

UNDP BIOFIN – TNFD Training

PG&E and California – a nature-related risk case study

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Climate Risk Services

UNDP

BIOFIN
The Biodiversity Finance Initiative

Meet the team

- Climate Risk Services' CEO **Gerhard** has a wealth of experience in the climate and nature field, previously working for consultancies, banks, governments, and the IUCN. He also holds an MBA from the University of Oxford.

- As a senior analyst at Climate Risk Services, **Ben** specialises in nature-related risk for financial institutions and corporates. Ben holds a Masters degree from Imperial College London in Environmental Technology (environmental economics and policy).



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In this video…

1. A walkthrough of a nature-related risk case study: PG&E and California

Key Objectives

- Understand the situation that led to PG&E's bankruptcy and such high wildfire risks for California.
- Understand how nature-related risks and climate risks combine to drive financial impacts.
- Understand how nature-related risks and climate risks represent a systemic risk for California.

Example: PG&E and Californian financial institutions

Wildfires in California - the PG&E case study

How nature-related risks led to the bankruptcy of one of America's largest utility firms



BloombergNEF

PG&E Corp | Electric transmission and distribution

Acute | Chronic | Legal and policy | Market | Technology | Reputational

Physical risk | Transition risk

PG&E Liabilities for California Wildfires Led to Bankruptcy

Power companies interact with the natural world in ways that bring existential threats. This is exemplified by the bankruptcy of PG&E Corp, the parent of regulated power and gas utility Pacific Gas and Electricity Company. The Northern California utility was forced to file for Chapter 11 bankruptcy after a federal court found PG&E liable for a series of forest fires from 2015 to 2018 that were started by sparking lines and poorly maintained infrastructure. It later paid out billions of dollars in settlements and was required to invest heavily in upgraded transmission and distribution equipment, as well as monitoring systems.

100% Share of gross value added by power utilities that is moderately or highly dependent on nature

91% Decline in PG&E's share price in the 15 months following the 2017 Napa Valley fire

$5.36 billion Amount paid by PG&E in settlements to compensate for the impacts of the wildfires

Climate change and nature loss

The natural systems, land use and climate change are interlinked. Increasing temperatures and deforestation hasten the decline in nature, which impairs the ability of natural systems to regulate the global climate.

Climate change | Biodiversity loss | Deforestation and land degradation

Source: BloombergNEF

Manifestation of nature risk

PG&E's (NYSE: PCG) service territory extends through urban, rural and wild settings. It covers approximately 70,000 square miles – almost twice the size of South Korea or Portugal – including some of the most forested areas of the state, in Northern California and the Sierra Nevada mountains.

Severe and prolonged drought – exacerbated by climate change – has made these natural settings more vulnerable to wildfire.

PG&E's service territory is smothered with high fire-threat areas

Fire threat: Elevated, Extreme

PG&E service area

Source: PG&E, California Public Utilities Commission, BloombergNEF.

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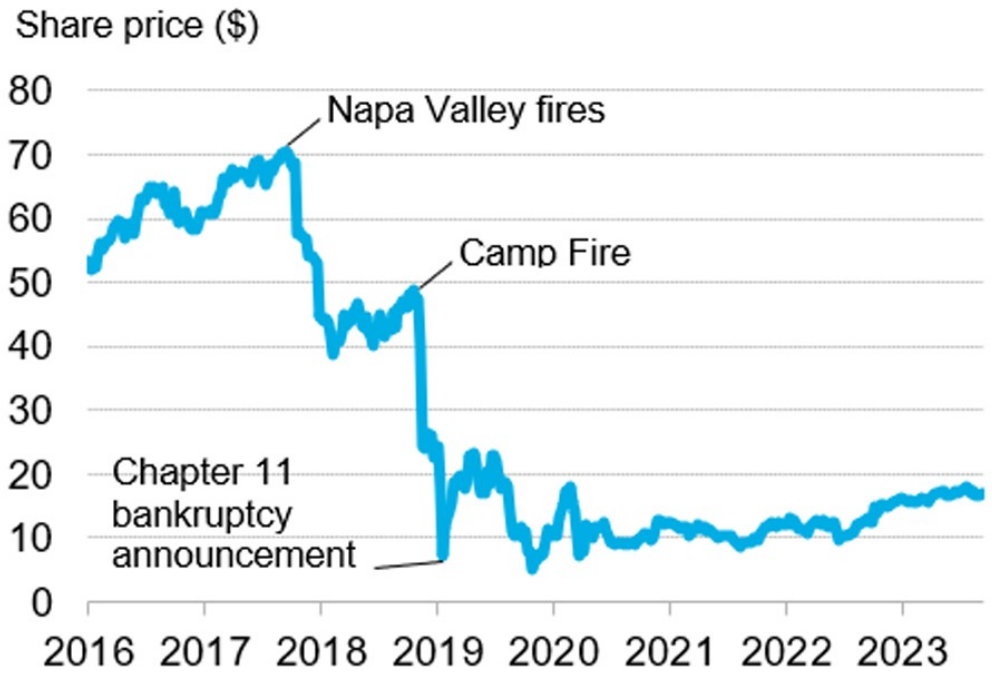
- Multiple factors make California highly susceptible to wildfires.
- Since the early 2000s there have been multiple notable wildfires in the state, including the Napa Valley (2017), Camp Fires (2018), and Los Angeles wildfires (2025).
- A federal judge ruled that Pacific Gas and Electricity Company was liable for damages relating to the fires due to failures to properly trim trees, resulting in fires when branches hit lines.
- The total liabilities for fire damages between 2015 and 2018 totalled $30 billion, far in excess of the firm's insurance limits.

What were the impacts for the company and investors?

How nature-related risks led to the bankruptcy of one of America's largest utility firms

- **For PG&E**:
  - Forced to file for bankruptcy in 2019
  - CEO and other senior staff resignations
  - Massive reputational damage as the company pleaded guilty to 84 counts of manslaughter
  - Implementation of a $59 billion reorganization plan
- **For insurers**: multiple payouts and legal fees associated with recouperation.
- **For investors**: PG&E share prices fell 91% over two years.

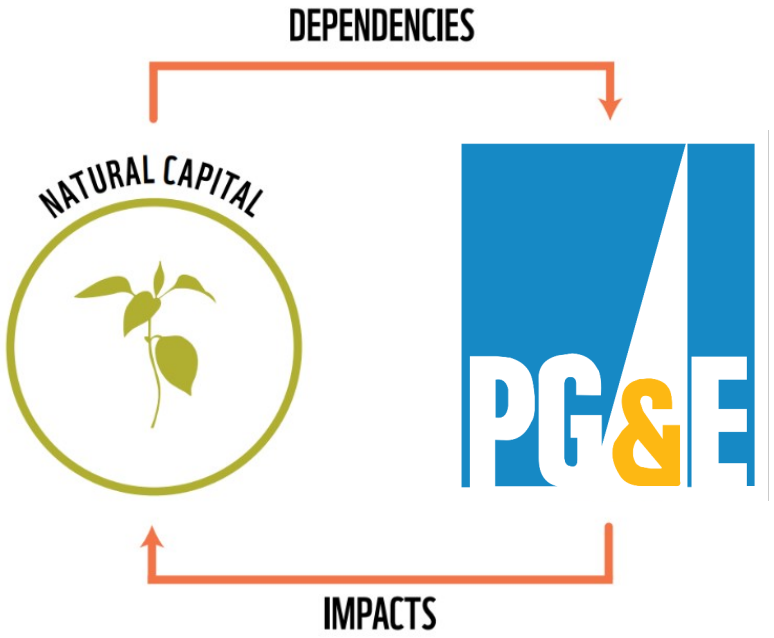
PG&E Corp share price fell 91% from September 2017 to January 2019



Source: BloombergNEF, Bloomberg Terminal.

Double-materiality - what was the role of nature-related risks?

How nature-related risks led to the bankruptcy of one of America's largest utility firms



Relevant **dependencies** of PG&E on nature

- Local climate regulation
- Water supply / rainfall
- Forest ecosystem health and integrity



Impacts of PG&E on nature through wildfires

- Habitat destruction
- Carbon emissions
- Soil degradation and increased erosion



Nature & Climate

How did the climate and nature nexus contribute to the wildfires?

- One factor in the wildfires was the large supply of “fuel”
  - Through the 2010’s multiple warm drought periods contributed to record numbers of tree mortalities providing large stocks of dead trees by the later 2010’s (129 million dead trees by 2017).
- These droughts are driven by nature risk and climate risk
  - Climate change increases the likelihood of wildfire risk, driving longer and hotter Summers in California.
  - Deforestation in California reduces the ability of local ecosystems to contribute towards local climate regulation and rainfall.
- Another contributing factor was habitat destruction and construction in the wildland-urban interface (WUI)
  - Since the 1990’s, nearly half of all new buildings have been constructed in the formerly unoccupied transition zone between urban and wild areas.
  - In previous fires when these areas burn damage is limited – now residences are threatened.
- Successful historic fire suppression to protect forests and those living in the WUI also contributed to the fuel supply
  - Limiting natural fires disrupts the ecosystem cycle of disturbance and





Nature & Climate

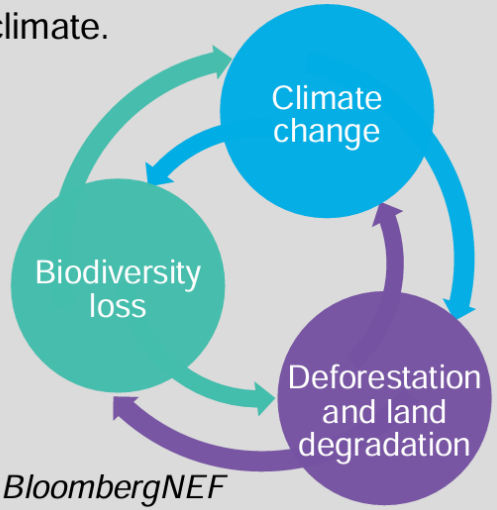
How will the relationship between climate and nature contribute to future wildfires?

If current trends continue, then climate and nature may increase wildfire risk even further:

- **Invasive species:** continued growth and spread of invasive grasses such as cheatgrass provide more continuous, flammable, material for fires than native species.
- **Habitat loss / land conversion:** continued development of the WUI areas for residential property increase the number of residences vulnerable to wildfires.
- **Deforestation:** if deforestation trends continue, the ability of the California ecosystem to regulate its local climate will continue to decline.
- **Soil degradation:** degraded soils perform poorer in water retention, support less diverse plant cover, and promote drier vegetation. Drought, erosion, and overgrazing may continue to drive soil degradation
- **Global warming & climate change:** As climate change continues, the climatic conditions favourable for wildfires will increase in duration – leading to a longer wildfire season.

Climate change and nature loss

The natural systems, land use and climate change are interlinked. Increasing temperatures and deforestation hasten the decline in nature, which impairs the ability of natural systems to regulate the global climate.



Source: BloombergNEF

LA wildfires 2025

Similar nature and climatic factors drove the wildfires in Los Angeles (January 2025)

Climate

- 2 Winters preceding 2024 with higher precipitation led to growth of wildfire fuel supply.
- Spring and Summer of 2024 was the hottest on record producing conditions susceptible for wildfires into the autumn and winter.
- Extension of fire risk conditions into January coincides with peak Santa Ana winds – dramatically spreading even small fires.

Nature

- Chaparral and coastal sage scrub ecosystems were out of balance, with invasive species and preceding unusual climatic conditions leading to easily ignited continuous fuel beds.
- Construction in urban-wildland interface areas put residences at high risk of wildfires



Hughes Fire, Los Angeles January 2025 *source: Frederic J.Brown*

What do these cases tell us about nature-related risks for financial institutions?

Immediate risks

- For insurers, nature-related risks can drive rapid high quantity and sizeable payouts.
- For investors (banks and pension funds), nature-related risks can reduce share values, cause expensive damages for clients, drive credit risk profile of counterparties, and cause reputational damage for clients (and potentially their financers)

Systemic risks

- Droughts and wildfires in California, driven by nature and climate risks pose a systemic risk to the entire financial system of the state.
- Large areas are now seen as *uninsurable* due to the vast scale of insurance payouts previously and the high-risk profile of the area.
- Without insurance, homeowners and businesses face dire consequences in the case of wildfires, property values may fall, and asset devaluation may occur for utilities, real estate, and other sectors. Mortgage eligibility is also at risk for many homeowners in affected areas.

This systemic risk has the potential to become a repeating cycle of reduced financial stability:

With rising loan defaults, devaluation of bonds, surges in infrastructure repair costs, massive insurance costs or coverage denial, and devaluation of properties at a regional scale all eroding the stability of the California financial system.

→ The US senate budget committee has identified the climate-driven insurance crisis as a potential source of a major financial crash



What do these cases tell us about the risks in South Africa?

With a similar climate and exposure to drought and wildfires – what are the implications for South African Financial Institutions

- The wildfire and drought situation in South Africa has some notable similarities with that of California:

Factor	California	South Africa
Hotter, drier summers	Increasing drought/fire frequency	2015–2018 Cape Town drought
Shrubland ecosystems	Chaparral, coastal sage scrub	Fynbos
Wildland–urban interface	Expanding urban sprawl into fire zones	Informal settlements near wild areas
Insurance stress	Increasing uninsurability post-2025	Short-term insurers exposed to fire/flood risk
Water scarcity	Sierra snowpack declining	Dam levels volatile, declining recharge

- South African FI's are already seeing some similar issues to those in California → multi-peril crop insurance has largely become unviable, with the area under such coverage falling by over 75% from 2009 – 2018
- The case of California shows that nature-related risks are **systemic** and **financial** → early TNFD adoption and uptake may help South African financial institutions avoid the issue of pricing lags experienced by Californian financial institutions.

Climate Risk Services

Thank you!

Building a climate-smart, net zero and nature-positive future together.

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