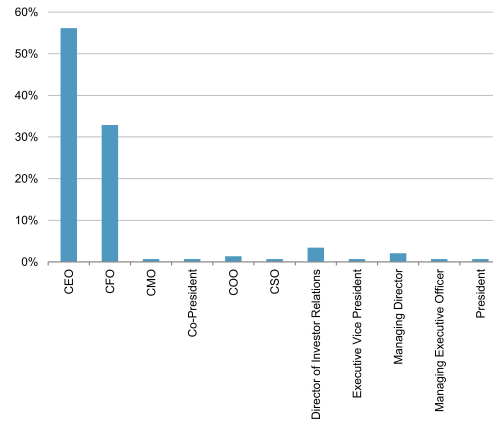
Retail--Percentage Of Weather References That Were Quantified



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Chart 10

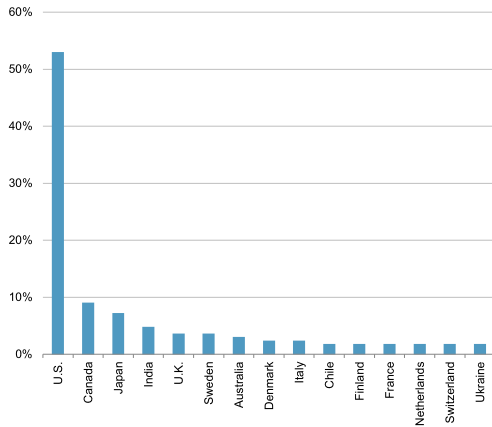
Retail--Title Of Person Who Made Disclosure



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Chart 11

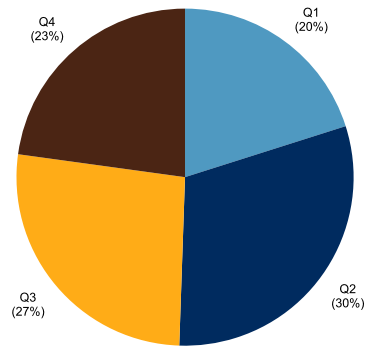
Retail--Distribution Of Disclosures By Country



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Chart 12

Retail--Distribution Of Disclosures By Quarter

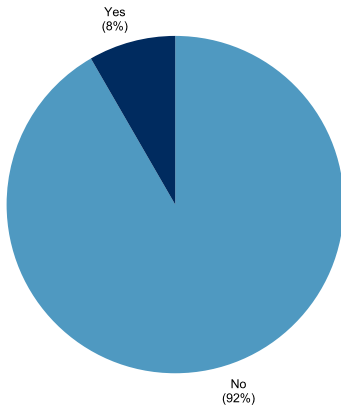


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## Hotels and lodging

Chart 13

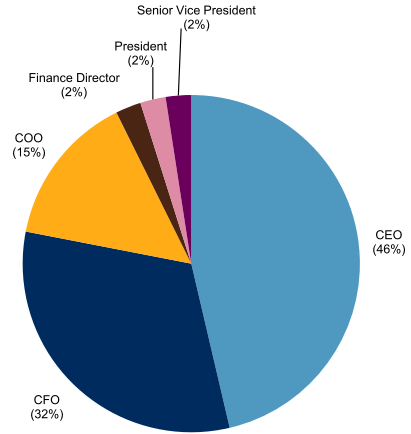
Hotels And Lodging--Percentage Of Weather References That Were Quantified



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Chart 14

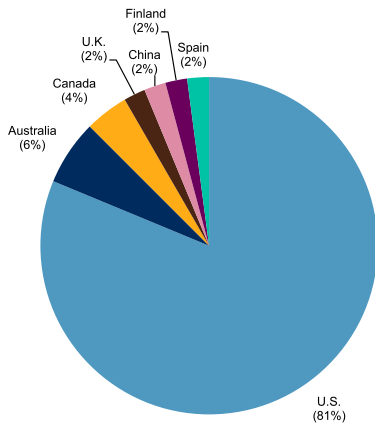
Hotels And Lodging--Title Of Person Who Made Disclosure



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Chart 15

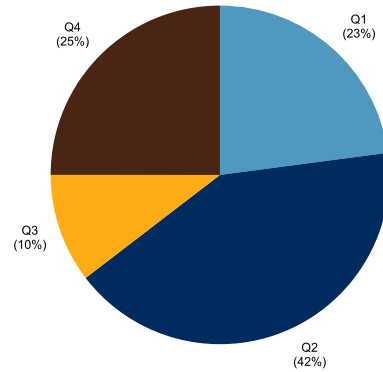
Hotels And Lodging--Distribution Of Disclosures By Country



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Chart 16

Hotels And Lodging--Distribution Of Disclosures By Quarter

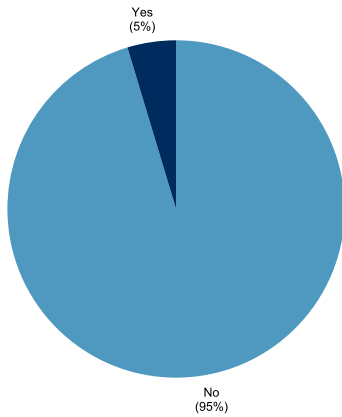


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## Industries

Chart 17

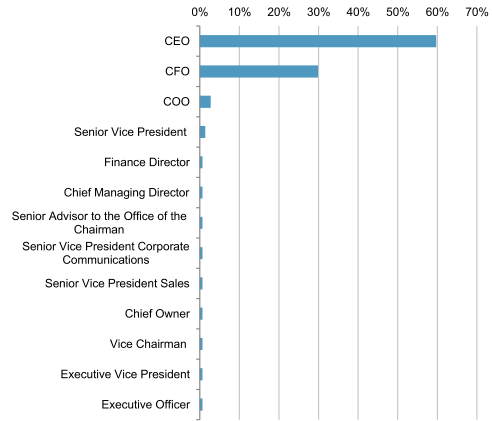
Industries--Percentage Of Weather References That Were Quantified



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Chart 18

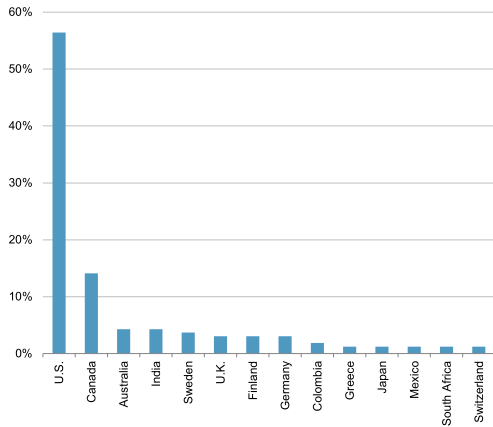
Industries--Title Of Person Who Made Disclosure



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Chart 19

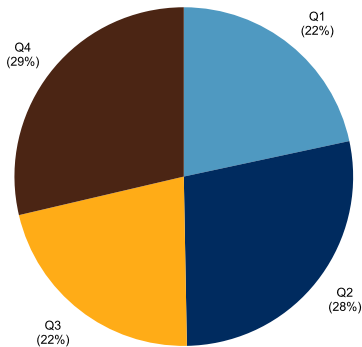
Industries--Distribution Of Disclosures By Country



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Chart 20

Industries--Distribution Of Disclosures By Quarter

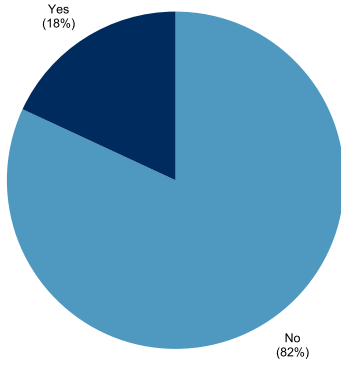


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## Utilities

Chart 21

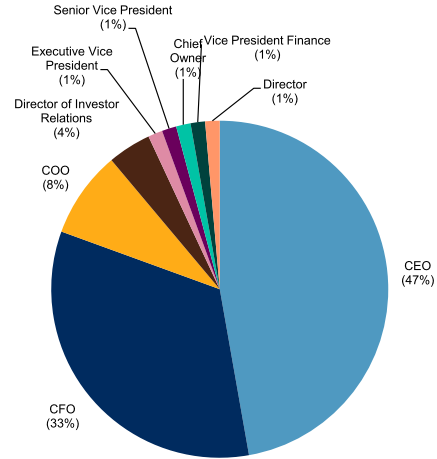
Utilities--Percentage Of Weather References That Were Quantified



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Chart 22

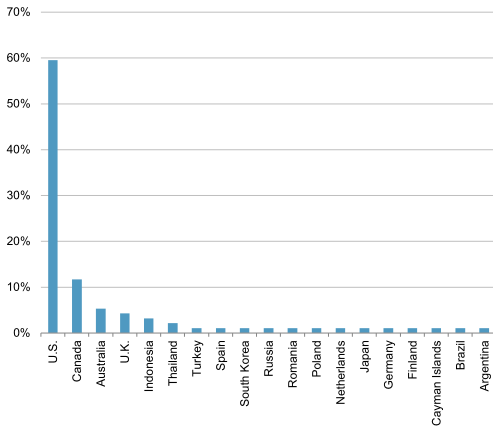
Utilities--Title Of Person Who Made Disclosure



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Chart 23

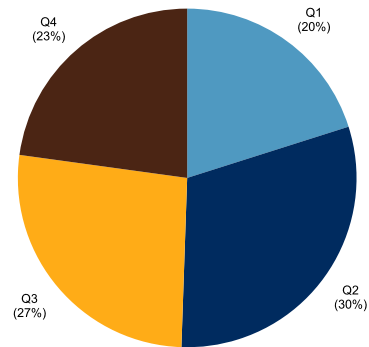
Utilities--Distribution Of Disclosures By Country



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Chart 24

Utilities--Distribution Of Disclosures By Quarter

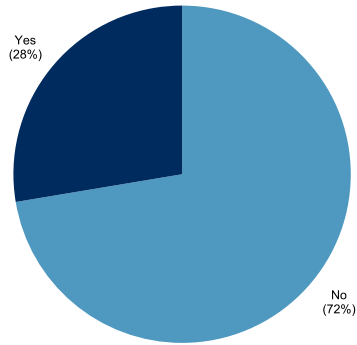


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## Energy

Chart 25

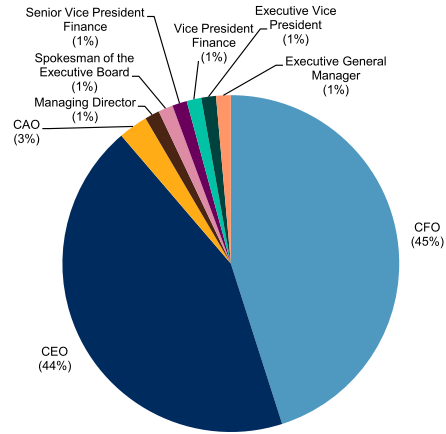
Energy--Percentage Of Weather References That Were Quantified



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Chart 26

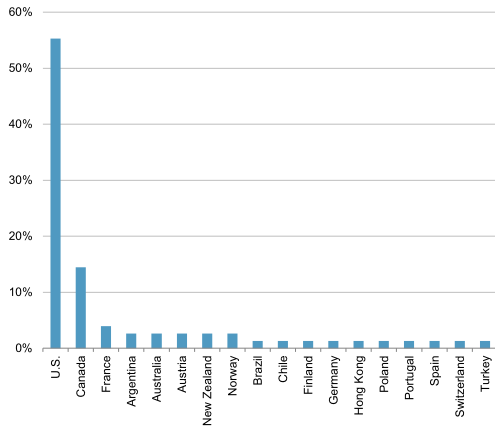
Energy--Title Of Person Who Made Disclosure



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Chart 27

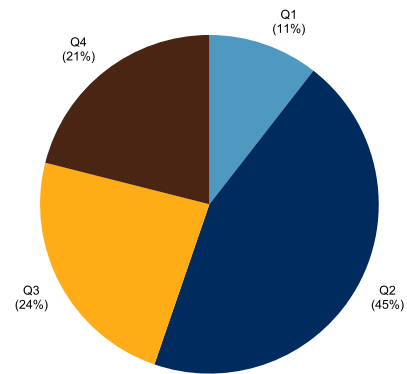
Energy--Distribution Of Disclosures By Country



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Chart 28

Energy--Distribution Of Disclosures By Quarter



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