

# From Risk to Resilience – Engaging with Corporates to Build Adaptive Capacity



Four Twenty Seven, June 2018

## KEY TAKEAWAYS

- The impacts of a changing climate pose significant downside risk for companies; a risk bound to increase as the climate continues to degrade.
- At present, investors are likely to become aware of exposure to financial damages from extreme weather events only after they have occurred. Disclosure is limited but gaining traction.
- Corporate engagement is a tool to encourage companies to deploy capital and technical assistance to build resilience in their operations and supply chains.
- Investors can select target companies reactively based on prior incidents or pro-actively identify firms that would benefit from resilience plans.
- Investors should question companies on their exposure to physical climate risks via their operations, supply chain and market as well as how they are building resilience to these risks through risk management and responsible corporate adaptation strategy.

## INTRODUCTION

Shareholder engagement on climate change has grown tremendously in recent years. Over 270 investors, managing almost \$30 trillion collectively, have committed to engage with the largest greenhouse gas emitters through the Climate Action 100+.<sup>1</sup>

In addition to their ongoing efforts to engage and encourage companies to reduce emissions, investors are becoming aware of the financial risks from extreme weather and climate change. Climate change increases downside risks: a negative repricing of assets is already being seen where climate impacts are most obvious, such as coastal areas of Miami.<sup>2</sup> As climate change can negatively impact company valuations, investors must strive to bolster governance and adaptive capacity to help companies build resilience.

Regulators are also paying close attention to physical climate change impacts. Article 173 of France's landmark Energy Transition and Green Growth Law passed in 2015, and the 2018 Action Plan from the European Commission, have both established the groundwork for mandated reporting around physical climate risk. Central Banks in the Netherlands, the UK, and France are actively exploring potential systemic impacts of physical risk on financial markets.

Yet disclosure on physical risk from corporations is in its early stages. Financial institutions are eager for more disclosures as they seek to understand and report risks to their portfolios, but many corporations are new to this topic. The seminal report published by the European Bank for Reconstruction and Development in May 2018: *Advancing TCFD guidance on physical climate risks and opportunities*,<sup>3</sup> presents detailed recommendations for metrics and best practices to disclose physical risks and opportunities, and highlights the need for corporations to be transparent about their processes for managing climate-related risks.

This report provides strategies and case studies on how to conduct engagement on physical climate risks. It is intended as a guide to support financial institutions to engage in dialogue on climate change for a better understanding of portfolio companies' exposure and resilience to physical climate risk. Section 1 makes the case for engagement; Section 2 presents strategies to select target engagement companies and issues of interest, and Section 3 provides sample questions investors may ask to learn more about portfolio companies' resilience to climate impacts.

## 1. WHY ENGAGE? VALUE FOR INVESTORS, VALUE FOR COMPANIES

The primary goal of engagement is to preserve and enhance long-term shareholder value. Shareholder engagement on the physical impacts of climate change can improve companies' awareness of their own exposures and offers important insights to investors.

Research shows that both corporations and investors benefit from exchanging information. For corporations, engagement means improved relationships with long-term investors, as expectations and knowledge on key issues become clearer. Investors also derive value from improved relationships with

<sup>1</sup>Climate Action 100+ is a five-year initiative led by investors to engage with the world's largest corporate greenhouse gas emitters to improve governance on climate change, curb emissions and strengthen climate-related financial disclosures.

<http://www.climateaction100.org/>

<sup>2</sup>"Rising Sea Levels Reshape Miami's Housing Market." The Wall Street Journal. April 20, 2018. <https://www.wsj.com/articles/climate-fears-reshape-miamis-housing-market-1524225600>

<sup>3</sup>European Bank for Reconstruction and Development and Global Center for Excellence in Climate Adaptation, *Advancing TCFD guidance on physical climate risks and opportunities*, 31 May 2018. [http://427mt.com/wp-content/uploads/2018/05/EBRD-GCECA\\_final\\_report.pdf](http://427mt.com/wp-content/uploads/2018/05/EBRD-GCECA_final_report.pdf)

clients and even improved context for investment decisions.<sup>4</sup>

Beyond improved communication, some individuals or groups of investors are engaging companies to provoke substantive changes in their business models and/or governance structures and have a deeper influence over outcomes. For example, on Energy Transition risk, Legal and General Investment Management has committed to vote against Chairs where company strategy and governance in relation to the low carbon transition are not meeting engagement expectations on climate change.<sup>5</sup> Investors are also asking companies in their portfolios for strategic and operational changes to decarbonize assets, by selling tar sands and increasing spending for research and development in alternative energy.<sup>6</sup> Simi-

larly, investors could put pressure on companies to ensure they assess and report on their risks, such as stranded assets due to sea level rise or water stress.

Lastly, engagement is a powerful tool to evaluate a corporation's governance - a critical factor to assess corporations' vulnerability to climate change. The management's leadership on climate risk (or lack thereof), corporate risk management processes and adaptation strategy will drive major differences in how companies perform in the face of a changing climate. In the words of Hermes Investment Management: "It is not good governance that leads to outperformance, but poor governance that leads to underperformance."<sup>7</sup> It is crucial for financial institutions to understand and influence how portfolio companies are building adaptive capacity.

#### To go it alone or engage collaboratively?

There are many advantages to partnering with other investors for engagements. A greater number of shareholders will be more influential with companies and may save time for investors as they can share feedback from companies. However, some investors' mandates may prohibit shared or public engagements as some information could be market sensitive. Many asset managers provide engagement as a service to their clients and pension funds sometimes collaborate through one manager. The Principles for Responsible Investment (PRI), Ceres, the Institutional Investors Group on Climate Change (IIGCC) and Interfaith Network for Corporate Responsibility (ICCR) all convene investors on issues involving climate change.

## 2. SELECTING ENGAGEMENT TARGETS FOR PHYSICAL CLIMATE RISK

A changing climate will have complex, diverse impacts globally. How can investors identify hotspots in their portfolios where companies are most likely to experience a damaging weather event? Investors can choose companies reactively and engage with those that have already experienced financial damages from one or more climate hazards. However, new data and analytics now also empower investors to spot systemic climatic risk factors before they

lead to financial harm and proactively engage companies likely to experience impacts in the future.

#### Reactive strategy, preventing further damage

Extreme weather events can have longstanding negative impacts on firms' operational assets and supply chains. A reactive strategy relies on news reports to identify catastrophic events that may affect portfolio companies. Examining historical

<sup>4</sup>Gond, Jean-Pascal. "How ESG engagement creates value: bringing the corporate perspective to the fore" Summary article published on PRI's website. 2 October, 2017.

<sup>5</sup>Omi, Meryam (2016). ESG Spotlight: Time to act on climate change: Engagement with consequences. [http://www.lgim.com/library/knowledge/thought-leadership-content/esg-spotlight/ESG\\_Spotlight-FWF.pdf?hootPostID=955f36caf420b4e6f04dad178327ff86](http://www.lgim.com/library/knowledge/thought-leadership-content/esg-spotlight/ESG_Spotlight-FWF.pdf?hootPostID=955f36caf420b4e6f04dad178327ff86)

<sup>6</sup>Global Investor Coalition on Climate Change (2016). Investor Climate Compass: Oil and Gas. <http://globalinvestorcoalition.org/wp-content/uploads/2017/05/IIGCC-2017-Oil-and-Gas-Investor-Expectations-v42.pdf>

<sup>7</sup>Hermes Investment Management (2014). "ESG Investing: Does it just make you feel good or is it good for your portfolio?"

<https://www.hermes-investment.com/wp-content/uploads/2015/06/esg-investing-does-it-just-make-you-feel-good-or-is-it-actually-good-for-your-portfolio.pdf>

events can provide insight into the ways in which financial impacts from climate hazards are likely to manifest.

Companies already affected by extreme weather events should be forthcoming in disclosing the impacts from these events. They should have a robust and transparent strategy to prevent further damages and reduce their exposure. Shareholders should expect improved risk management, with a sense of urgency around building resilience and adaptive capacity. Additionally, if a company did not clearly disclose the financial losses from an extreme weather event, investors should request greater transparency.

**Identifying Reactive Engagement Targets: Examples from the Beverage Industry**

Investors may also scan specific regions looking for sectors or portfolio companies exposed to climate impacts. For example, following a cyclone, investors can identify the risks that a company’s operational sites have of experiencing damage as a result of

subsequent similar events.

For public companies with facilities around the world, one extreme weather event may prompt investors to investigate other regions where companies in that sector may be exposed. In 2017, PepsiCo and CocaCola faced a ban in two states in India, Kerala and Tamil Nadu, started by retailers’ boycott of the products of these two multinational companies in protest of their depletion of groundwater.<sup>8</sup> A closer look at PepsiCo and other beverage companies show they face significant exposure to water stress in the Western United States and Mexico (Figure 1). Changing regulations, such as California’s Sustainable Groundwater Management Act of 2017,<sup>9</sup> and shifting availability of water supply as an input to beverages present a material risk to the industry. Some investors already engage on water stress. The Norwegian Public Pension Fund, for example, publishes its expectations on issues such as climate change and water management<sup>10</sup> to help set the agenda for company engagement.

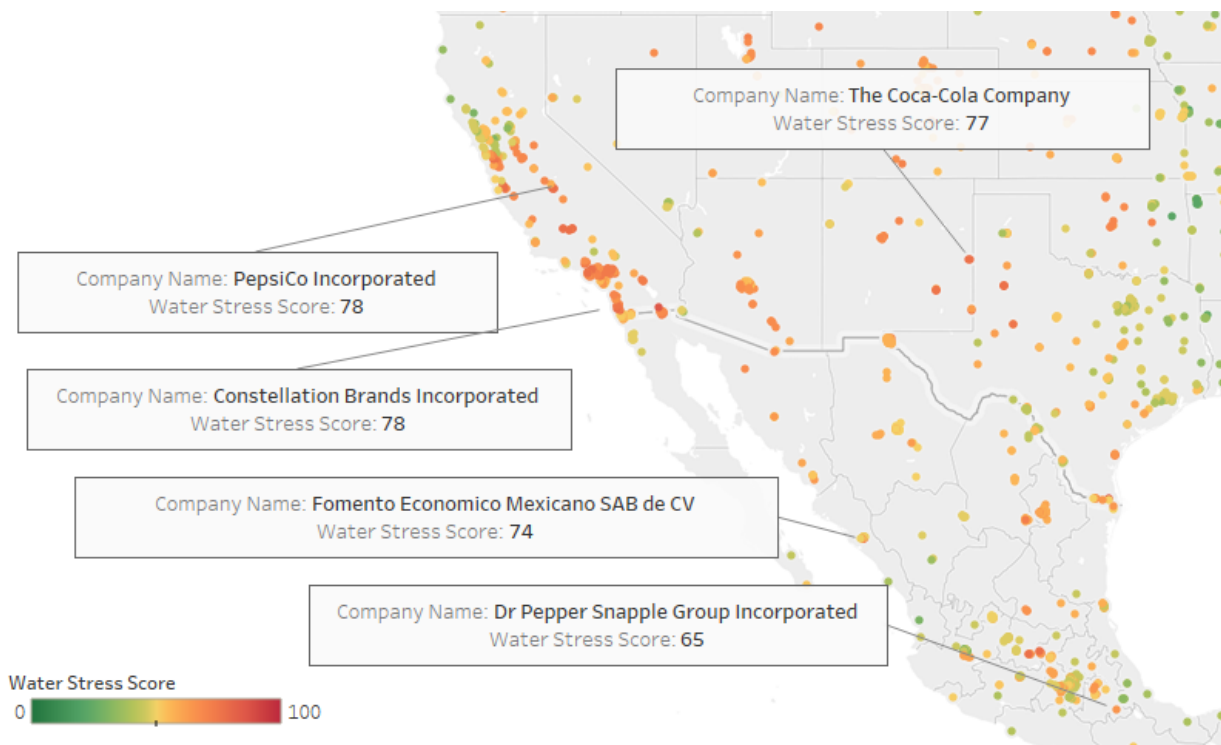


Figure 1. Beverage companies in the United States and Mexico, including PepsiCo, face exposure to water stress. Source: Four Twenty Seven.

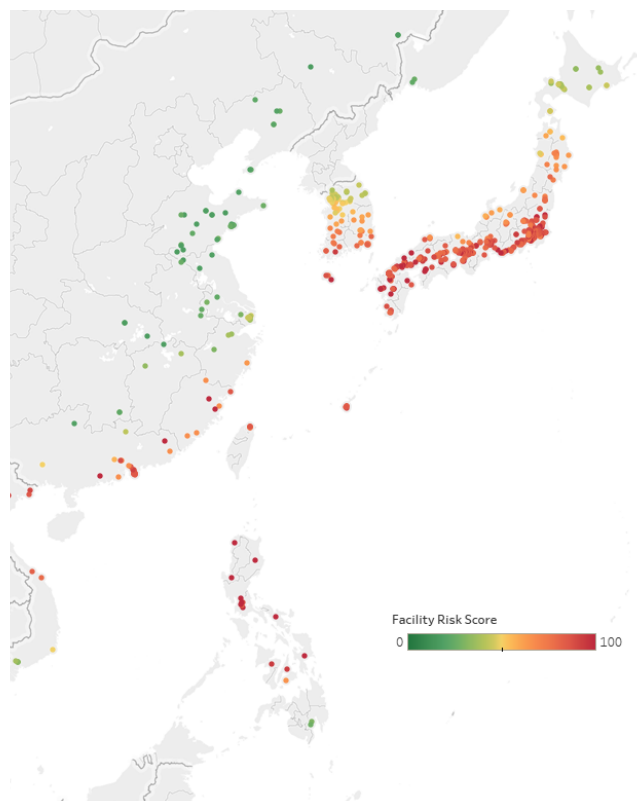
Similarly, in 2013, Pepsi-Cola Products Philippines had to write off over ten million dollars equivalent from their inventory as a result of the destruction during the Typhoon Haiyan.

This should raise questions on how the company is prepared for increasing frequency and intensity of cyclones. Exploring a map of cyclone exposure for facilities in the industry, as shown in Figure 2., can help identify hotspots where operational sites are likely to be hit again, and ensure corporate owners are preparing adequately.

Table 1 provides additional examples of climate hazards and their business impacts.

*Figure 2 Exposure to cyclones of facilities in the Beverage sector. Points represent facilities owned by beverage companies and the color represents their exposure to cyclones, with red representing the most exposed and green representing the least exposed.*

*Source: Four Twenty Seven*



**Table 1. Climate hazard and their business impacts.**

<b>Cyclones, Hurricanes Ty-phoons</b>	In 2013, Pepsi-Cola Products Philippines had to write off half million dollars equivalent from their inventory as a result of the destruction during the Typhoon Haiyan. (Pepsi-Cola Products Philippines)
<b>Sea level rise</b>	Winter storms in 2013 to 2014 in England and Wales caused flooding that damaged 23 harbors. The UK government estimates that total economic damages to the ports was GBP 1.8 million (USD 2.9M). (Environment Agency)
<b>Extreme Rainfall</b>	The 2011 floods in Thailand flooded multiple manufacturing sites near Bangkok, which hurt profits in Sony and Panasonic, resulting in a downgrade in their debt rating by Moody's. (Reuters)
<b>Heat Stress</b>	In February 2017, a heat wave and surge in demand for cooling across Australia drove prices up and several mining companies shut down their plants, causing lasting damage to smelters which cooled with molten minerals hardening inside them. BHP Billiton halted operations for two weeks as a result of a blackout at its Olympic Dam Copper Mine. (Reuters)
<b>Water Stress</b>	In 2015 Brazil experienced its worst drought in 80 years. As a result, General Motors experienced an increase in water costs of US\$2.1 million, and subsequent reduction in availability of hydropower drove up electricity costs by US\$5.9 million. (Water and Waste Digest)
<b>Wildfire</b>	Bulk wine producers were hit by low grape production globally over the 2017 growing season. Mass wine producers operate at lower margins so increases in grape prices due to supply shortage coupled with higher water prices could be financially damaging. Constellation Brands closed tasting rooms in Northern California. (U.S. News)

<sup>8</sup> "PepsiCo, Coca Cola face ban in second Indian state on water." Bloomberg. 8 March 2017. <https://www.bloomberg.com/news/articles/2017-03-08/pepsico-coca-cola-face-boycott-in-second-indian-state-on-water>

<sup>9</sup> "AB-487 Sustainable Groundwater Management Act." California Legislative Information. 2017. [https://leginfo.ca.gov/faces/billTextClient.xhtml?bill\\_id=20170180AB487](https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=20170180AB487)

<sup>10</sup> Norge Bank Investment Management. (2015) "Updated water expectation document." <https://www.nbim.no/en/transparency/news-list/2015/updated-water-expectation-document/>

**Proactive strategy, identification of outliers**

Investors may prefer a more systematic approach to identifying companies' vulnerabilities to climate risks. They can identify strategic engagement targets by exploring which companies are most exposed compared to their peers in a specific industry.

**Identifying Proactive Engagement Targets: Examples from the Automotive Sector**

The automobile industry is exposed to extreme weather risk to its operations as seen during the Thailand floods in 2011. As a resource-intensive operation, automobile manufacturing is also exposed to vulnerabilities from water shortages and may be exposed to physical climate risks through its supply

chain as components and materials such as rubber could be concentrated in a few production locations.

Investors can prioritize companies for engagement by looking at those that have the highest risk scores for operations, supply chain and market. Figure 3 displays automobile manufacturers plotted by their operations risk and market and supply chain risks. Investors may decide to open a dialogue with Guangzhou Automobile Group, BYD Co Limited and Suzuki Motor Corporation, as examples, to learn more about their management frameworks for adaptation to climate vulnerabilities.

Similarly, investors could integrate questions on climate risk in the supply chain for all investee auto

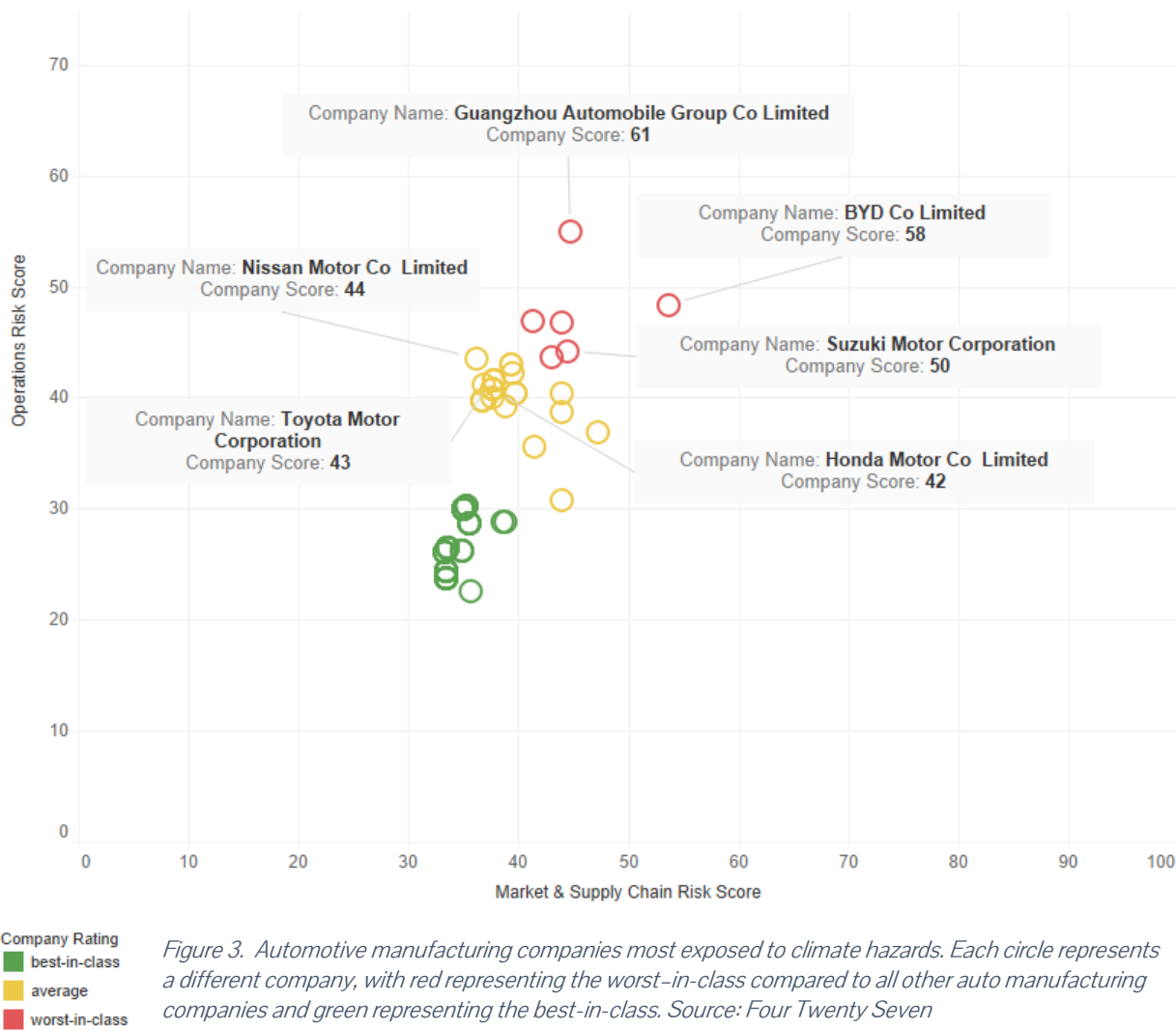


Figure 3. Automotive manufacturing companies most exposed to climate hazards. Each circle represents a different company, with red representing the worst-in-class compared to all other auto manufacturing companies and green representing the best-in-class. Source: Four Twenty Seven

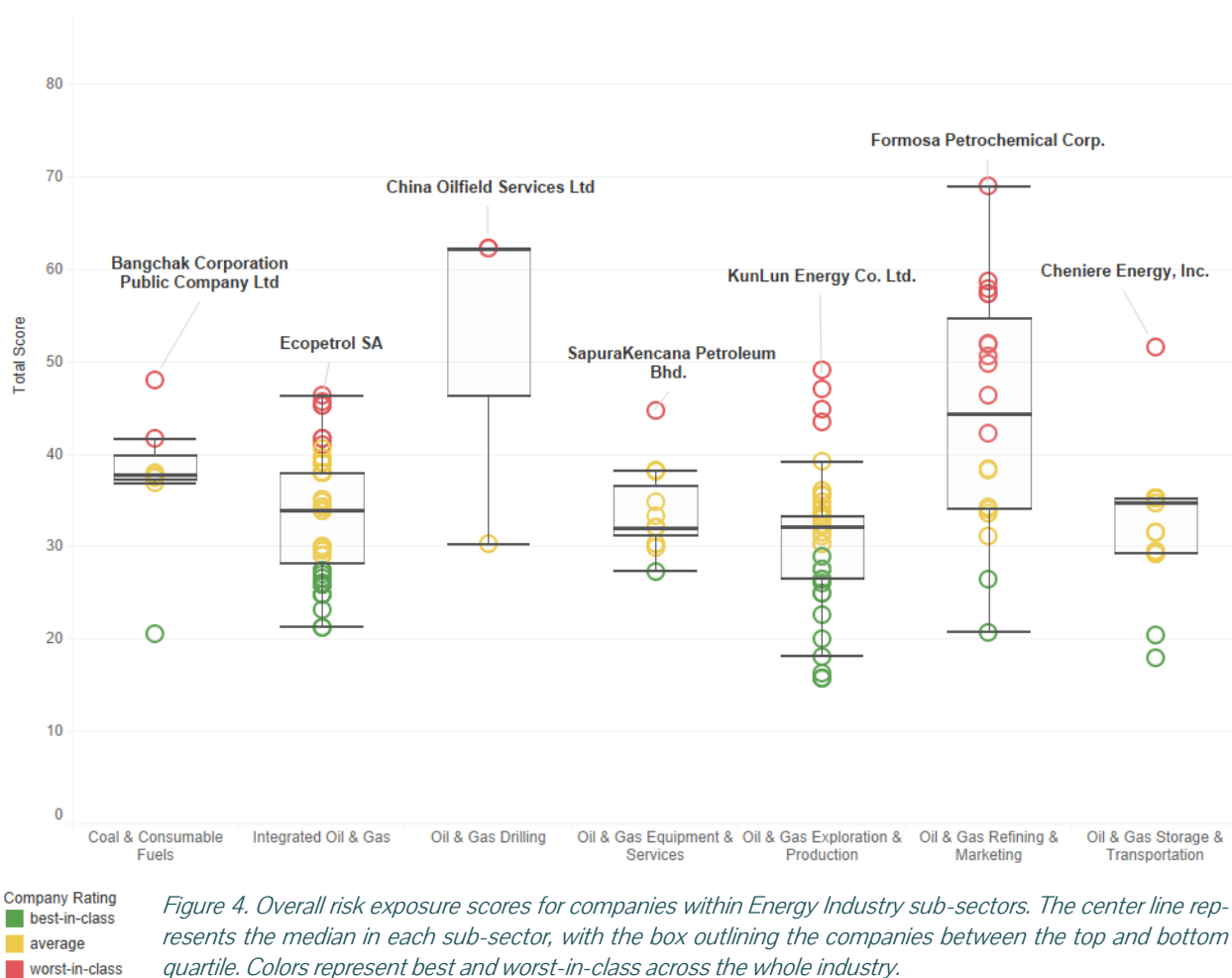
companies, specifically focusing on how they are maintaining diversity in supply for key components. Where certain materials are concentrated geographically, like rubber, companies should have a resilient, sustainable procurement policy that supports adaptation measures for rubber plantations and farmers.

**Identifying Proactive Engagement Targets: Examples from the Energy Sector**

The energy industry is also exposed to a broad range of climate hazards. Refineries tend to be water intensive and offshore drilling sites are vulnerable to sea level rise and cyclones. Formosa and CNOOC are

among the most exposed entities to certain physical hazards relative to their peers because of their geographic exposure to cyclones and heat stress, respectively.

Figure 4 also shows that certain sub-industries, which are more specialized in upstream or downstream activities, may have a wider variation of risk exposures. For example, Oil and Gas Exploration and Refining have a number of worst-in-class outliers that are more exposed to physical climate risk and should be prioritized for engagement.



**Measuring climate risk in equity portfolios**

Four Twenty Seven scores exposure to physical risk in three dimensions: Operations Risk, Market Risk and Supply Chain Risk. Operations Risk measures facility-level exposure to climate risks, including cyclones, sea level rise, extreme precipitation, heat stress, and water stress. Market Risk captures how a company's consumers may change their behavior due to climate variability. Supply Chain Risk assesses both the climate risk in countries that produce a company's materials and the sensitivity of a company's industry to climate-related resources such as water and land. Four Twenty Seven's report, [Physical Climate Risk in Equity Portfolios](#),<sup>11</sup> explains this methodology.

**3. FRAMING THE DIALOGUE ON RISK AND RESILIENCE**

Engagement on climate risk is a way for both investors and companies to understand and better leverage scenarios and metrics to gauge the risks of a changing climate. Promoting [responsible corporate adaptation](#) also encourages companies to reduce their exposure to climate impacts and identify opportunities to work with local communities and invest in mutual resilience.<sup>12</sup>

Shareholders can use the following questions as a starting point for engaging with companies on different components of climate risk. Questions may be further refined to speak more specifically to a company's sector and geographic exposure.

**Operations Risk**

*Planning processes:* Is there a process for identifying short-term and long-term risks from a changing climate? Are there systems for monitoring changing conditions? Are there risk thresholds to alert risk and logistics officers? Is information collected and shared throughout the organization? Is there potential for autonomous learning?

*Production:* How may climate impacts affect production capacity? If any assets are damaged, is there a contingency plan for rebuilding or diverting production elsewhere? Are any assets exposed to more permanent effects of sea level rise, and if so,

are there plans to relocate operations? Are assets in regions prone to cyclones able to withstand strong winds?

*Information systems:* Does the company have early warning systems for the weather risks that most immediately threaten its sites, such as heat waves, seasonal drought, wildfires, cyclones, extreme rainfall, river flooding and coastal storm surge? What data sources does management use to collect information on extreme weather risk? Is there staff expertise to gauge the impact of acute events and make decisions?

*Energy, cooling and water use:* Has the company analyzed how rising temperatures will affect energy usage? Are there power purchasing agreements in place to mitigate fluctuating costs of energy use? What are the primary sources of water and how is water consumption managed? How is the labor force sensitive to heat and are there adequate cooling measures in place? What processes are in place to monitor and improve efficiency and performance of operations relative to key resource inputs? Is the company experimenting with new innovations for how to increase efficiency or create the product with alternative and renewable resources? Is resource efficiency factored into planning and investment for new facilities and infrastructure?

<sup>11</sup>Four Twenty Seven and DWS, *Physical Climate Risk in Equity Portfolios*, 8 November 2017. <http://427mt.com/2017/11/08/physical-climate-risk-in-equity-portfolios-white-paper/>

<sup>12</sup>Caring for Climate and UN Global Compact, *The Business Case for Responsible Corporate Adaptation*, 2 December 2015. <http://427mt.com/2015/12/02/business-case-responsible-corporate-adaptation/>



### Climate Action 100+

Investors engaging through the Climate Action 100+ can leverage their engagement on carbon emissions to raise questions on physical climate risks and resilience as well. The table below shows the ten companies with the highest overall risk of climate hazards along with their scores for each climate hazard. Formosa is the company most exposed to physical climate risk in the Climate Action 100+, largely due to its exposure to Cyclones and heat stress in Southeast China. Nippon Steel, Toray Industry and Panasonic also display high exposure to cyclones - which should open the door to a dialogue on preparedness for increase intensity of typhoons. Investors should engage with these companies to inquire how their operational sites are building resilience for the climate hazards to which they are most exposed.

Company Name	Total Score	Cyclones	Sea Level Rise	Extreme Rainfall	Heat Stress	Water Stress
Formosa Petrochemical Co	69	67	23	43	54	41
Nippon Steel and Sumitomo Metal Co	62	74	36	43	42	38
Toray Industries Inc.	61	62	17	41	42	38
Anhui Conch Cement Co Ltd	61	27	5	49	54	44
SK Innovation Co Ltd	58	45	26	39	44	45
Reliance Industries Ltd	57	17	19	41	57	55
Nestlé Berhad	54	0	0	65	69	50
PTT Global Chemical PLC	54	15	20	39	61	38
Panasonic Co	51	60	16	41	41	35
Korea Electric Power Co	51	46	20	33	47	39

Source: Four Twenty Seven

### Market Risk

*Demand for products and services:* Does management stress-test demand across countries of sales in the face of changing climate conditions? How sensitive are customers to price increases in key markets? How important is the company's brand to its marketing? Are there any reputational risks from poor planning around climate change? Have there been any discussions with corporate clients on their risk and resilience to climate change and how this may impact supply ordering?

### Supply Chain Risk

*Resource demand:* What is the intensity of natural resource use for a company's products and services? How sensitive is the operating margin to in-

creased cost of energy and raw materials? Is the company exposed to any potential supply shortages caused by physical climate risks? How does the company manage potential fluctuations in input costs? Does the company have any processes for employee and stakeholder engagement with suppliers that may be affected by climate hazards or natural resource depletion?

*Supply chain management:* What best practices has the company adopted for managing supply chain relationships and communications? Where do the company's products originate and where must they travel before their point of sale? Are suppliers concentrated in one area? Is the company engaging with its suppliers on climate risk? How are logistics and transportation routes potentially affected by climate change?

### Adaptive Capacity

*Management quality:* Does the company meet the highest standards for corporate governance? Is physical climate risk considered at the board level? If so, are there specialists or committees internally that are focused on this issue? Is responsibility for physical climate risks assigned to anyone in senior management? Is there a Chief Risk Officer who considers climate risk and resilience at a strategic level and is in a position to deploy capital? If so, are remuneration and bonuses awarded for good management and meeting targets to improve resilience? Is the company using scenario-analysis to assess long-term shifts in the economy and the operating envi-

ronment due to climate change?

*Financial resilience:* Does the company have insurance for property damage from various climate hazards at all sites? If so, does this insurance cover disruptions to product manufacturing or labor availability? What are the implications for future cash flows if there is a major disruption in production or delivery or increase in input costs? Does the company have sufficient access to credit to build new assets or infrastructure if necessary? What are the OPEX and CAPEX implications of developing adaptation systems for extreme events (extreme rainfall, droughts, heatwaves and cyclones)?

## 4. WHAT DEFINES SUCCESSFUL ENGAGEMENT

It is crucial to assess if engagements have been successful. Such assessments can be facilitated through better metrics. As time and research will be invested into any company engagement, asset managers must demonstrate where goals have been met. Civil society has taken an active interest in the power of shareholder influence to make the business sector more sustainable and ethical and are calling for more transparency on the process.

Successful engagement requires data-driven feedback mechanisms, and investors that use a robust

dataset on physical risk will have an advantage when it comes to tracking the success of their engagement efforts. Some investors have a tiered model to track company responses, conversation and ultimately completed resolution of the original concerns. Others maintain detailed matrices of companies with multiple issues under engagement. Regardless of the specific tracking system, the golden rule for effective engagements is that they must be consistent, based on clear expectations, and supported by research.

## CONCLUSION

Climate change impacts on financial markets is a topic of growing concern for investors but corporate disclosures lag. Engagement on physical climate risk is an effective tool to ensure that companies with past or future exposure to climate impacts provide more information on their risk exposure and start preparing to mitigate risks. Four Twenty-Seven's data platforms, dashboards, and company scorecards help investors develop engagement strategies and identify engagement targets.

Engaging may help prevent losses in company valuation, and delivers value through improved processes for companies and more detailed sector and geographic insights for investors. Corporate engagement is also critical to raise awareness of growing exposure to climate impacts and ensure companies invest early in building resilience.

## SUMMARY

<p><b>Why engage?</b> Develop a physical climate risk engagement strategy</p>	<p>Both investors and companies benefit through increased communication, transparency, and ultimately, financial risk mitigation.</p> <p>Focus on a goal for the engagement:</p> <ul style="list-style-type: none"> <li>• Gain information on exposure to physical climate risk;</li> <li>• Raise awareness of climate impacts</li> <li>• Take adaptive action to build resilience.</li> </ul>
<p><b>Who to engage?</b> Create a priority list of companies to engage</p>	<p>Investors often focus on catastrophic events covered in the news, with a reactive engagement strategy based on company performance following an extreme event.</p> <p>Four Twenty Seven’s equity scores covering key business risks and climate hazards can support a proactive engagement strategy based on identification of outliers in specific industries or regions.</p>
<p><b>What to engage on?</b> Frame the dialogue on risk and resilience.</p>	<p>When investors ask the right questions and compare across company engagements, they can obtain actionable information on:</p> <ul style="list-style-type: none"> <li>• Indicators of management quality and early warning climate information systems;</li> <li>• Peer performance indicators on operations, supply chain and market risks;</li> <li>• Resource efficiencies for energy, water and other product inputs;</li> <li>• Investment opportunities and financial resilience;</li> <li>• Potential regulatory changes and country risks.</li> </ul>
<p><b>How to track success?</b> Use metrics to assess engagement efforts.</p>	<p>Using a robust dataset on physical risk will help track progress of engagement efforts.</p>



# Four Twenty Seven

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## ABOUT FOUR TWENTY SEVEN

Four Twenty Seven ([427mt.com](http://427mt.com)) is the leading provider of market intelligence on the impacts of climate change for financial markets. We tackle physical risk head on by identifying the locations of corporate production and retail sites around the world and their vulnerability to climate change hazards such as sea level rise, droughts, floods and tropical storms, which pose an immediate threat to investment portfolios.

Four Twenty Seven's ever-growing database now includes close to one million corporate sites and covers over 2000 publicly-traded companies. We offer [subscription products and advisory](#)

[services](#) to access this unique dataset. Options include data licenses, an interactive analytics platform, and company scorecards, as well as reporting services, scenario analysis, and real asset portfolio risk assessments.

Four Twenty Seven has won multiple awards for its innovative work on climate risk and resilience and our work has been featured by Bloomberg, the Financial Times and the UNFCCC. Four Twenty Seven was founded in 2012 and is headquartered in Berkeley, California with offices in Washington, DC and Paris, France.

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