PZENA Investment Management

PHYSICAL CLIMATE RISK PRIMER

Understanding climate risk is key to resilience and long-term value.

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TERMINOLOGY DEFINED

INTRODUCTION

Physical climate risk presents a potential threat to corporate value, with implications for companies and investors. By understanding how and where these risks materialize, companies can begin to adapt their businesses to withstand the physical impacts of climate change, and investors can better understand the balance between risk and resilience at the company and portfolio levels.

PHYSICAL CLIMATE RISK

Physical climate risk refers to the impacts from the direct, tangible effects of a changing climate. It encompasses the wide range of damages that result from environmental disruptions. It differs from transition risk, which includes the impact of societal, economic, and policy shifts toward a low-carbon economy.

The Taskforce on Climate Related Financial Disclosure (TCFD) breaks physical climate risk into two categories: acute and chronic.

- **Acute** physical climate risk is event-driven, resulting from the increasing frequency and intensity of extreme weather events such as hurricanes, floods, wildfires, and cyclones.
- **Chronic** physical climate risk is long-term, emerging gradually, as shifts in climate patterns like temperature and sea level rise continue.

CLIMATE ADAPTATION

Climate adaptation refers to the process of adjusting systems, infrastructure, and practices to better withstand physical climate impacts. Adaptation measures include a range of solutions, from man-made protective walls that combat rising sea levels to nature-based concepts, such as replanting habitats to recover ecosystem services.

CLIMATE RESILIENCE

Climate resilience is the end goal, bridging the gap between mitigation and adaptation. Mitigation efforts that reduce greenhouse gases are increasingly recognized to be insufficient; adaptation strategies are also needed to fully recover from climate-related disruptions. Climate resilience depends in part on maintaining the resilience of natural ecosystems, as these often provide the first line of defense against the exacerbated impacts of climate change.

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FINANCIAL MATERIALITY

Physical climate risk can become financially material for companies in the following ways. Increasingly, companies are talking about these risks in terms of "enterprise value-at-risk."

1. Stranded assets/asset devaluation – Existing assets may lose value or be forced into early shutdowns, leading to write-offs in high-risk regions. Some assets may also become uninsurable over time, which poses the risk of greater future financial losses.
2. Elevated costs of goods and services – Supply chain interruptions and rising operating expenses (such as increased insurance costs) can drive prices up.
3. Capital ratios – The financial stability and solvency of banks and insurers may be threatened by growing climate-related risks.
4. Availability of financing – Investments may become harder to secure in areas with higher seasonal or environmental risk.
5. Bottom-line revenue – Production levels may fall due to disruptions in operations or supply chains, reducing overall profits.

PORTFOLIO EXAMPLES

Gildan Activewear

In 2018, Hurricane Florence temporarily shut down Gildan's distribution operations in the Carolinas. Similarly, in November 2020, Hurricanes Eta and Iota forced the temporary closure of their manufacturing hub in Honduras and Nicaragua due to flooding and power outages. The company incurred tens of millions of dollars in losses*.

BASF

Extremely low water levels in the Rhine River around 2018, caused by drought and high temperatures, disrupted BASF's chemical complex, limiting the transport of raw materials and products and halting production. The company reported losses of approximately €200–250 million due to decreased production and increased logistics costs*.

**Source: Pzena analysis*

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ENGAGEMENT FRAMEWORK

01

GOVERNANCE

How is exposure to physical risk and climate adaptation managed internally, and who oversees this?

02

STRATEGY

How are adaptation priorities reflected in capital allocation and investment decisions?

03

RISK MANAGEMENT

Which physical climate risks do you consider to be effectively managed or appropriately accounted for? Are there particular areas that remain difficult to mitigate and continue to pose significant concern for those responsible?

04

METRICS & TARGETS

What KPIs are used to track progress, and have any signaled emerging risks over time? Are there any significant data gaps you are struggling with?

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SECTOR DEEP DIVE

While there is the potential for physical climate risk to affect all sectors, some sectors are likely to have more "enterprise value-at-risk" from the physical impacts of climate change in the shorter to medium term, by virtue of their operations. The following table outlines sectors where we may see these key risks materialize first.

SECTOR	EXAMPLES OF KEY PHYSICAL CLIMATE RISKS
Utilities/ Energy	• Damage to power plants, grids, and pipelines from storms, flooding, and wildfires • Reduced generation capacity due to drought (hydropower) or heat • Heat stress on equipment • Sea level rise impacting coastal infrastructure
Agriculture	• Extreme weather leads to crop loss, soil erosion, livestock mortality, and widespread pests/disease
Real Estate	• Property damage from extreme weather and sea level rise • Rising insurance costs, asset devaluation, or becoming uninsurable
Industrials	• Factory shutdowns from extreme weather • Heat-related productivity loss • Supply chain breaks due to damaged infrastructure
Financials	• Higher insurance claims due to extreme events • Credit risk from borrowers exposed to climate hazards; asset devaluation in high-risk regions • Challenges to solvency ratios and risk modeling
Chemicals	• Flooding or storm damage to raw materials • Hazardous spill risks during disasters • Supply chain interruption
Healthcare	• Facility damage from floods, storms, or heat • Increased patient load during heatwaves or disease outbreaks • Supply chain disruption for medical equipment and pharmaceuticals

04 SECTOR DEEP DIVE

Agriculture: *Barry Callebaut*

As previously detailed, climate change poses serious and direct risks to the agriculture industry. Some estimates suggest that, globally, agriculture has experienced approximately one-quarter of all economic losses resulting from climate events[1], magnified to a greater degree in developing and more vulnerable regions.

Exposure to physical climate risk is therefore one of the issues we assess when researching a company in the agriculture industry. For example, we recently invested in global chocolate processor Barry Callebaut, which operates in regions such as West Africa, where physical climate risk manifests as changing weather patterns and increasingly unpredictable cocoa harvests.

When we explored this issue as part of our due diligence prior to making the investment, we learned that Barry Callebaut is successfully adapting to physical climate risk, primarily through supporting systems of agroforestry in its supply chain. The goal of agroforestry is to maintain land health and biodiversity. For example, a farmer may plant multiple shady trees alongside the cocoa plant; this provides a natural shield, strengthening the cocoa plant's productivity and resilience by protecting it from excessive heat while also enriching the soil with nutrients. Additionally, agroforestry can provide multiple revenue streams for farmers who may operate under difficult financial conditions.

Financing climate adaptation remains one of the greatest challenges, particularly in agriculture, an industry dominated by independent smallholders across diverse regions. Many smallholders lack access to the resources needed to adopt climate-resilient farming measures. This provides an opportunity for larger companies, like Barry Callebaut, to help bridge the financing gap in its supply chain.

Exposure to physical climate risk did not preclude us from investing in Barry Callebaut because we were comfortable with the company's approach to mitigation and adaptation. We will continue to engage on this topic to make sure we remain confident in Barry Callebaut's ability to manage its risk exposure.

1. *UN Environment Program Finance Initiative*

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FURTHER INFORMATION

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