

# The Value Gap: Market Fantasy vs. Climate Reality

Financial markets are on a collision course with climate crisis



- **Theoretical Growth:** Market growth ignoring climate disruption -- current financial valuations and projections implicitly assume consistent ~2% annual growth.
- **Climate-Adjusted Growth:** Incorporates economic impacts from climate change based on Kotz et al.'s findings of 19% GDP reduction by 2049. Includes temperature effects, precipitation changes, extreme weather damage, and productivity losses.<sup>1</sup>
- **Historical Performance:** Simplified historical market performance (2000-2025) showing downturns during the 2008 global financial crisis brought on by the US subprime mortgage crisis and in 2020 the COVID-19 pandemic.
- **Climate-Corrected Projection:** Hypothesized market path (2025-2050) as markets are forced to reckon with climate reality through increasing volatility, corrections, persistent climate-driven recessions that converge with climate-adjusted fundamentals.

<sup>1</sup> Kotz, M., Levermann, A., & Wenz, L. (2024). The economic commitment of climate change. *Nature*, 628(8008), 551-557. doi.org/10.1038/s41586-024-07219-0

# Why The Gap Exists: The Climate Risk Dilution Pipeline

The inevitability of climate risk gets progressively filtered and diluted through multiple institutional barriers, leading to market valuations untethered from reality.

Here are the stages of how that risk is distorted from physics to markets:

## 1. Climate Change is Here

The complete scope of climate risk includes tipping points, cascading failures, extreme weather events, infrastructure damage, supply chain disruptions, resource scarcity, and systemic economic breakdowns. Under our current policy trajectory they cannot rule out warming of 4°C or more.<sup>2</sup> Climate scientists are very clear that this is an existential threat, not a matter of a few percentage points of economic growth.

At this stage of the pipeline, all risk factors that could impact economic value are present: ice sheet collapse, Amazon dieback, permafrost methane release, crop failures, mass migration, infrastructure destruction, and the compounding effects when multiple systems fail simultaneously.

## 2. Climate Science Filter

Scientific conservatism systematically excludes high-risk, low-probability events from climate models. Scientists don't publish findings until they can defend them beyond reasonable doubt. Proving highly uncertain outcomes like tipping points is nearly impossible, so these risks don't make it into climate models, despite their increasing likelihood and existential threat to humanity.

Scientists face enormous pressure not to overstate climate risk. Fossil fuel interests attack any finding that appears to exaggerate the risk, making conservatism a survival trait for career success in climate science. The result: published climate science systematically underestimates risk by excluding the most dangerous but uncertain scenarios.

Filtered out: Tipping point cascades, worst-case scenarios, deep uncertainty

## 3. Climate Economics Translation

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<sup>2</sup> Hausfather, Z. (2025). An assessment of current policy scenarios over the 21st century and the reduced plausibility of high-emissions pathways. *Dialogues on Climate Change*, 2(1), 26-32. <https://doi.org/10.1177/29768659241304854>.

Economics and climate science don't speak the same language. This creates a fundamental translation problem where the latest economic papers are (a) out of date with climate research, and (b) consistently underestimate climate's impact on the economy.

Economists approach climate risk assuming baseline economic growth at consistent rates minus climate change's negative impacts. But this misses the fundamental truth: economic growth depends on the stable climate of the recent past. The climate isn't a small external variable affecting the economy—the economy exists within and because of the climate.

Economics hasn't developed compelling models for the climate-economy relationship. Most economic premises about how climate risk works treat climate as an external variable rather than the foundation that all economic activity depends upon.

Filtered out: Climate-economy interdependence, system-level breakdowns, non-linear impacts

#### 4. Third-Party Climate Risk Modeling

A significant gap exists between cutting-edge academic research and how private markets assess climate risk. Research takes years to percolate into the climate modeling used by financial institutions.

If financial institutions consider rigorous climate risk modeling at all, they rely on third parties with perverse incentives.<sup>3</sup> What is the business incentive for a climate risk advisory company to update models as climate science progresses and climate projections get bleaker? Updates mean delivering worse news to the clients who are paying you. Commercial pressures favor models that don't disrupt client planning or financial reporting or create uncomfortable conversations about fundamental business model risks.

The result is systematically outdated risk models that lag academic research by years, miss recent climate developments, and tend toward conservative assumptions.

Filtered out: Latest research findings, model updates that worsen outlook, uncomfortable strategic implications

#### 5. Financial Market Incentives

Financial markets struggle to properly assess long term risks. So even if financial institutions were to receive realistic climate risk modeling, they have little incentive to publicize the results or take appropriate action.

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<sup>3</sup> Carbon Tracker Initiative. (2023). Loading the DICE against pension funds. Flawed economic thinking on climate has put your pension at risk.

Multiple institutional pressures work against incorporating long-term climate risks: quarterly earnings pressure, career incentives tied to short-term performance, competitive disadvantages to being a "first mover" on climate concerns, and investor expectations of continuous growth regardless of long-term sustainability.

The institutional structure of financial markets systematically filter out risks that manifest over decades. Climate risk falls into this blind spot almost perfectly.

Filtered out: Long-term risks, scenarios that threaten growth assumptions, competitive disadvantages from climate honesty

## 6. Final Asset Valuations

The end result: asset valuations that incorporate only a tiny fraction of actual climate risk. This gap between physical reality and today's market prices creates the climate reality gap clear in the chart above.

We can see this dilution everywhere: minimal attention to climate in financial reporting, growth assumptions in 2050+ financial models that ignore climate uncertainty, and systematic language drift where climate scientists' "existential threats" become "growth headwinds" in financial reports.

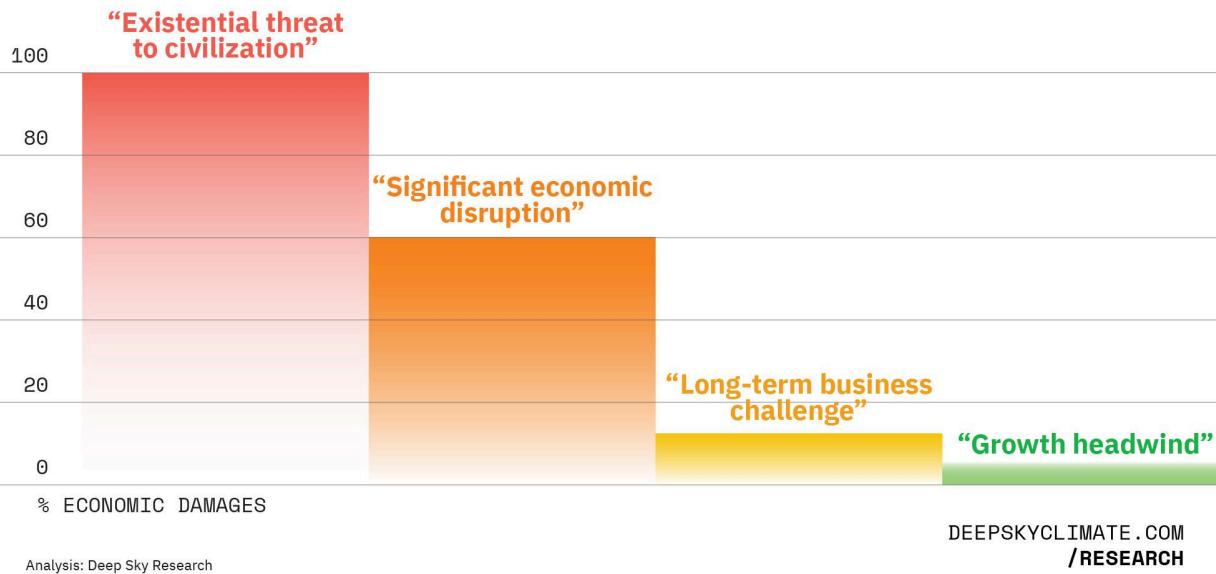
Each institutional filter removes layers of risk, creating a financial system that prices assets as if climate change were a minor external factor rather than a fundamental threat to the economic foundations those assets depend on.

Result: the value gap between market fantasy and climate reality.

## LANGUAGE DRIFT: HOW “EXISTENTIAL THREAT” BECOMES “GROWTH HEADWIND”



CLIMATE SCIENCE > CLIMATE ECONOMICS > THIRD-PARTY MODELING > FINANCIAL REPORTS



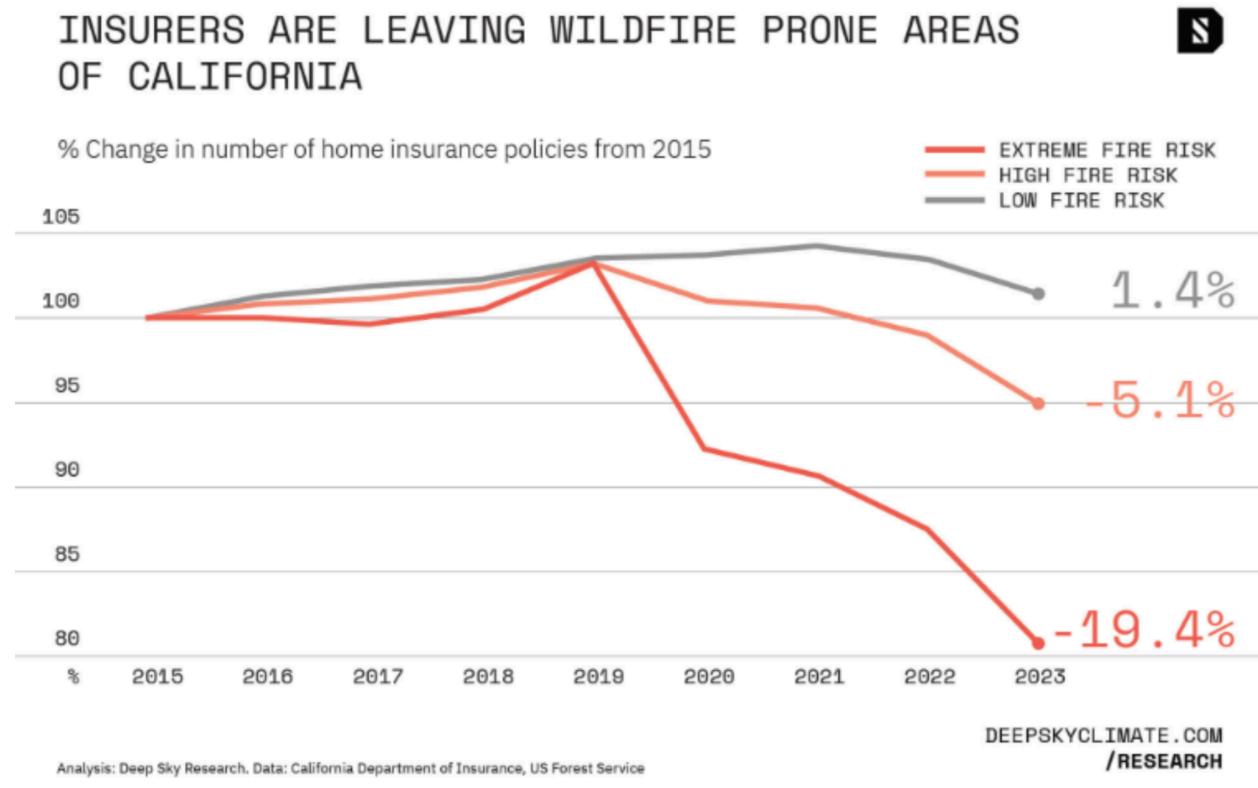
## Climate Recession

Unlike traditional economic downturns that eventually recover due to monetary policy or fiscal stimulus, climate-driven recessions will be fundamentally different. They'll be persistent, recurring, and increasingly severe because the underlying physical risk only worsens as global atmospheric CO<sub>2</sub> concentrations increase, as they will continue to do for decades to come.

The scale of value destruction in a climate recession will dwarf previous financial crises. The 2008 global financial crisis wiped out \$7.1 trillion in US stock market value according to the Federal Reserve<sup>4</sup> but financial stimulus was able to prevent the damage spreading further. Kotz et al. (2024) project damages more than 5X this size. Financial stimulus may restore confidence when a crisis is financial at its core. But when the markets are reacting to a new physical reality, such an injection won't have the same impact. A climate recession represents the collision of \$600+ trillion in global assets with the physical reality of a destabilizing planet and no cash injection will meaningfully slow that crash.

<sup>4</sup> The Pew Charitable Trusts (2010). [The Impact of the September 2008 Economic Collapse | The Pew Charitable Trusts](#).

Property markets offer a preview of how this recession will unfold. There is a growing gap between property values implied by home insurers' behaviour and current property market values. Insurance companies are rapidly raising prices in high climate-risk areas like wildfire prone parts of California and flood-vulnerable areas of the US Southeast. In fact, in the highest risk areas they are declining to offer coverage at all.<sup>5</sup> This is a strong signal that the actual level of risk is increasing. Yet that signal is not yet apparent in property values, hence an impending real estate correction.



What is the value of an uninsurable house? If a homebuyer cannot find affordable home insurance they will be unable to get a mortgage, when most buyers can't get a mortgage they are unable to enter the market, which – in high risk areas – will happen simultaneously for many buyers, which will lead to a severe market correction. Property values rely on confidence in real estate as at least a store of wealth. That will disappear when values start dropping and people recognize climate change for what it is: a real physical risk that is not going away.

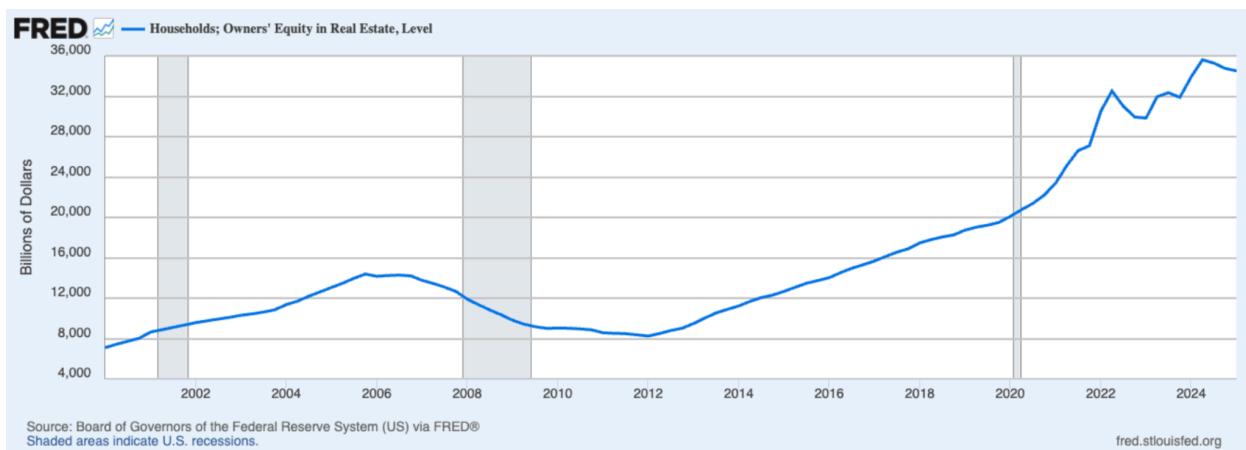
When property values collapse, they trigger broader economic recessions. There is plenty of historical and international evidence for this: the 2008 US subprime mortgage crisis caused a broad global financial crisis, the real estate market in Japan collapsed in the early 90s and subsequently experienced deflation and sluggish growth termed the "Lost Decade"<sup>6</sup>, and China

<sup>5</sup> Deep Sky Research (2024). [Insurers Retreat as 2025 Wildfire Risk Reaches Dangerous Levels](#).

<sup>6</sup> Fukao, M. (2003). Japan's lost decade and its financial system. *World Economy*, 26(3), 365-384.

is currently experiencing a property sector crisis which has hindered national economic growth since 2021.<sup>7</sup>

Real estate makes up a huge portion of total economic wealth in the US and Canada. Owners' equity in real estate reached \$35 trillion in 2024, which is more than total US GDP. It has more than doubled over the past decade.<sup>8</sup> Concentration of wealth in real estate is even higher in Canada, with many identifying it as a housing bubble. Home real estate, commercial real estate, rental incomes, construction jobs, materials suppliers are all vulnerable to a climate change-fuelled real estate market correction.



The risk that is causing insurers to raise rates and abandon entire regions will eventually be reflected in property values and throughout financial markets. Physical risk and transition risk – often viewed as distinct – will combine and build on one another. The more severe the physical toll of climate change the more abrupt and costly the transition away from fossil fuels will be. Perspectives will change quickly and liabilities will swamp the cashflow of large traditional energy assets leaving them stranded.

Entire sections of the real estate market risk becoming “stranded assets”. As previous real estate market crashes have demonstrated—and especially given the current size of the sector in North America—a crisis of confidence in property values threatens the entire financial system.

## How to respond

Spotting a climate recession before it hits can be extremely financially rewarding—but also morally imperative. The coming recessions won't be temporary disruptions but the new economic reality as climate impacts compound year after year. Taking advantage means

<sup>7</sup> The Wall Street Journal (2025). [China's Economy Is Burdened by Years of Excess. Here's How Bad It Really Is. - WSJ](#).

<sup>8</sup> Federal Reserve Bank of St. Louis (2025). [Households; Owners' Equity in Real Estate, Level \(OEHRENWBSHNO\) | FRED | St. Louis Fed](#).

implementing proactive investment strategies: identifying hedges against climate-exposed assets and positioning in technologies that will surge in value when the market finally prices climate reality.

The same institutional filters that create today's valuation gap also systematically undervalue climate solutions. Carbon removal technologies – particularly direct air capture (DAC) – represent an asymmetric opportunity. DAC, currently priced as a speculative venture, is destined to become essential infrastructure once markets confront climate reality.

## The Carbon Removal Thesis

Today's carbon markets treat carbon removal as an optional corporate virtue signal. Voluntary carbon credit buyers are motivated more by PR than climate reality. Today's carbon markets reflect the same delusion visible in the chart above, that climate change is a manageable externality rather than an existential threat.

But physical reality has its own logic. The IPCC is unequivocal: limiting warming to 1.5°C requires removing *billions* tons of CO<sub>2</sub> annually by 2050. Every credible climate pathway depends on massive carbon removal deployment. Yet current DAC capacity is measured in thousands of tons, not billions.

This gap between physical necessity and current market pricing creates the hedge opportunity. During climate recessions, carbon removal will be one of the few growth sectors as governments and corporations desperately seek ways to mitigate the physical drivers of economic collapse. When climate reality forces market repricing, the value proposition flips overnight:

- Carbon removal shifts from voluntary offset to mandatory infrastructure
- Companies stop buying credits for reputation and start buying them for business continuity
- Scarcity pricing kicks in when demand spikes against limited supply

## Why Direct Air Capture Wins the Correction

Not all carbon removal is created equal. When markets panic, they'll demand solutions with specific characteristics that DAC uniquely provides:

- Permanence: Forest offsets can burn (as California demonstrates annually). DAC with geological storage is permanent.
- Scalability: Agricultural and nature-based solutions hit land-use limits. DAC scales with energy and capital, exactly what desperate markets can provide.

- Verifiability: In a correction, trust evaporates. DAC provides measurable, auditible carbon removal.
- Speed: Unlike 30-year forest projects, DAC delivers immediate, additional removal—essential when markets need solutions yesterday.

## The Institutional Awakening

The same consulting firms currently downplaying climate risk will pivot to selling carbon removal strategies. The lag between academic consensus and commercial implementation that currently suppresses climate risk awareness will disappear creating a massive demand for proven solutions.

These trends signal the coming repricing:

- Central banks including removal in climate stress tests
- Governments implementing removal obligations alongside emissions caps
- Energy majors pivoting from "transition fuel" narratives to removal investments

## Essential Future Infrastructure at Venture Prices

Unlike hedges against traditional recessions that eventually become worthless as economies recover, this hedge appreciates in value as atmospheric CO<sub>2</sub> increases and climate impacts intensify. Current DAC investments trade at venture valuations despite representing essential infrastructure for the future. The strategy:

- Identify technology leaders: Companies with proven DAC technology, not just PowerPoints
- Assess scalability: Patents, energy efficiency improvements, and modular designs that enable rapid deployment
- Value the option: Today's valuations price in technology risk but ignore climate urgency upside
- Size for asymmetry: Small positions can provide significant portfolio protection given the potential repricing magnitude

Carbon removal isn't just a hedge against climate correction. It's a bet on regulatory inevitability. Just as sewage treatment became mandatory urban infrastructure, atmospheric waste management will become obligatory.

First movers in DAC are establishing the frameworks, standards, and relationships that will define a mandatory trillion-dollar market. When governments require carbon removal, existing capacity holders will see valuations that make today's prices look like rounding errors.

The climate fantasy underlying current valuations will end not with a single correction, but with a series of increasingly severe recessions that reshape the global economy. In this new reality, there will be big winners and big losers and the winners will be those who recognized that climate risk isn't temporary but persistent and accelerating.