

## Market Outlook: The Adaptation Thesis

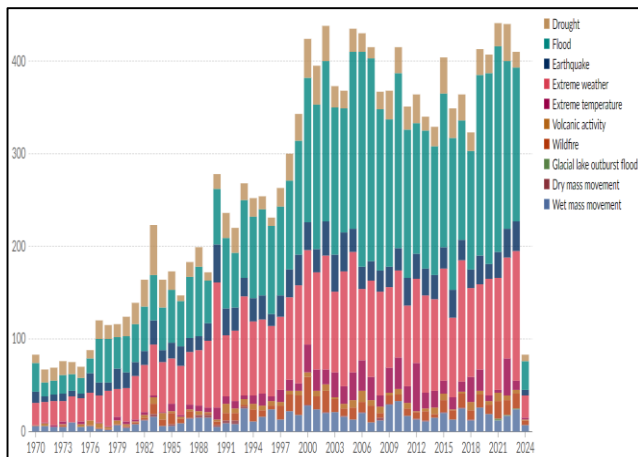
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### The New Normal: Real-Time Climate Risk Pricing

The world is witnessing a paradigm shift as climate risk is increasingly priced across asset classes. Hurricanes, typhoons, wildfires, and droughts are not just natural disasters; they are now financial events with tangible impacts on industries and economies. Recent trends in hurricane and typhoon activity, domestically and globally, underscore a significant change in weather patterns. Hurricane Beryl set a record for its rapid transition from a tropical depression to a named hurricane and Milton's pathway to becoming a category-five storm was the fastest ever recorded. Helene has been named the deadliest U.S. hurricane since Katrina, highlighting the escalating risk profile of these extreme events.

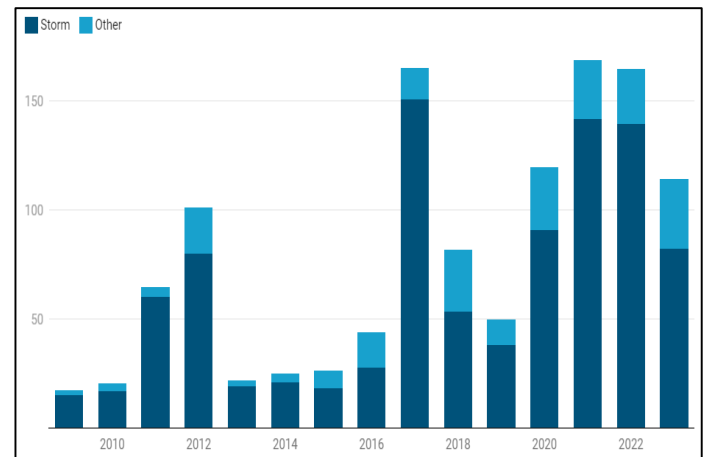
This shift is more than just weather, and while no single event defines a trend, the increasing intensity of these storms signals the need to reevaluate risks in sectors like insurance, real estate, energy, and infrastructure. As the environment in which we operate evolves, so must our approach to risk management and long-term planning. For investors, this dynamic presents both risks and unprecedented opportunities. As climate volatility becomes part of the "new normal," savvy investors are positioning their portfolios to capitalize on assets aligned with real-time climate risk pricing.

**Globally Reported Natural Disasters by Type – 1970-2024**



Source: <https://ourworldindata.org/natural-disasters>

**Economic Losses due to Natural Disasters in the US (Billions)**



Source: <https://futurepositiveinvestor.substack.com/p/weather-the-storm-sectors-set-to>

The newly released 2024 [“State of the Climate”](#) report, developed by a global consortium of top scientists, highlights a concerning reality: 25 out of 35 of the planet's crucial environmental metrics are now at all-time highs, with many trending in an alarming direction. We view these



metrics as the vital signs of the ecosystem that underpins our economy, because our socio-economic structures rely on our environment. For example, the rapid warming of our oceans and the subsequent rise in storm frequency and intensity is just one of many indicators illustrating the broader planetary shifts we are facing. But the implications of this shift extend far beyond environmental concerns. Every sector is exposed to climate risk, from the real estate industry in hurricane-prone regions to agricultural commodities vulnerable to droughts. Insurance companies are already adjusting premiums, real estate markets are feeling the pinch in high-risk areas, municipal bonds are being affected, sovereign debt, and even corporate valuations are being re-priced in light of climate exposure risks and opportunities.<sup>1,2</sup> For investors, we feel that this evolving landscape requires a proactive approach to identifying assets at risk of being re-priced, investing to mitigate these risks, and/or finding investments that stand to benefit from them.

## Evidence of Climate Risk Pricing in the Housing Market

Almost one-third of U.S. residents aged 18-34 say they're reconsidering where they want to move in the future after seeing the damage of this latest volley of Hurricanes per a recent [Redfin survey](#). This reversal of pandemic migration patterns is happening at a time when housing prices in Miami have hit a global high-water mark on the UBS bubble risk score index, creating the environment for financially material re-pricing of climate risk in Florida real estate.

Florida's vulnerability to rising sea levels and hurricane damage is well-documented. About [\\$200 billion of residential real estate in Florida is less than 1.8 meters above high tide. A McKinsey study predicted that by 2050, Florida's real estate losses during a 100-year hurricane event could rise from \\$35 billion to \\$50 billion](#). Yet, in just four years, Hurricanes Beryl and Helene have already caused [tens of billions in damage](#), and Hurricane Milton's potential losses may reach [\\$100 billion](#), far exceeding McKinsey's 2050 forecast. In the same report, McKinsey noted that these figures exclude potential real estate devaluation. The report said that by 2050, exposed properties could lose [\\$30-80 billion in value \(15-35%\)](#). Suppose we apply the same margin of error that McKinsey had in estimating hurricane costs to potential hit-to-home valuations. In that case, it tells us that hurricane-exposed properties could lose up to ~60% of their value as soon as this year in the most affected areas as these risks begin to get priced. These accelerated timelines indicate just how rapidly climate risk can be priced into the market, with exposed properties potentially facing steep devaluation in the near term.

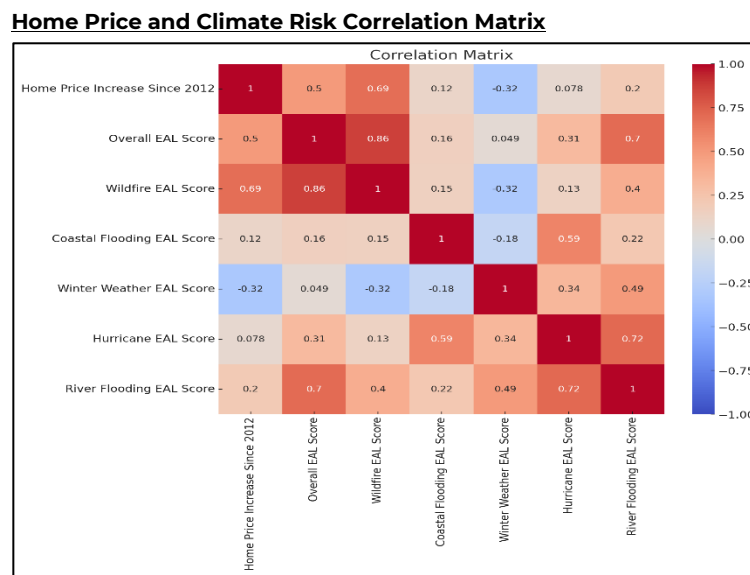
Zooming out from the obvious example of Florida, a [2023 HomeBay](#) study compared home price increases across the 50 largest U.S. metros alongside their state's climate risk scores, providing

<sup>1</sup> <https://knowledge.wharton.upenn.edu/article/how-higher-property-insurance-premiums-mirror-climate-risk/>

<sup>2</sup> <https://www.bis.org/publ/bppdf/bispap130.pdf>

valuable insights into the relationship between climate risk and real estate prices. Contrary to expectations that higher Expected Annual Loss (EAL) scores would directly correlate with lower home prices, our analysis found a more complex relationship. Certain climate risks, like wildfire and river flooding actually showed positive correlations with home price increases in some metros. This suggests that, despite high risk, market demand remains strong in these areas, potentially due to desirable locations, job opportunities, or other attractive features that offset perceived climate risks.

The correlation matrix below illustrates these relationships, showing how specific climate factors such as coastal flooding, extreme winter weather, hurricanes, and river flooding are connected to home price increases. Notably, extreme winter weather risk had a negative correlation with price increases, suggesting that that harsh climates dampen demand in certain areas.



Source: Created by Gitterman Asset Management using data from <https://homebay.com/climate-change-risk-real-estate/>

To delve deeper into these dynamics, we used a Random Forest model to predict home price changes using these risk factors, finding that it explained 55% of the variation in home prices.<sup>3</sup> This shows that while climate risks influence prices, they don't fully drive them, suggesting that the real estate market is only partially factoring in these risks. In high-risk areas where price growth continues to outpace rising climate risk, non-climate factors like strong demand are often dominant, overshadowing risk-based adjustments.

This finding highlights an important insight: in many high-risk areas, buyers aren't fully accounting for long-term climate risks, potentially due to a sense of security from insurance or

<sup>3</sup> A Random Forest model is a machine learning method that combines multiple decision trees to improve predictive accuracy and reduce overfitting. It's useful for analyzing the predictiveness of climate factors on home prices because it can capture complex, non-linear relationships.

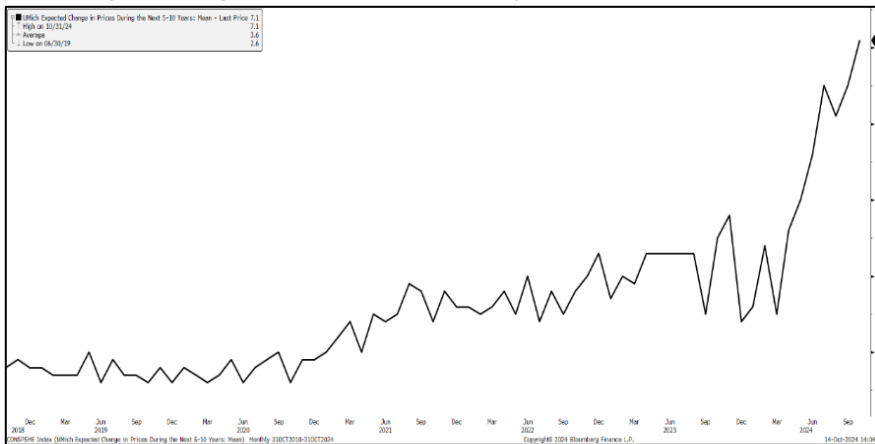




that while Headline CPI dropped due to falling energy prices from an oil and gas oversupply and slower demand, Core CPI tells a more complex story. Excluding energy and food, Core CPI initially stabilized as pandemic-driven supply chain issues resolved. However, it's now rising again, driven by inflation in key areas like services, food, and housing, which continue to push costs higher despite overall energy price declines. This highlights persistent inflationary pressures beyond energy.

But if we focus on long-term energy trends, they still tell an inflation story. Among commodities, oil has the most profound influence on inflation and inflation expectations. We believe oil and gas prices will be on the rise in the long run, and here's why. First, energy demand is expected to keep increasing, thanks to economic growth, new technologies, and more people using electric vehicles and heat pumps. At the same time, the supply of oil and gas is getting tighter. We're seeing production from the best oil fields decline and we are not discovering enough new reserves globally to keep up with energy demand. Extracting fossil fuels is becoming more challenging due to the depletion of the most accessible and productive fields, meaning that what's left often requires more advanced and expensive techniques to extract. This, combined with challenges like stricter regulations and the rising costs of energy inputs, makes production less efficient. With all these factors creating a supply-and-demand gap, major oil companies are focusing on keeping their production costs low and consolidating their positions through acquisition, signaling that they are confident that fossil fuels will still be a significant part of the global energy mix for years to come. All this suggests we might see higher prices for oil and gas in the future, which is inflationary for headline CPI despite any short-term deflation we may be experiencing in energy prices. These trends have profound implications for 60/40 portfolios and fixed income strategies.

### University of Michigan Consumer Price Survey 5-10 Year Forecast



Source: Bloomberg / University of Michigan Consumer Price Survey, October 2024



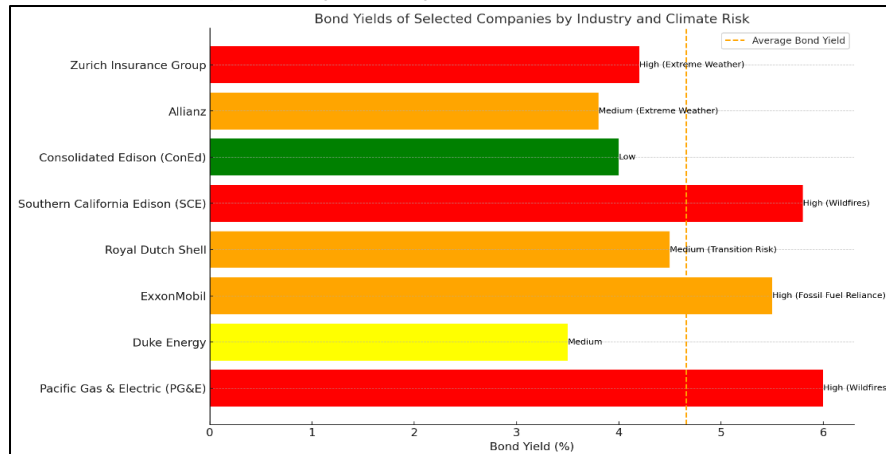
U.S. consumers' inflation expectations for the next 5-10 years surged to 7.1% in October, reaching their highest level in over 40 years. According to the University of Michigan Consumer Survey, this figure has doubled in just a few months. For context, median inflation expectations have held steady around 3% for the past three years.<sup>4</sup> Inflation and inflation expectations filter in to how companies run their business, how investors model risk, and which asset classes win investor asset flows.

## Evidence of Climate Risk Pricing in Corporate Bonds and Equities<sup>5</sup>

Companies in climate-sensitive sectors like energy, insurance, and utilities have experienced stock and bond price volatility linked to their exposure to climate risks. Research shows that firms reliant on fossil fuels or areas prone to climate-related events often face lower valuations due to regulatory risks and operational disruptions. For example, utility companies in wildfire-prone California, such as Pacific Gas & Electric (PG&E) and Southern California Edison (SCE), have higher bond yields (6.0% and 5.8%, respectively) compared to Consolidated Edison (4.0%) and Duke Energy (3.5%), reflecting their greater climate risk exposure.

While climate risk significantly influences bond pricing, other factors like debt structure, creditworthiness, and macroeconomic conditions also play a role. For instance, PG&E's elevated yields partly stem from the risk of operational disruptions, potentially adding 1-2% to its bond yields compared to peers with lower climate threats. ExxonMobil's yield (5.5%) exceeds that of Royal Dutch Shell (4.5%) in the energy sector due to differing fossil fuel strategies. In comparison, Zurich Insurance Group (4.2%) has a slight premium over Allianz (3.8%), which is linked to its extreme weather exposure.

**Bond Yields of Companies by Industry and Climate Risk**



Source: Created by Gitterman Asset Management using data from Bloomberg as of 10/16/2024

<sup>4</sup> All consumer price data in this section was taken from Bloomberg as of 10/2024

<sup>5</sup> All yield figures in this section were taken from Bloomberg as of 10/16/2024



While traditional financial factors drive bond yields, climate risk has become a significant pricing variable, especially for companies in vulnerable sectors and regions. Yield differentials among companies can significantly influence their financial health and long-term viability. Higher bond yields indicate greater perceived risk, leading to a higher cost of capital, which can constrain investment in growth and climate resilience initiatives. Companies with elevated yields, like PG&E, may face operational limitations and reduced market perception, hindering their ability to attract investment. Conversely, firms with lower yields enjoy more financial stability, enabling them to invest in innovation, sustainability, and compliance with evolving regulations. This positioning can enhance their competitive advantage, allowing them to adapt more effectively to climate challenges and improve their long-term sustainability. Overall, yield differentials directly correlate with a company's ability to navigate climate risks and secure future success.

## The Performance of Equities Positioned to Benefit from Climate Pricing

This year's investment landscape has increasingly factored in the growing climate risks, such as rising temperatures, sea level rise, wildfires, and hurricanes. Companies that offer solutions to these environmental challenges have been well-positioned to capture revenue as these climate events worsen, driving investor interest and financial performance.

Below is a breakdown of crucial climate risks and the companies that we invest in that are set to benefit:

### Rising Temperatures<sup>6</sup>

As global temperatures rise, companies providing energy-efficient cooling solutions are seeing robust demand. **Trane Technologies** (+64.3%), a leader in HVAC systems, has performed strongly this year. As heat waves become more frequent and intense, both residential and commercial sectors are prioritizing energy-efficient climate control. The company's focus on reducing emissions and improving energy efficiency has made it an essential player as governments and industries seek to lower their carbon footprints. Year-to-date, Trane has outperformed the broader market, benefiting from regulatory tailwinds and consumer demand for more sustainable building solutions. **Modine Manufacturing** (+112.6%) is also tapping into this trend, offering thermal management technologies that enhance energy efficiency in cooling and heating systems. As temperatures rise, the demand for such systems will only increase, positioning these companies for continued revenue growth.

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<sup>6</sup> All return figures in this section were taken from Bloomberg as of 10/16/2024 and reflect YTD total return.





## Wildfires

Wildfires, particularly in regions like California, have devastated communities and infrastructure. Utility companies like Pacific Gas & Electric (PG&E) have felt the pressure of these risks, but others, such as **Generac Holdings** (+24%), which manufactures backup generators and energy storage solutions, have seen a surge in demand. As wildfires increase in frequency, residents and businesses are seeking more resilient energy solutions to withstand power outages. Generac has capitalized on this trend, with strong YTD performance driven by sales of its home and industrial backup generators. With wildfire risks predicted to worsen due to rising temperatures and drier conditions, companies like Generac are well-positioned to see continued growth in revenue from climate resilience solutions.

## Water Scarcity and Sea Level Rise

Water management is an increasingly critical issue as climate change leads to both droughts and sea level rise. **Xylem Inc** (+20.5%) and **Badger Meter** (+44.5%) have seen strong performance YTD as they help address water scarcity through smart water management technologies. Xylem is a leader in water infrastructure solutions, providing municipalities and businesses with systems to better manage water resources in an era of rising demand and shrinking supply. Sea level rise, particularly in coastal cities, is also driving demand for solutions to mitigate flooding and protect infrastructure, and Xylem's innovative approach has positioned it as a key player in this space. **Tetra Tech** (+47.5%), which offers environmental consulting services, has similarly benefited from increasing demand for water and infrastructure resilience services.

## Hurricanes and Extreme Weather Events

Hurricanes and severe storms are becoming more frequent and destructive, presenting risks to infrastructure but also opportunities for companies involved in climate adaptation and disaster recovery. **Great Lakes Dredge & Dock** (+50%) is one such company, providing coastal protection and dredging services to combat the effects of rising sea levels and storm surges. With hurricane intensity expected to increase due to warmer ocean temperatures, Great Lakes is well-positioned to benefit from federal and state-level investments in coastal infrastructure protection.

Meanwhile, **Pentair PLC** (+36.7%) and **Veralto Corp** (+37.6%) are focusing on water treatment and filtration solutions, crucial for disaster recovery efforts and ensuring clean water access post-storm. Both have seen solid performance YTD as their services become more integral to mitigating the impacts of extreme weather events.





## Energy Transition and Grid Resilience

The energy transition away from fossil fuels and the need for a more resilient power grid in the face of climate risks has led to growth for companies like **Vertiv Holdings** (+54.7%) and **Jacobs Solutions** (+23.7%). Vertiv specializes in data center infrastructure, which is critical for ensuring resilient digital networks in extreme weather conditions. Jacobs Solutions focuses on infrastructure engineering and design, helping communities build more climate-resilient cities. As hurricanes, floods, and fires put increasing pressure on infrastructure, these companies are well-positioned to benefit from public and private investments in climate adaptation.

## Nuclear Energy for Climate Resilience

As global demand for clean, reliable energy rises, nuclear power is emerging as a key solution to mitigate the environmental impact of fossil fuels. **Cameco** (+29.1%), a major uranium producer, is also benefiting from the renewed interest in nuclear energy, which is seen as a critical component of reducing carbon emissions. Cameco's YTD performance has been driven by increased global interest in uranium as demand for nuclear fuel grows. The rise of SMRs and other nuclear technologies further strengthens Cameco's position in the market, as it provides the raw material necessary for nuclear energy expansion. With the world shifting toward more sustainable energy sources, Cameco is well positioned for future growth.

## Thesis for Continued Growth

In our view, the issues driving demand for these climate solutions are only expected to worsen. Rising global temperatures are set to increase the frequency and intensity of extreme weather events, from hurricanes and wildfires to heatwaves and droughts. Regulatory changes, particularly in regions like Europe and the U.S., are creating favorable environments for companies that can help governments and industries meet sustainability goals. As climate risks escalate, the need for infrastructure upgrades, energy-efficient solutions, and disaster resilience will only grow, providing these companies with sustained revenue growth opportunities.

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