The Effect of Climate Change on Your Client's Portfolios

SATURNA CAPITAL

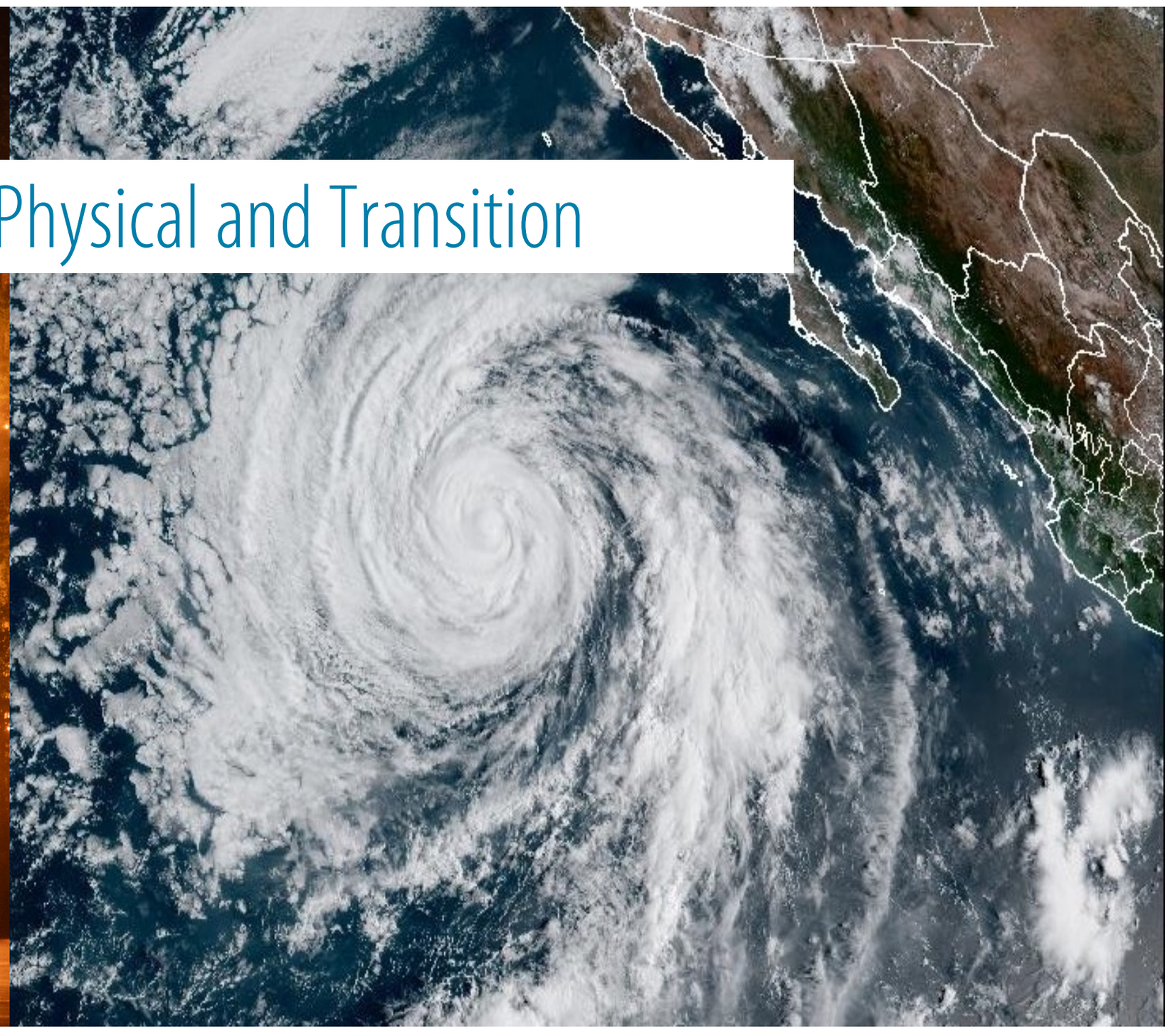
Components of Climate risk

Potential impact to investments

The Climate is Changing, and the Impacts are Widespread

- According to a study released on July 7, 2021, the deadly heat wave that roasted the Pacific Northwest and western Canada “was virtually impossible without human-caused climate change”.
- Hurricane Ida was the strongest storm to hit Louisiana in 150 years and continued to wreak havoc all the way to New York/New Jersey.
- Average wildlife populations have dropped by 60 per cent in just over 40 years
- According to the World Health Organization, Climate Change is the biggest health threat facing humanity, expected to cause 250,000 additional deaths per year from 2030 to 2050 from malnutrition, malaria, and heat stress
- Each of the last four decades has been successively warmer than any decade that preceded it since 1850. Global surface temperature over 2001-2020 was 0.99 [0.84-1.10] °C higher than 1850-1900 .
- Global surface temperature was 1.09 [0.95 to 1.20] °C higher in 2011-2020 than 1850–1900.
- Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO2 and other greenhouse gas emissions occur in the coming decades.

Two Types of Risks – Physical and Transition



Transition Risks

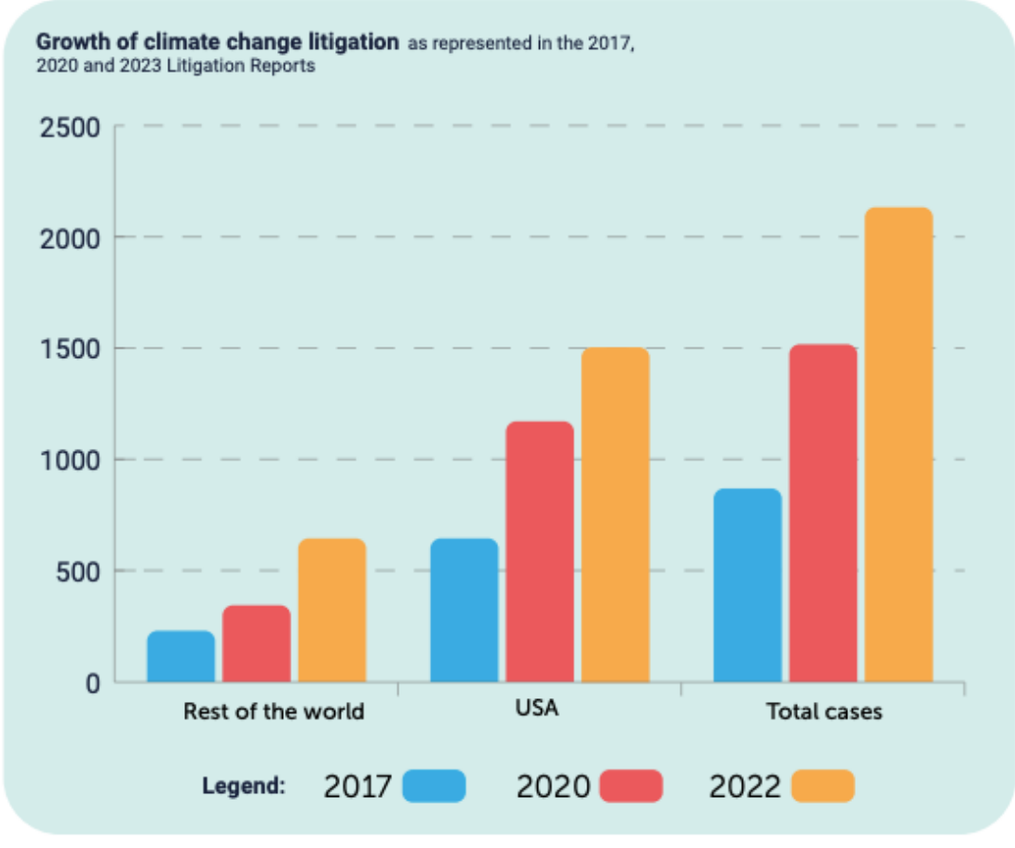
Transition Risks - The risks to businesses or assets that arise from policy, legal, technological and/or market changes as the world seeks to transition to a lower-carbon economy.

Example: As the world transitions to a low-carbon economy, as much as $10 trillion of fossil fuel assets could become "stranded" as regulations and clean energy sources make those investments economically unviable. Since insurers oversee about one-quarter of all invested assets in the world, this could be a potential time bomb for the industry, Moody's notes.

Example: Eventually a carbon tax or cap-and-trade system will, must be implemented, increasing costs for companies that haven't worked to minimize their carbon footprints.

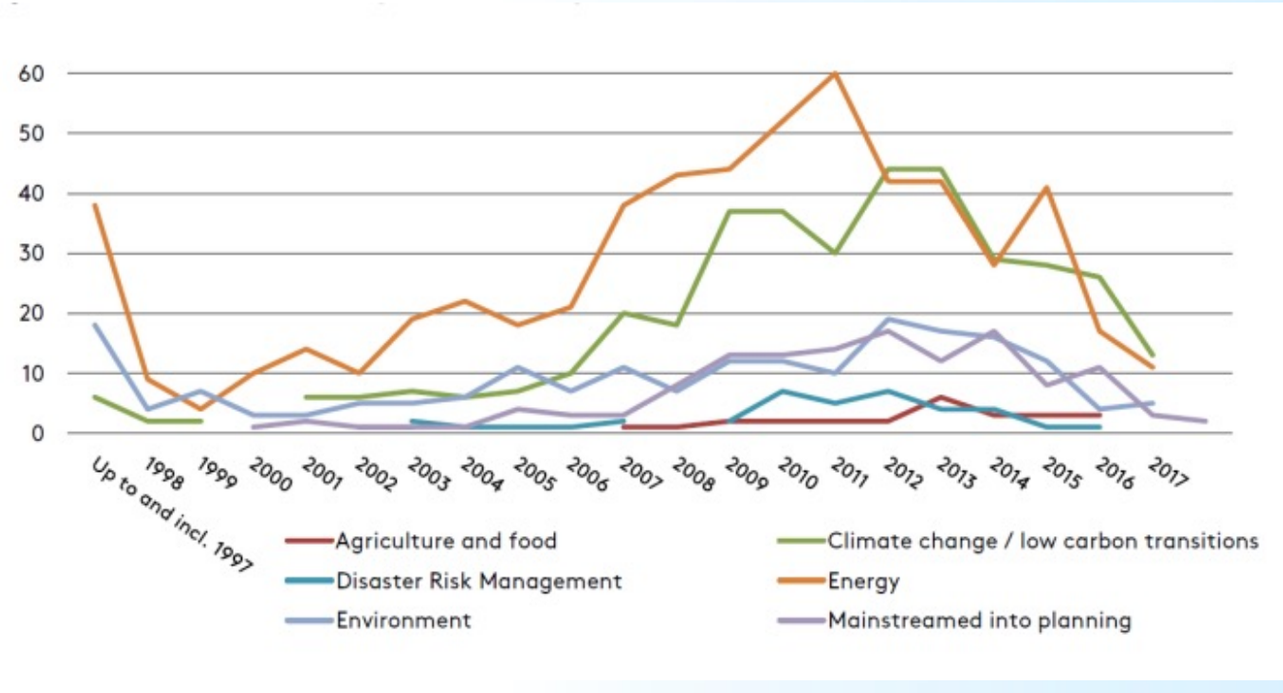
Example: Federal flood and fire insurance schemes are now requiring homeowners to re-locate rather than allowing them to rebuild in vulnerable locations. What does this transition mean for local tax bases and the municipal bonds?

Climate Legislation and Litigation are Growing



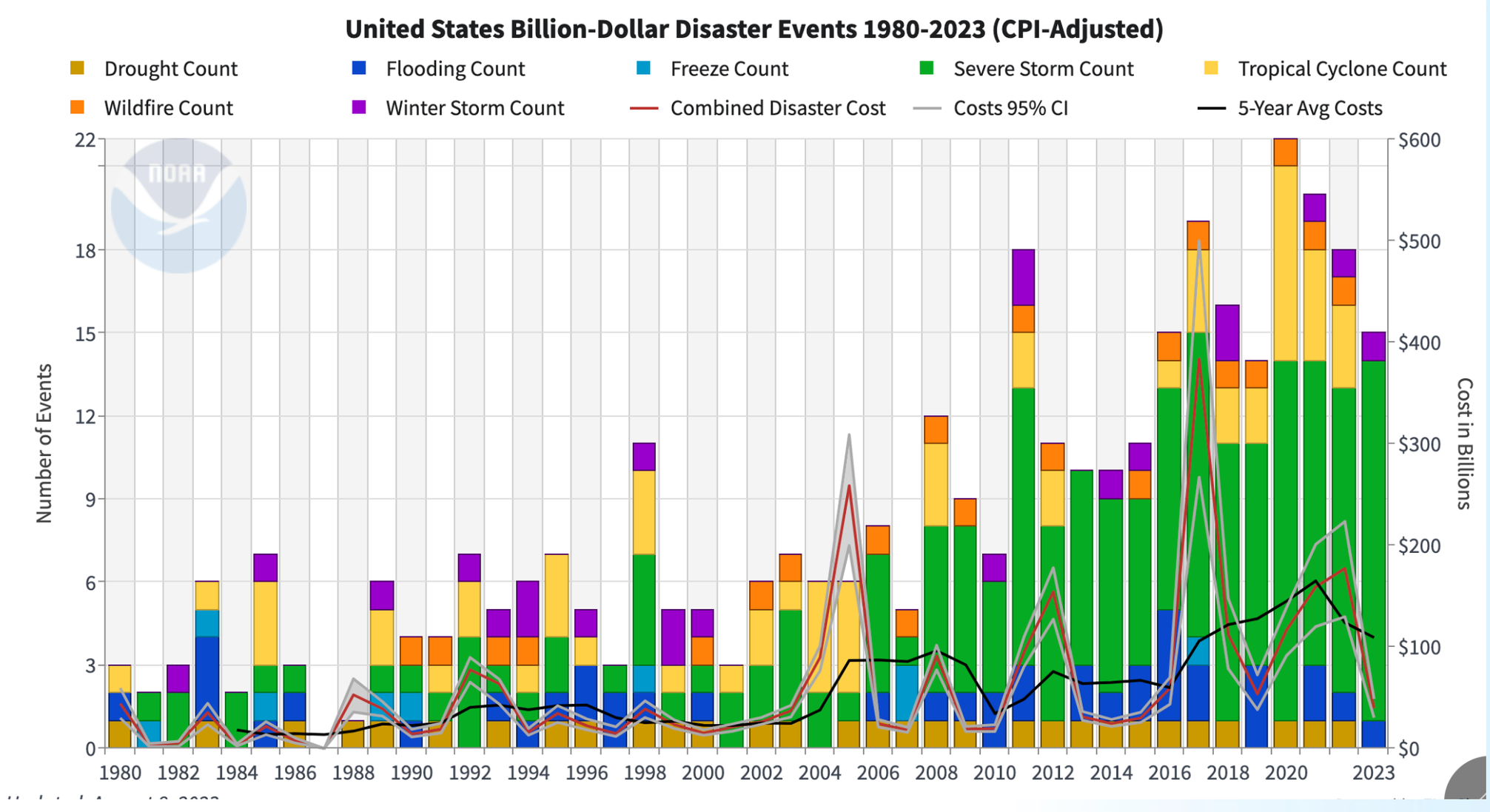
Source: Global Climate Litigation Report 2023 from Columbia Law

New Laws Passed Each Year, to end of 2017

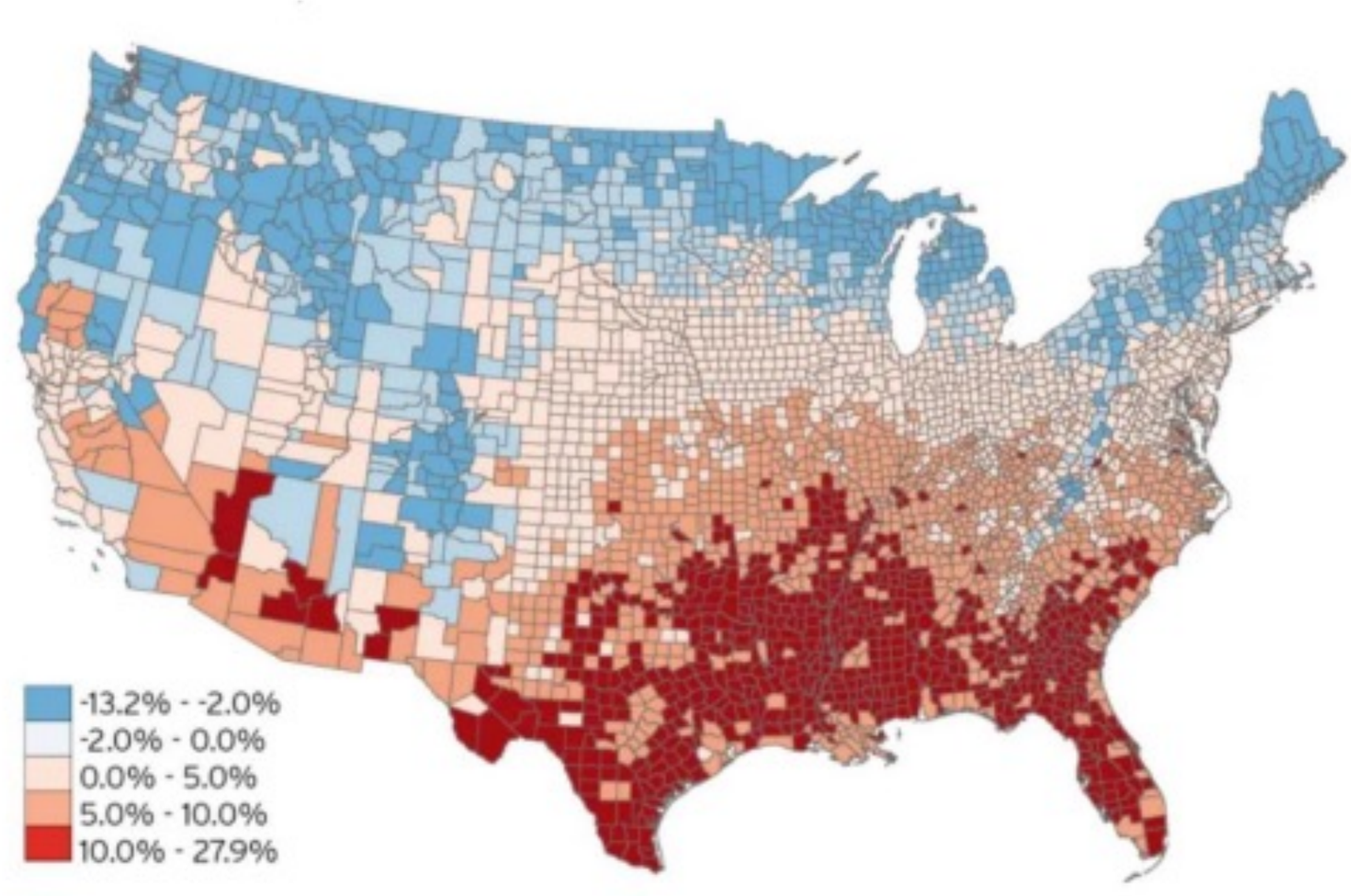


Source: Global trends in climate change legislation and litigation : 2018 Snapshot from the LSE

Costs of Natural Disasters are Also Growing

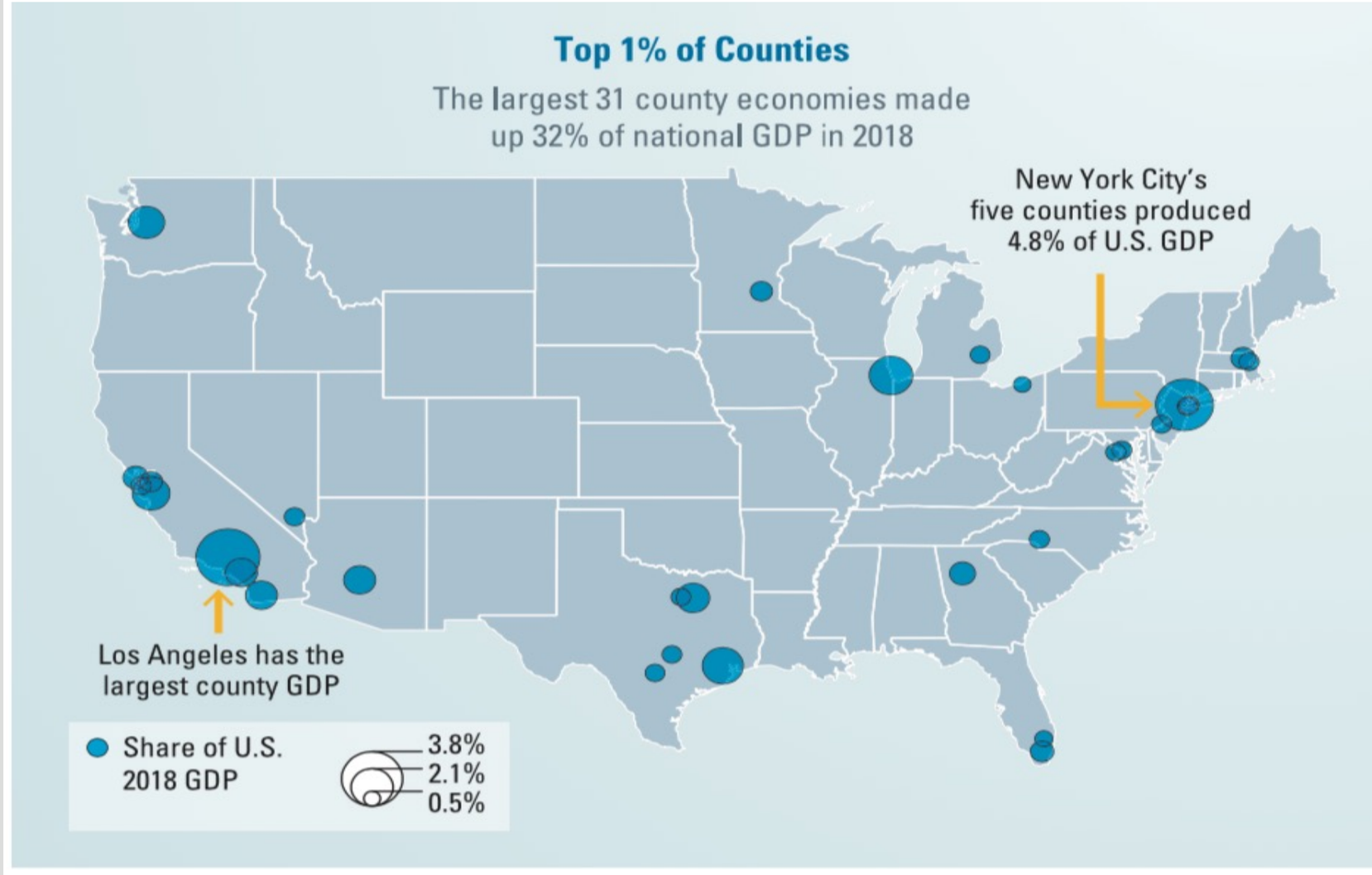


Projected 2080 Income Loss from Climate Change by U.S. County



Source: Hsiang, et al. 2017

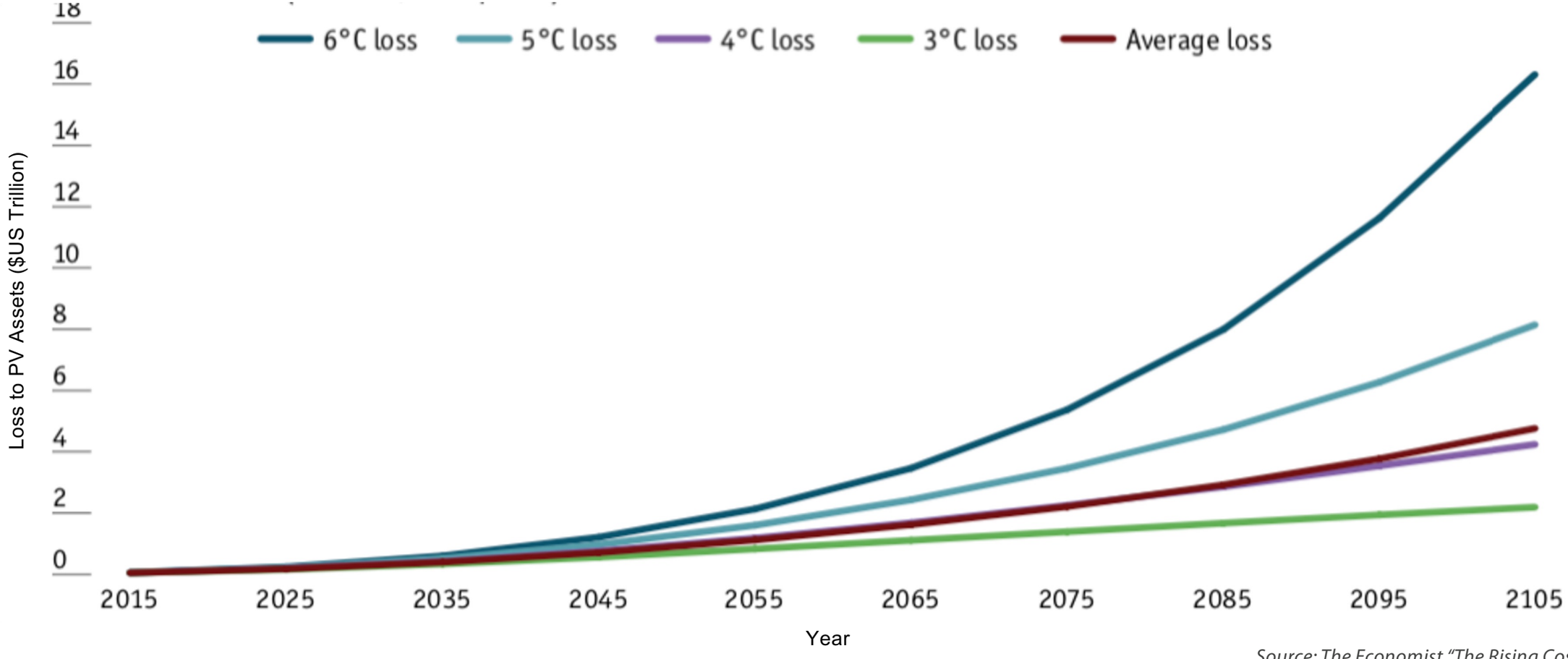
GDP is Concentrated in High-Risk Coastal Areas



2050 GDP Change relative to a no-climate change world

Temperature path	Well below 2°C increase			2.0°C increase			2.6°C increase			3.2°C increase		
	Paris target			*The likely range of global temperature gains*						*Severe case*		
UK	−0.1%	−1.1%	−2.4%	−0.5%	−3.2%	−6.6%	−0.3%	−3.1%	−6.5%	−0.6%	−4.2%	−8.7%
Ukraine	0.2%	0.0%	−0.2%	0.0%	−1.5%	−3.7%	0.3%	−1.3%	−3.6%	0.2%	−1.9%	−5.6%
US	−0.5%	−1.7%	−3.1%	−0.9%	−3.6%	−6.8%	−1.0%	−3.9%	−7.2%	−1.2%	−5.0%	−9.2%
Venezuela	−0.3%	−1.4%	−2.7%	−0.9%	−4.6%	−9.2%	−1.2%	−6.3%	−12.4%	−1.6%	−8.2%	−16.2%

Risk to Present Value of Manageable Assets

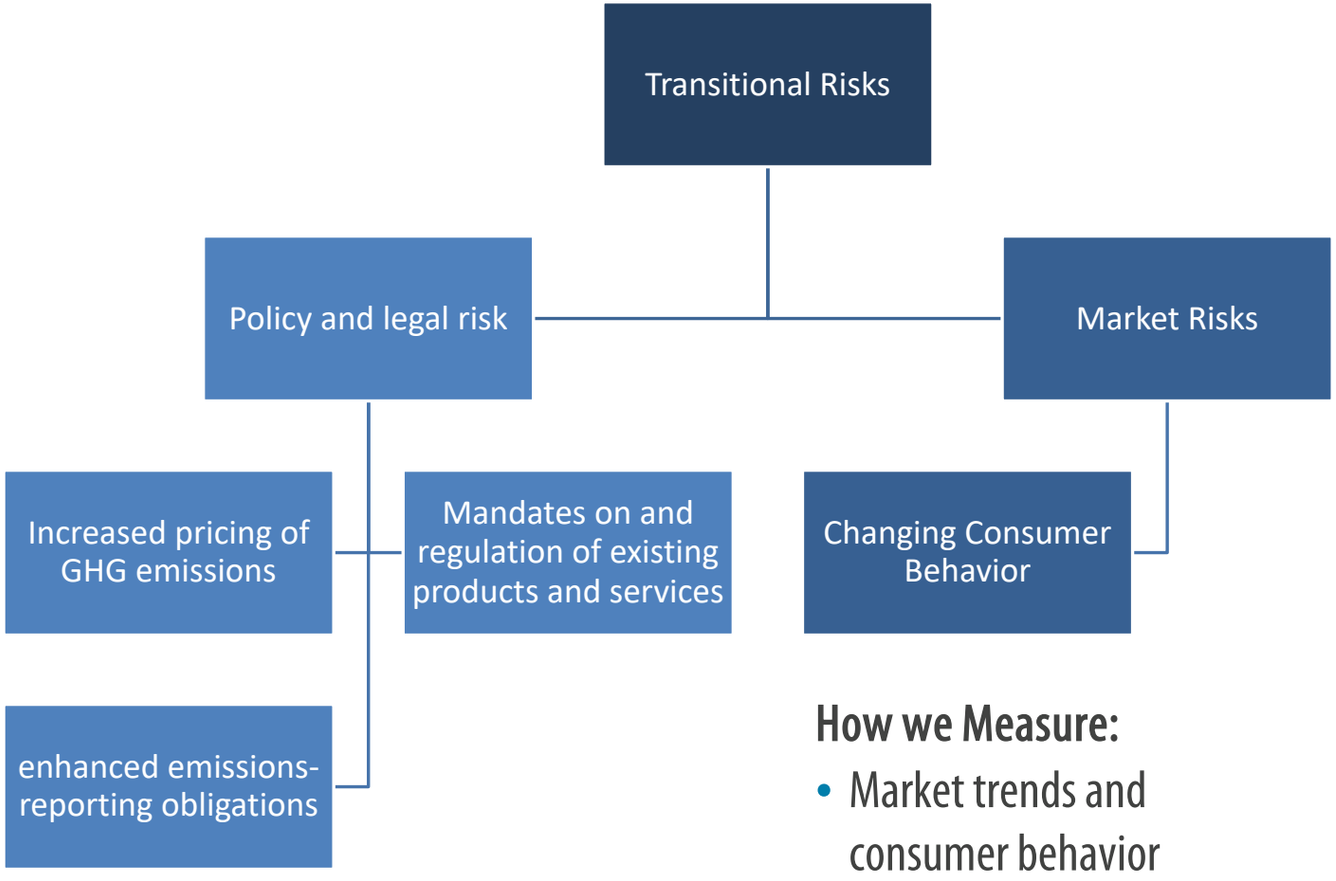


Source: The Economist "The Rising Cost of Inaction"

Building a climate-resilient portfolio

Measuring risk

Components of Carbon Risk

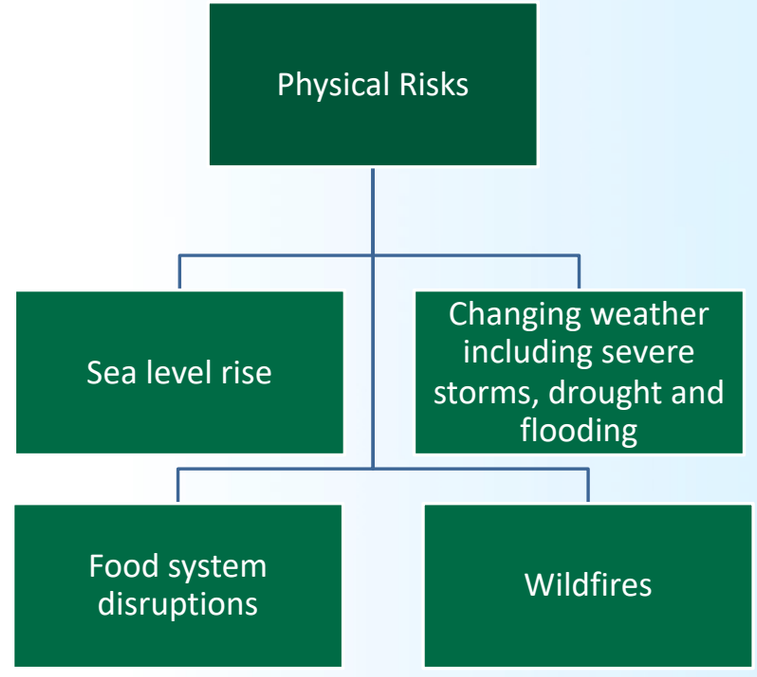


How we Measure:

- Carbon Intensity
- Regulatory Trends
- Assets that have the potential or risk of becoming "stranded assets"

How we Measure:

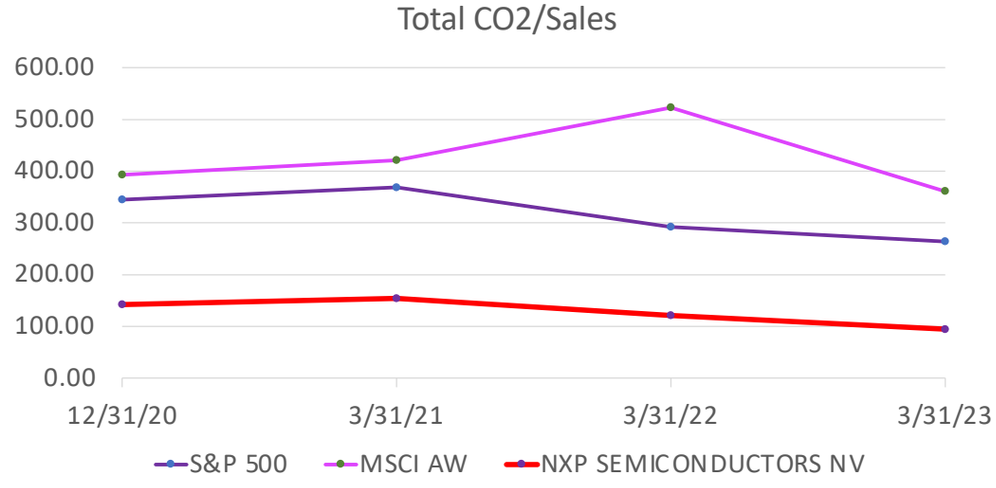
- Market trends and consumer behavior

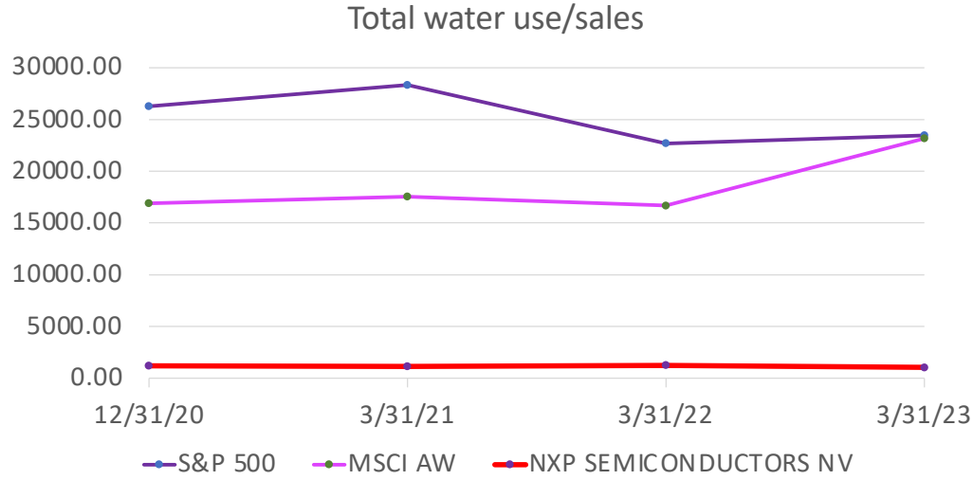


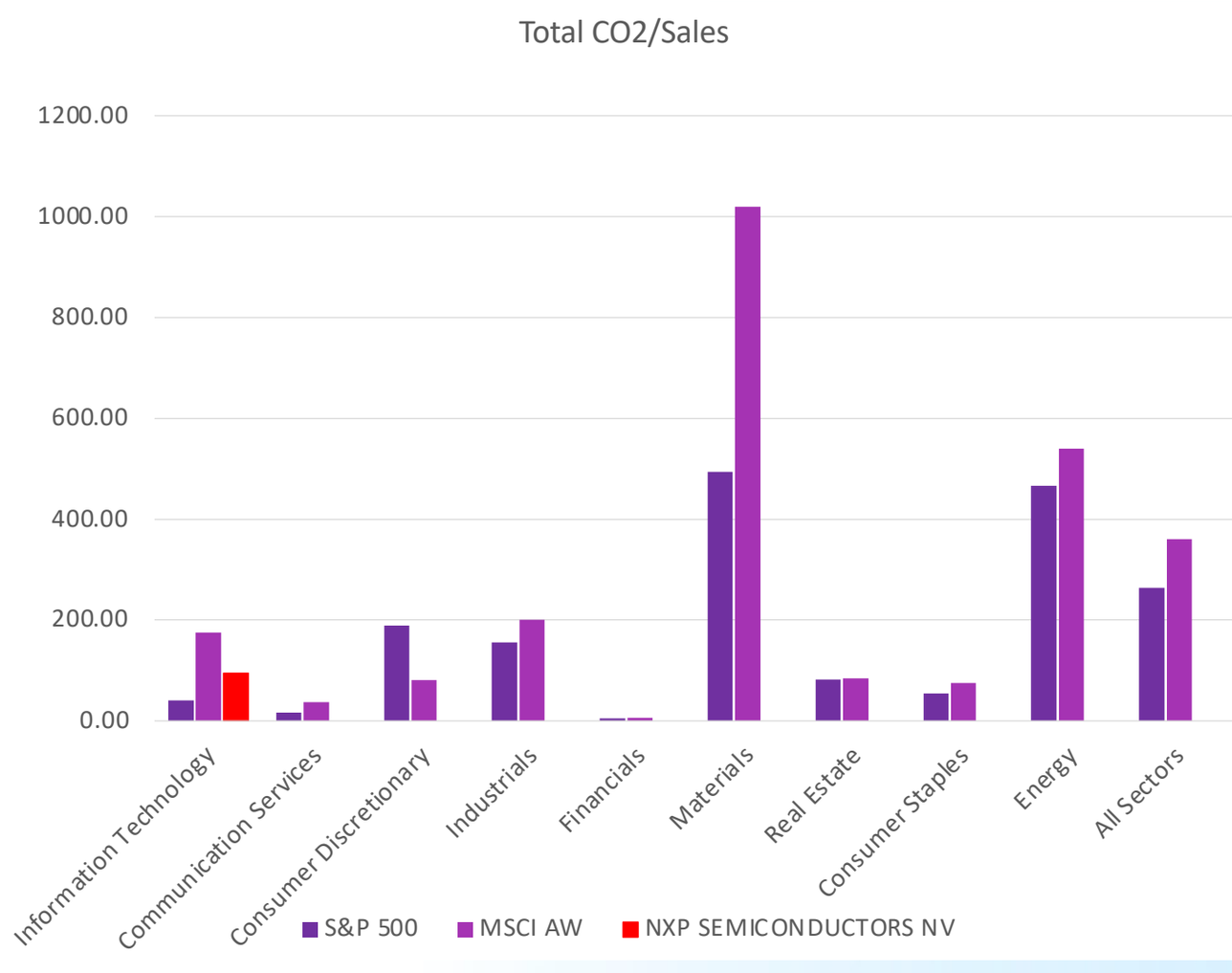
How we Measure:

- Location of physical assets
- Business sector (i.e. insurance)
- Contribution to or mitigation against climate change
- Supply chain and labor analysis
- Natural capital and land use intensity

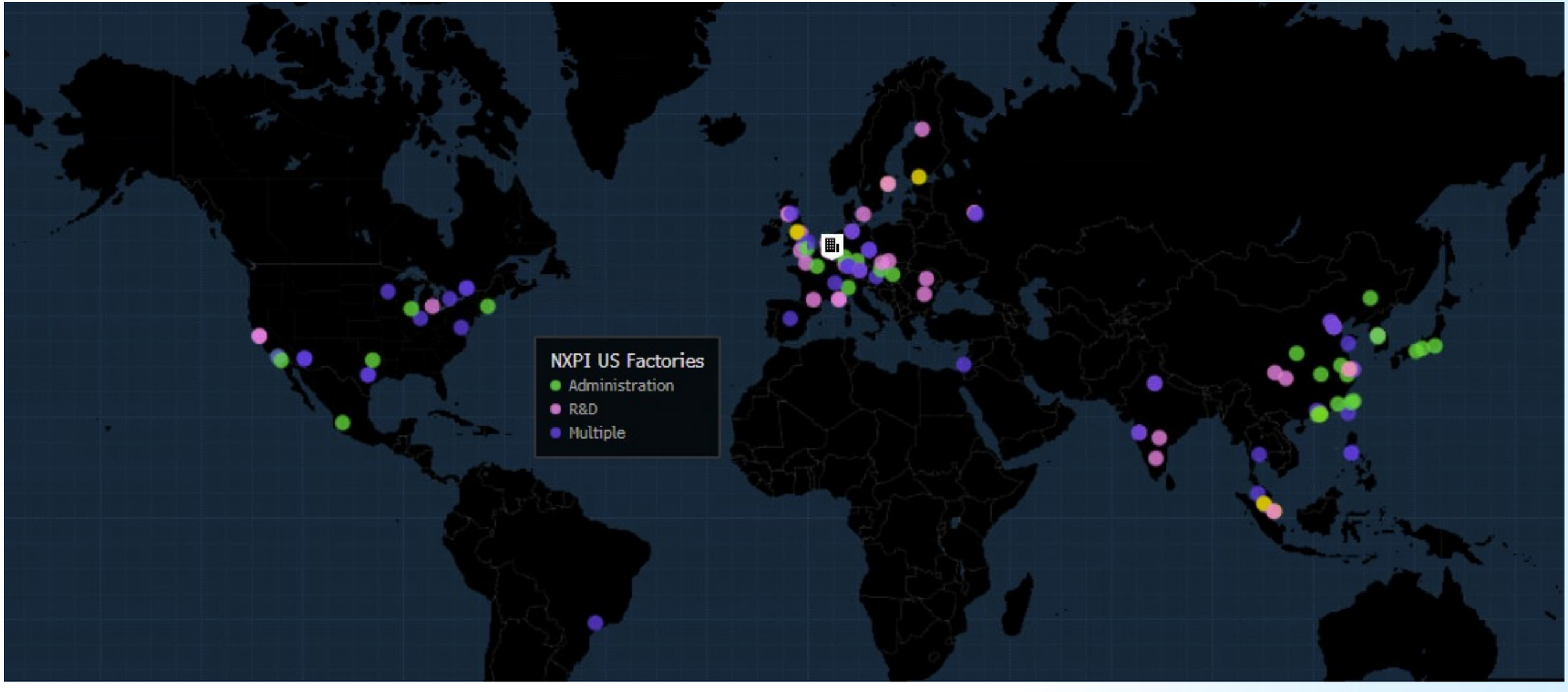
Tracking Emissions and Material Data







Tracking Physical Assets



Climate Alignment – Choosing the Best Companies

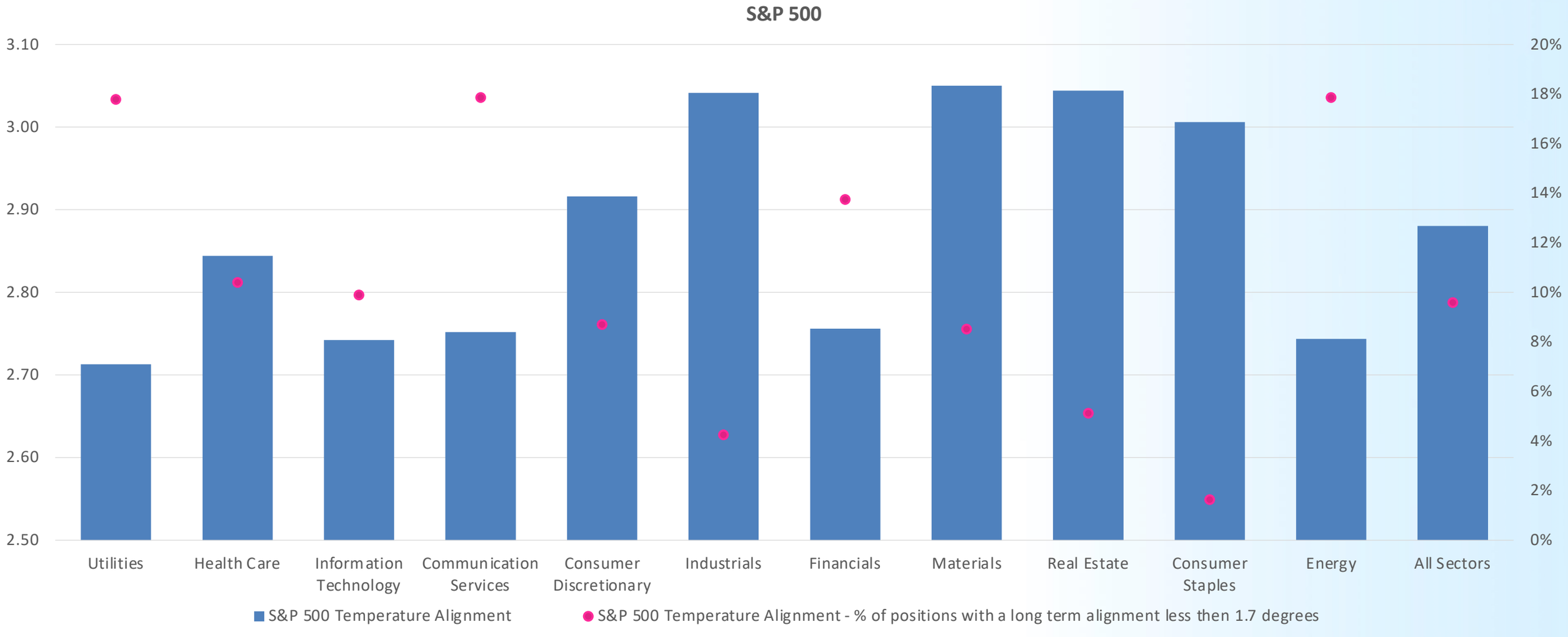
Science based targets and temperature scores

Temperature scoring enables the translation of corporate GHG emission reduction targets into temperature scores at target, company, and portfolio levels.

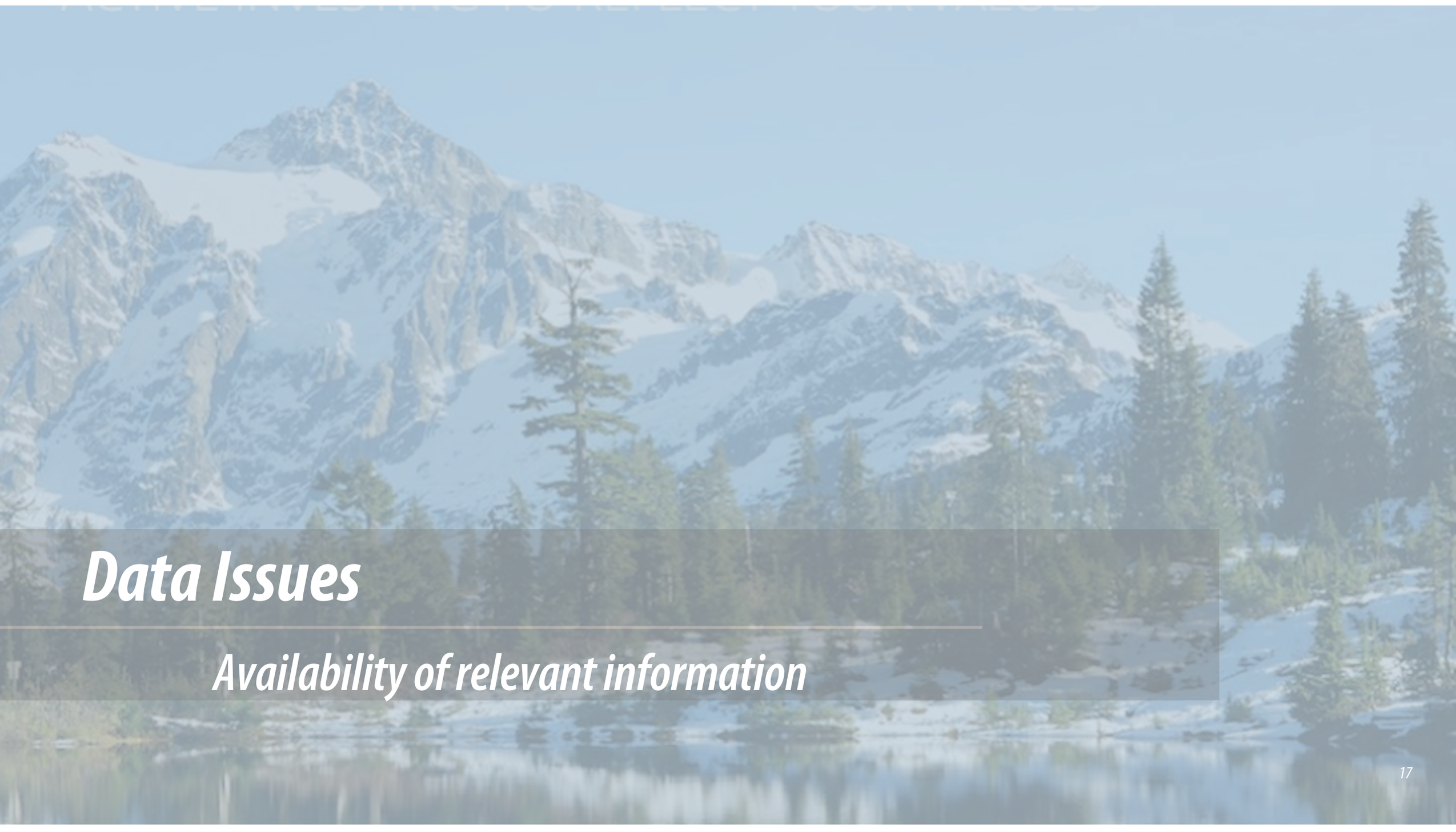
What is the true ambition of the company's Scope 1-3 emission reduction target(s)?

- The temperature pathways used in CDP temperature ratings are derived from the UN Intergovernmental Panel on Climate Change (IPCC) 1.5°C report and the Integrated Assessment Modelling Consortium (IAMC) database of climate scenarios.
- CDP temperature ratings systematically assess companies' entire emissions, producing separate °C temperatures for operational (scope 1 and 2) and complete value chain (scope 1, 2, and 3) emissions, including across short-, medium-, and long-term timeframes.
- These scores help determine the alignment of corporations with climate goals.

Average Temperature Alignment – S&P 500



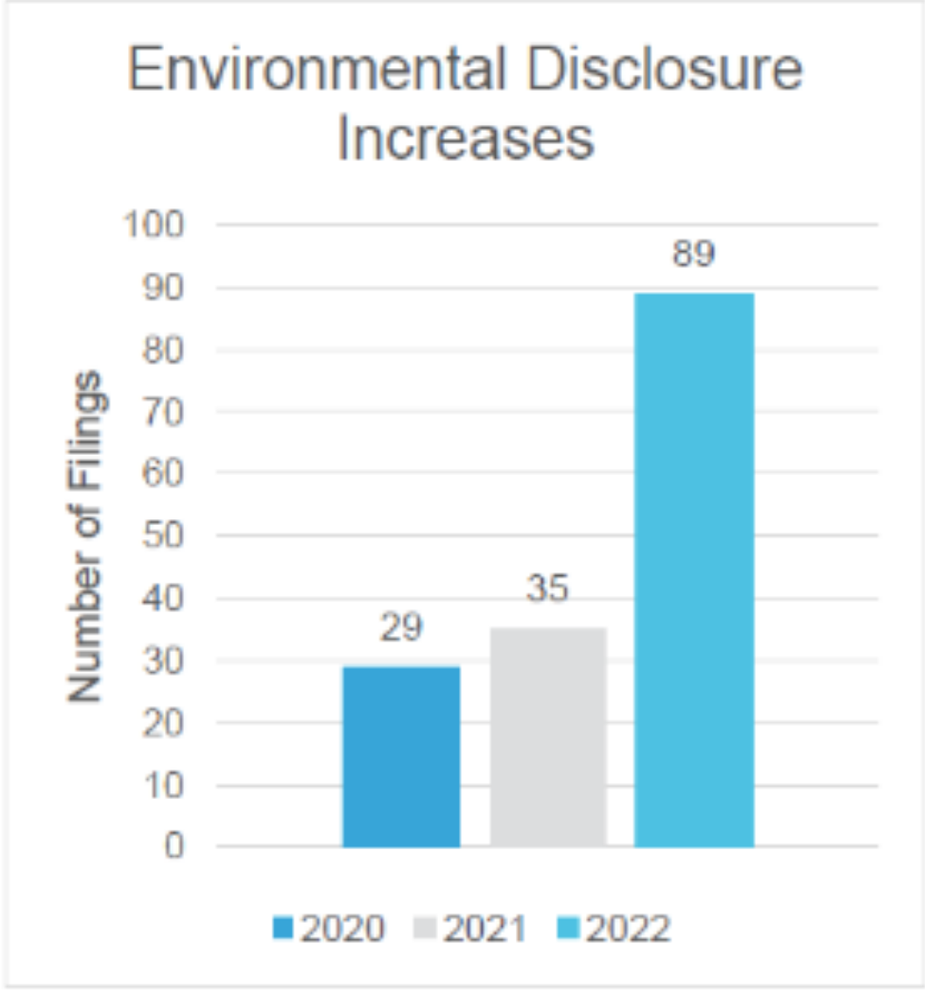
Source: Bloomberg

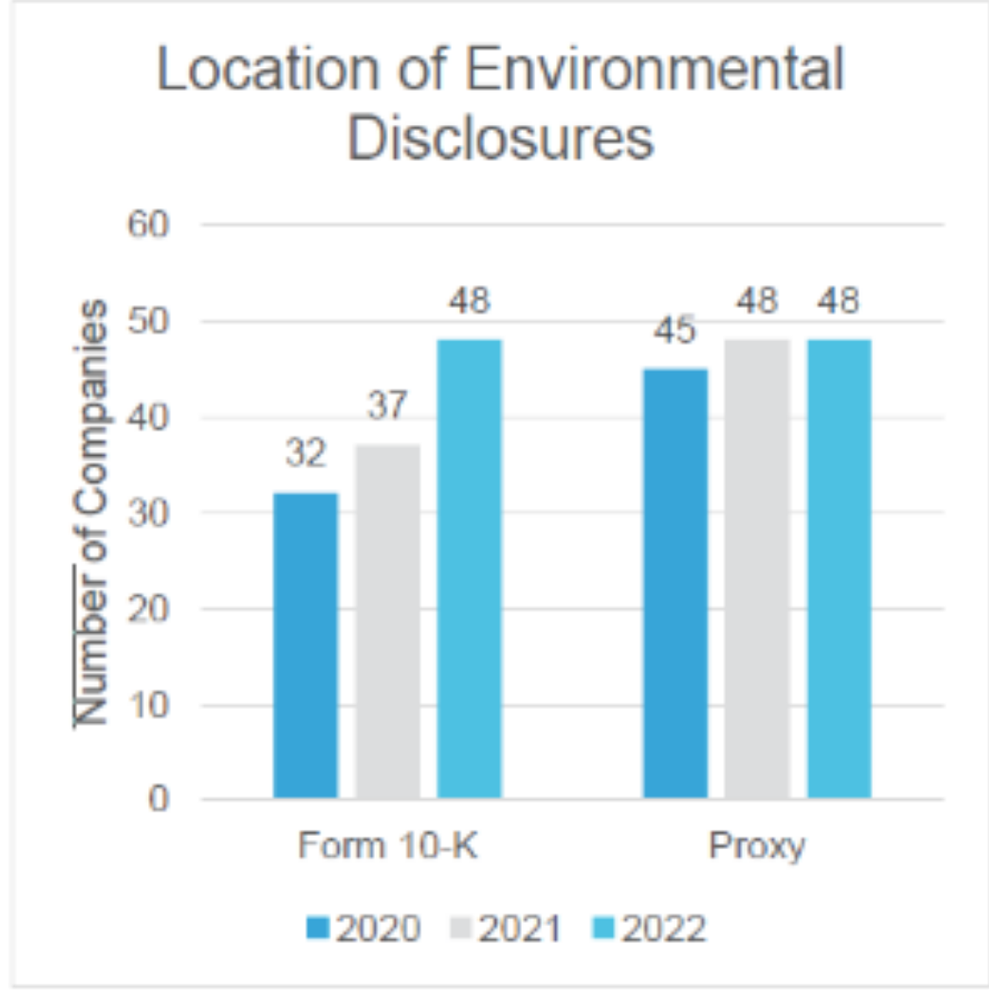


Data Issues

Availability of relevant information

Climate Disclosure Trends

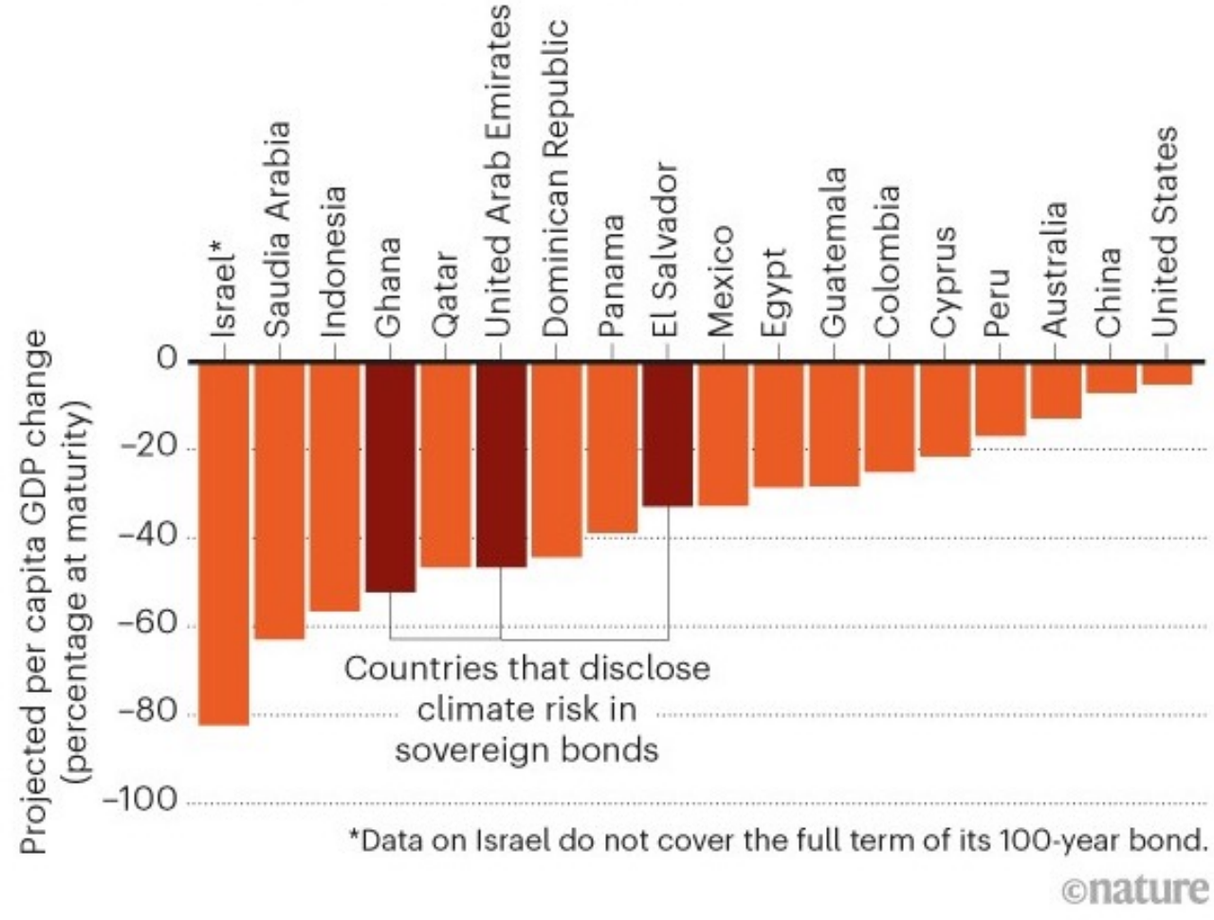




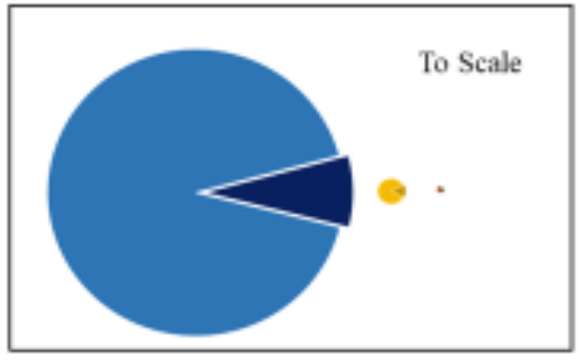
Climate Change could Impact Credit Quality

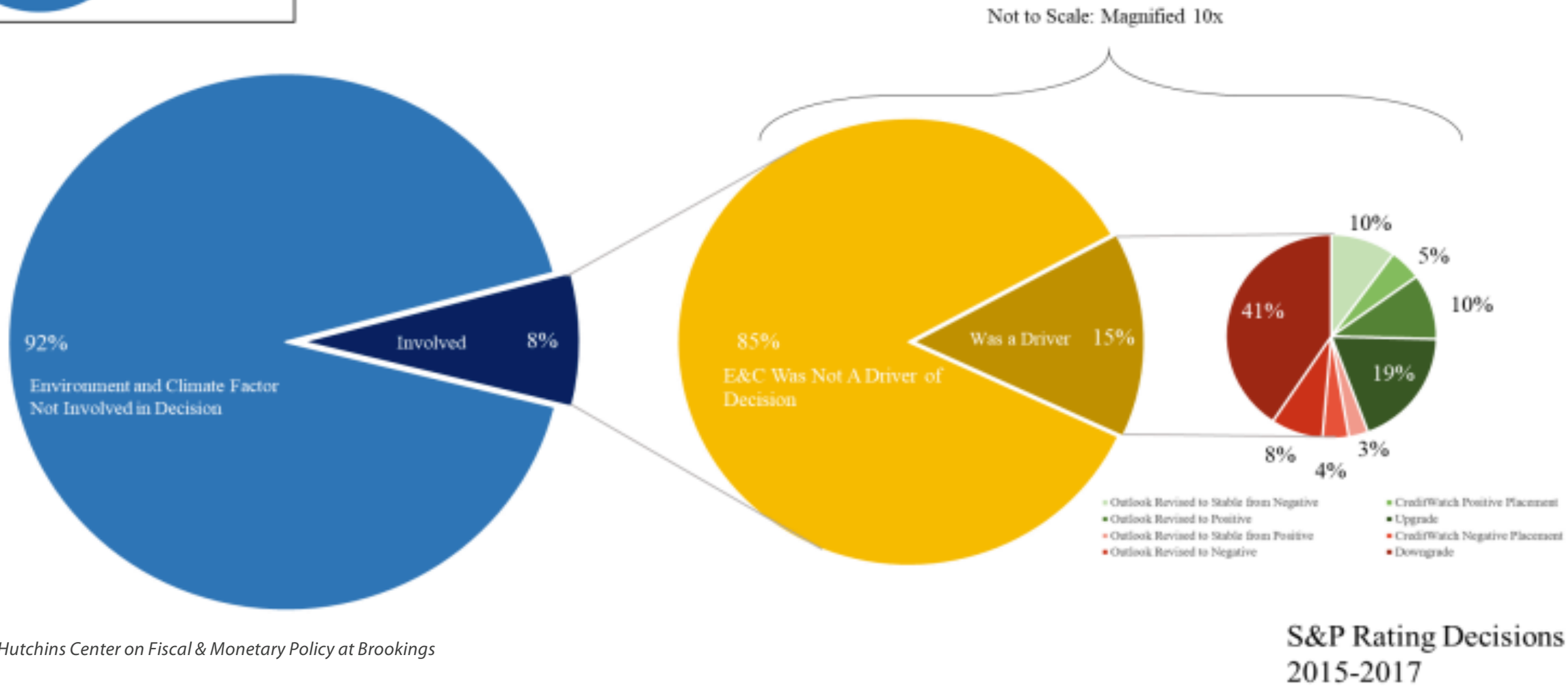
CLIMATE CRASH

Many COVID-19 sovereign bonds are due to be paid in the next 30–100 years. Projections of future economic productivity show that, by then, gross domestic product could have dropped sharply in many countries because of climate change, making it hard for them to pay the debt (data from ref. 5).



Climate Change is Rarely Material to the Decisions of Major Rating Agencies

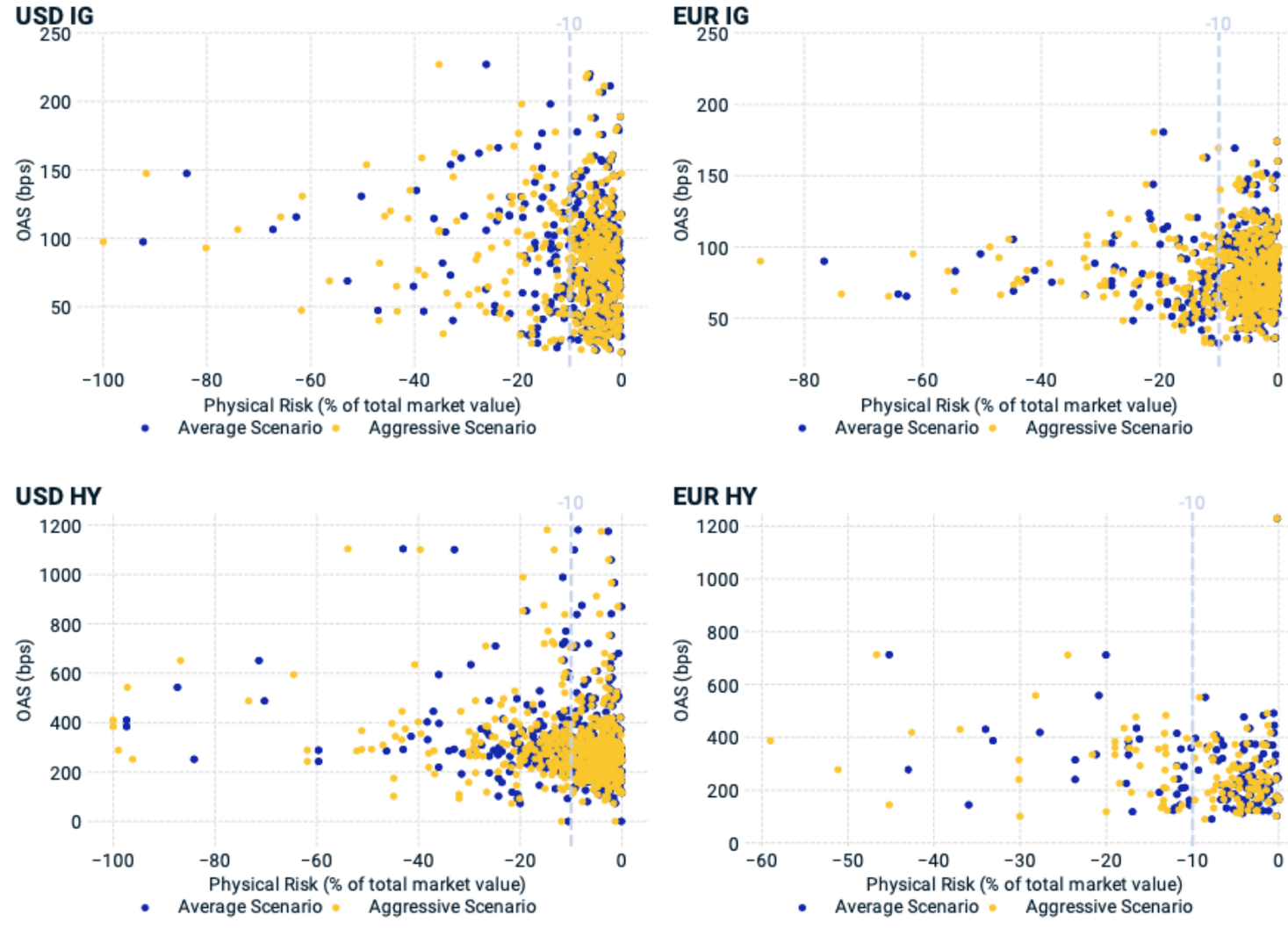




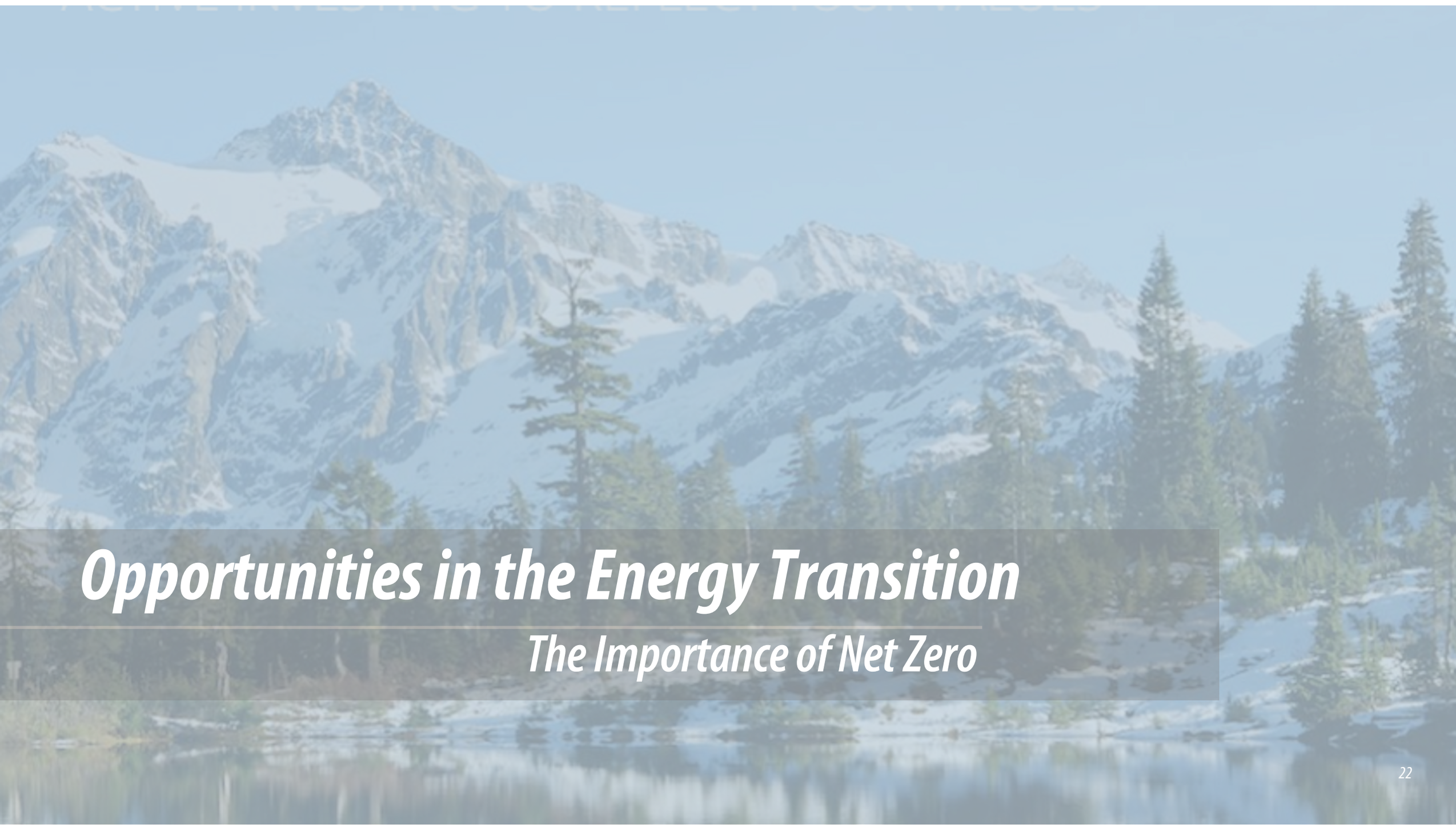
S&P Rating Decisions 2015-2017

Source: Hutchins Center on Fiscal & Monetary Policy at Brookings

Issuer Spreads Do Not Yet Reflect the Cost of Physical Climate Risk



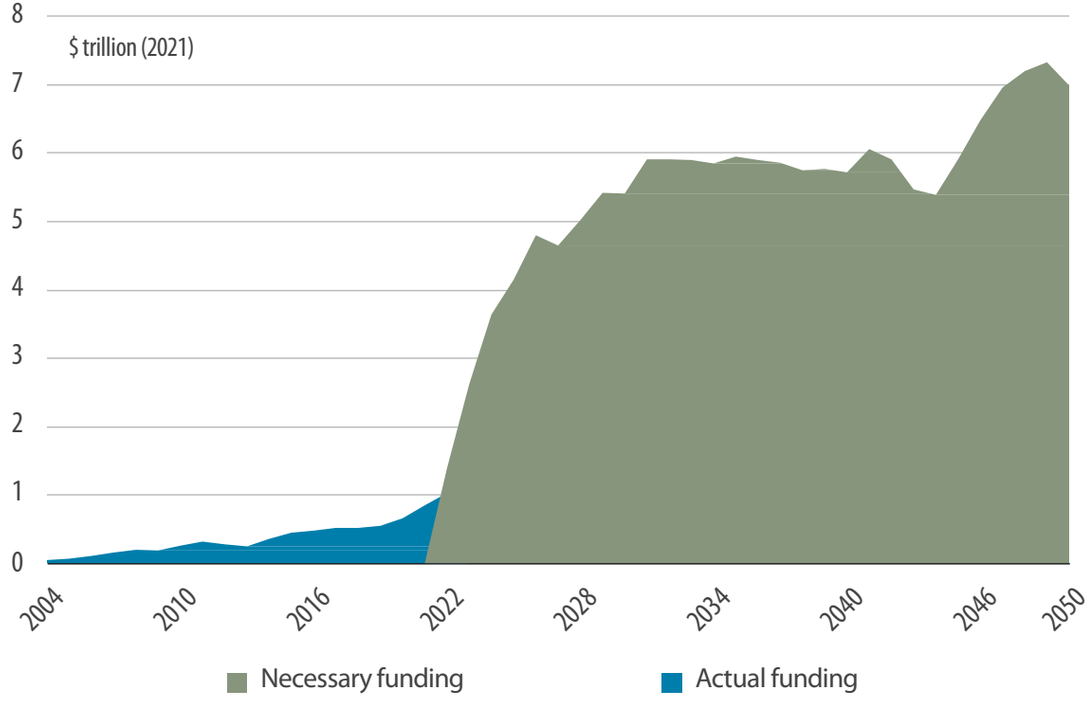
Source: MSCI



Opportunities in the Energy Transition

The Importance of Net Zero

Net Zero Investment Trends

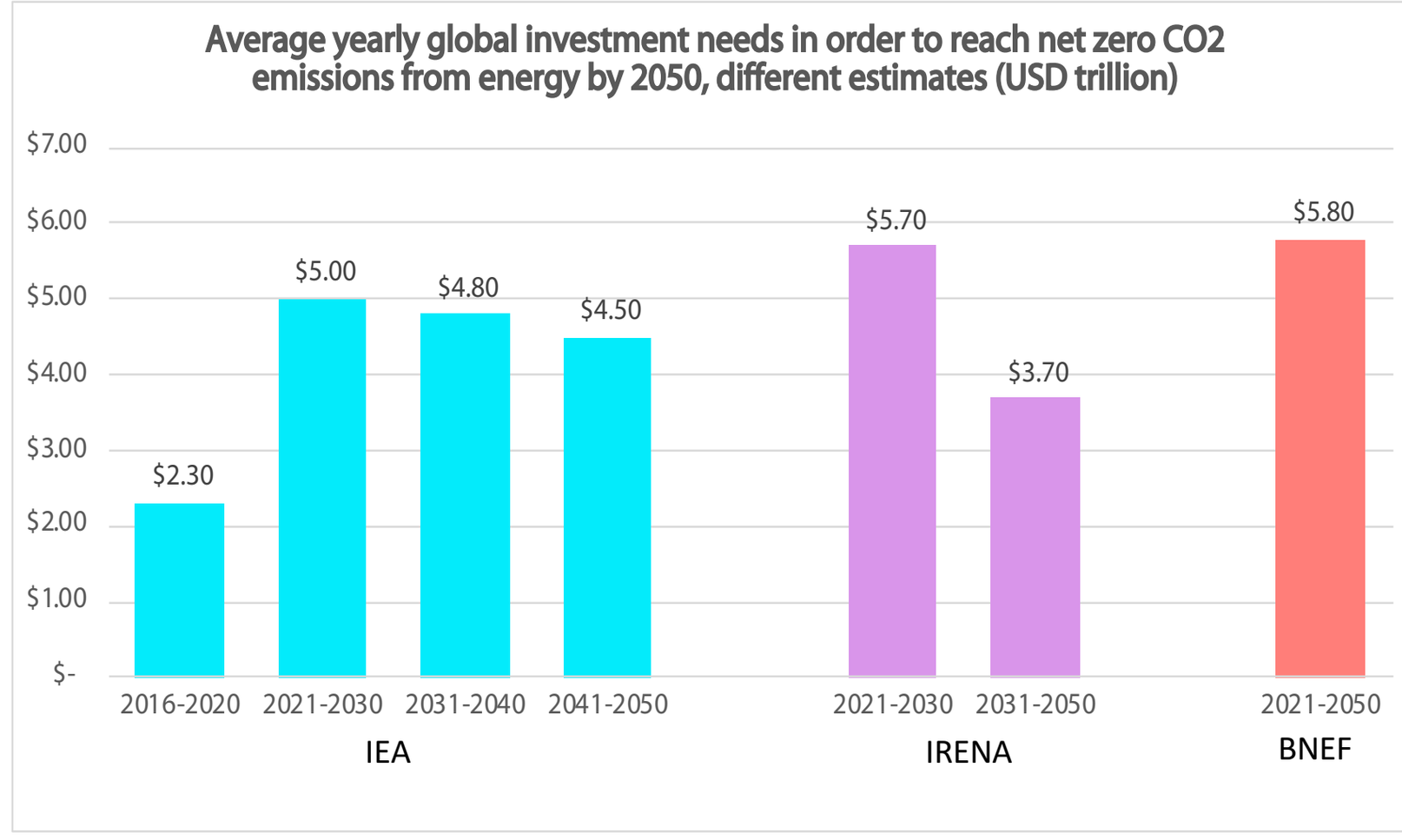


Global annual investment needs to triple throughout this decade in order to achieve a net-zero emissions world by 2050.

- Reaching net zero globally by 2050 presents a $196 trillion investment opportunity in the energy sector. Bending the curve toward the Net Zero Emissions by 2050 Scenario (NZE) requires immediate action on both the supply and the demand sides of the energy balance. Current levels of capital spending are not aligned with a net-zero world, meaning a substantial shift and acceleration in capital deployment is required.
- China leads overall energy investment in the scenario, reaching $37.7 trillion by mid-century. The US follows in second, spending a cumulative $29.6 trillion between 2022 to 2050. These two global economic powerhouses see a vast low-carbon transformation to their energy systems.

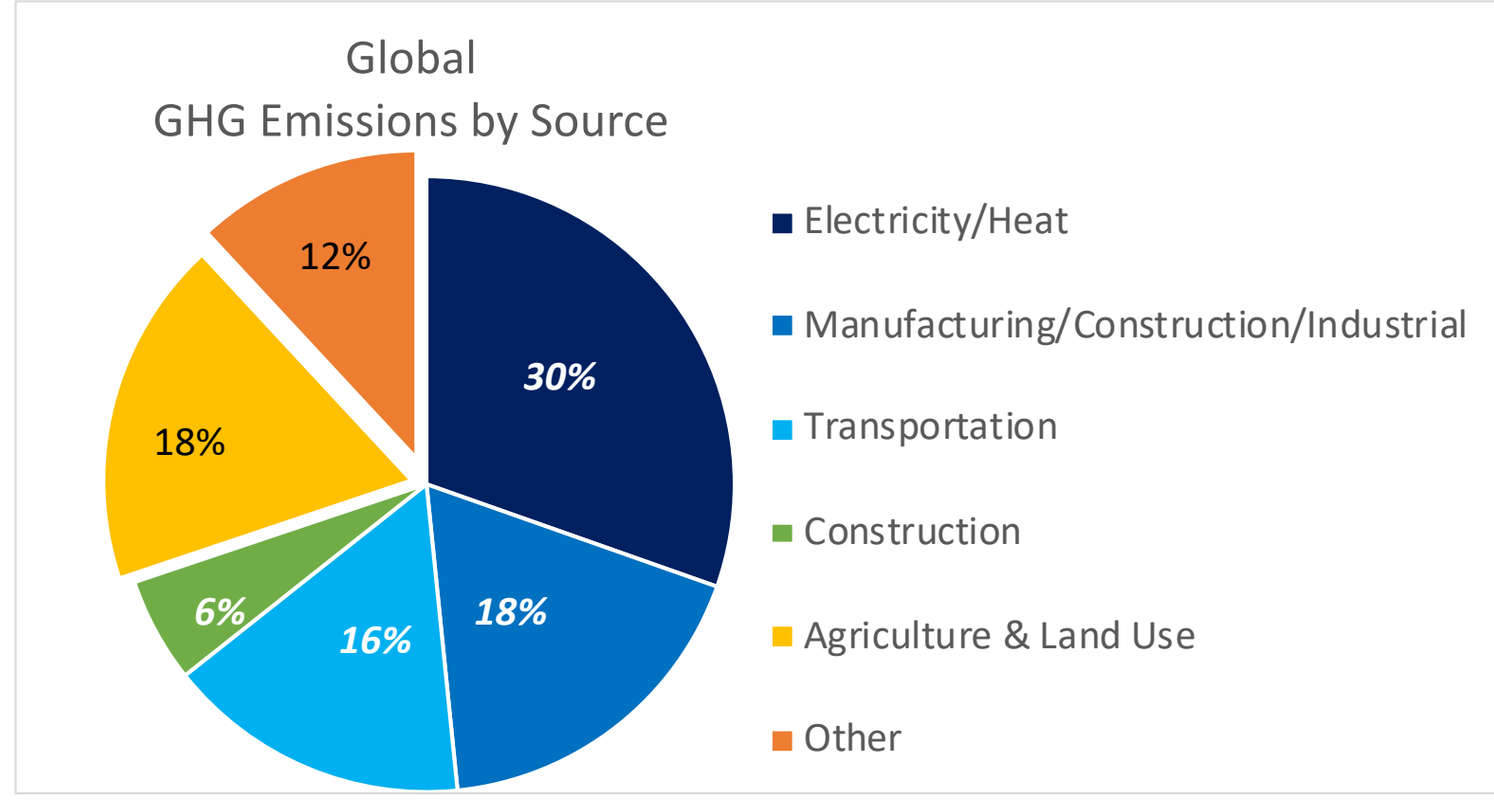
Source: Bloomberg NEF

The Role of Finance in Reaching Net Zero Emission

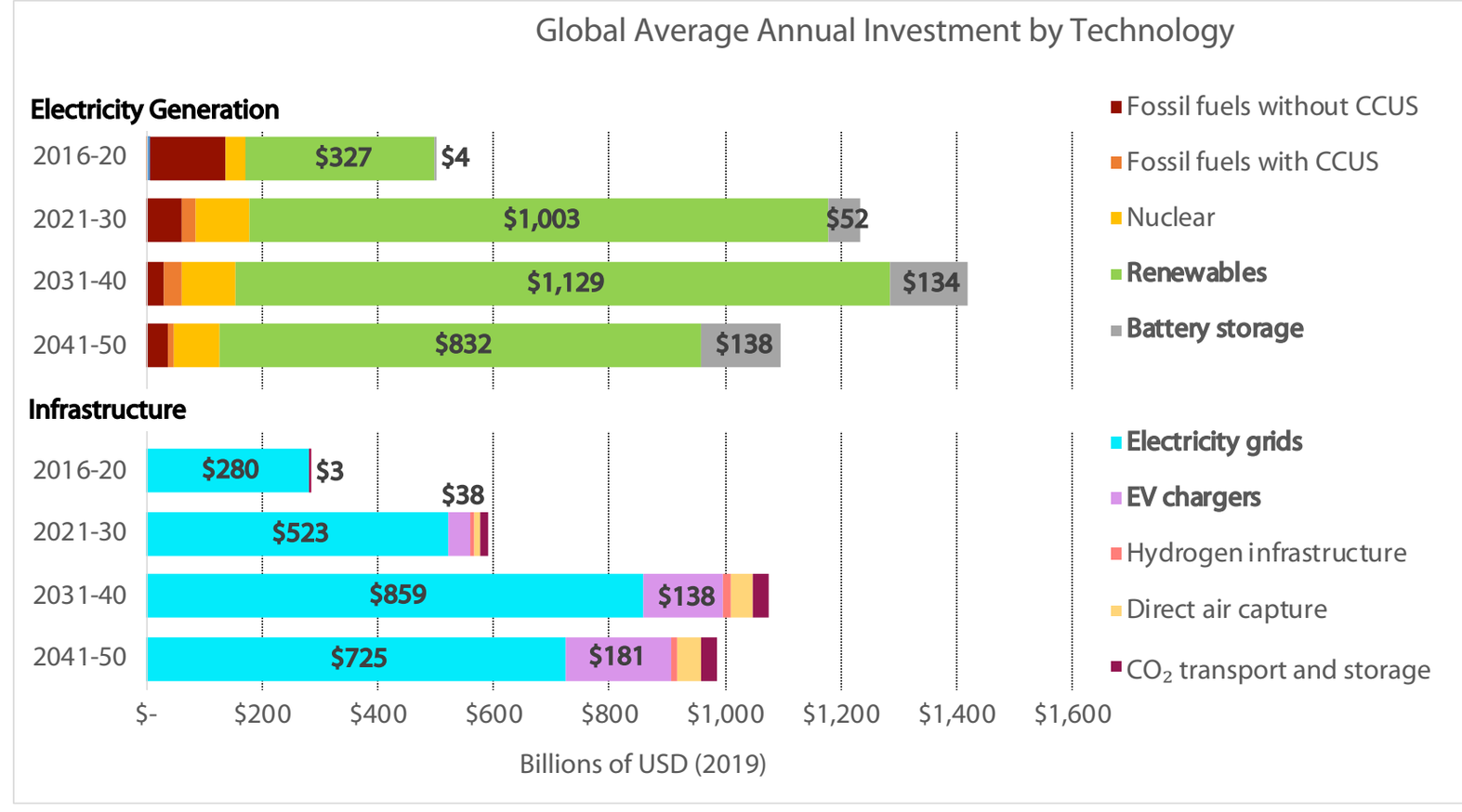


Source: International Energy Agency(IEA), International Renewable Energy Agency (IRENA), Bloomberg New Energy Finance (BNEF)

Focus on Energy and Electricity

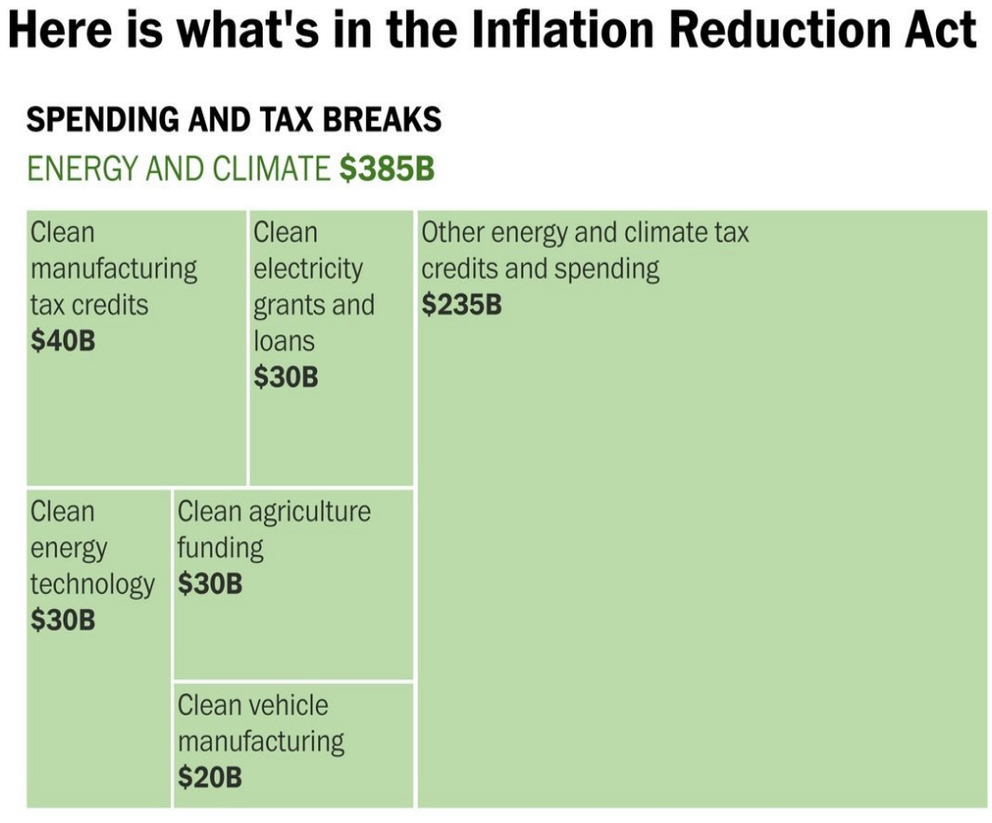


Largest Investment Needs

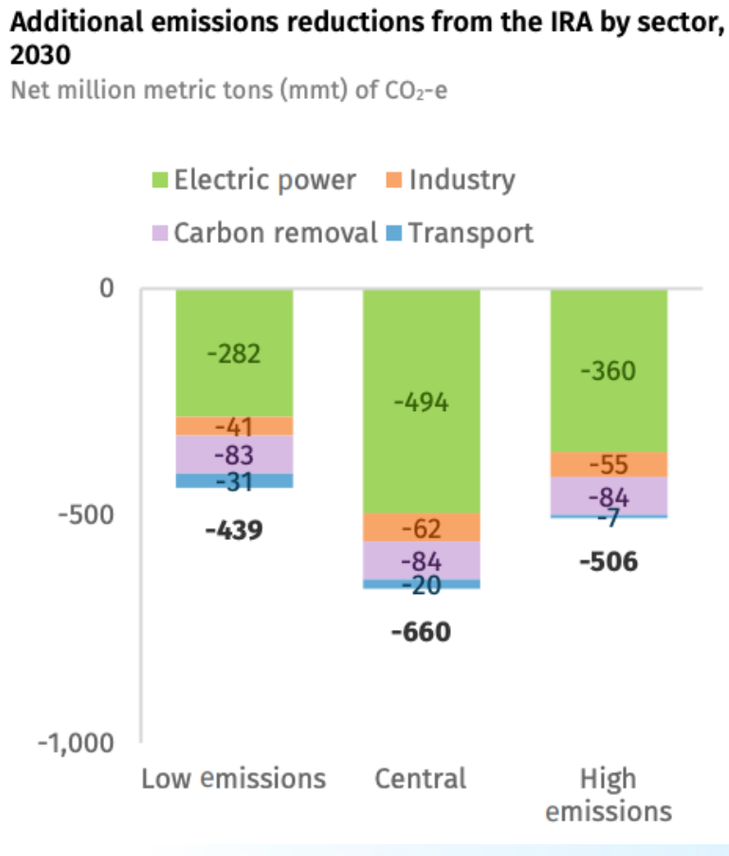


Source: IEA

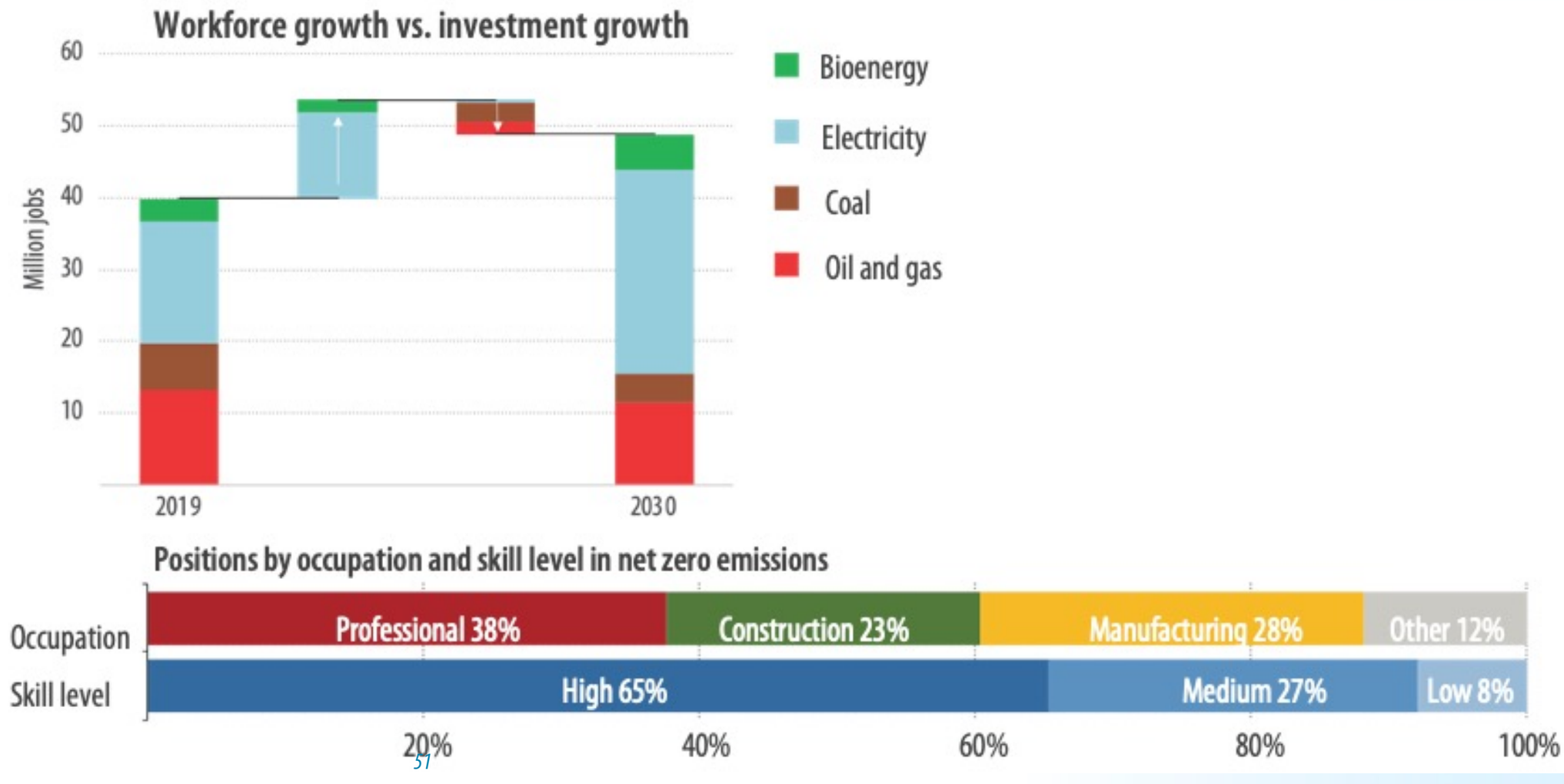
Governments are Incentivizing Investment!



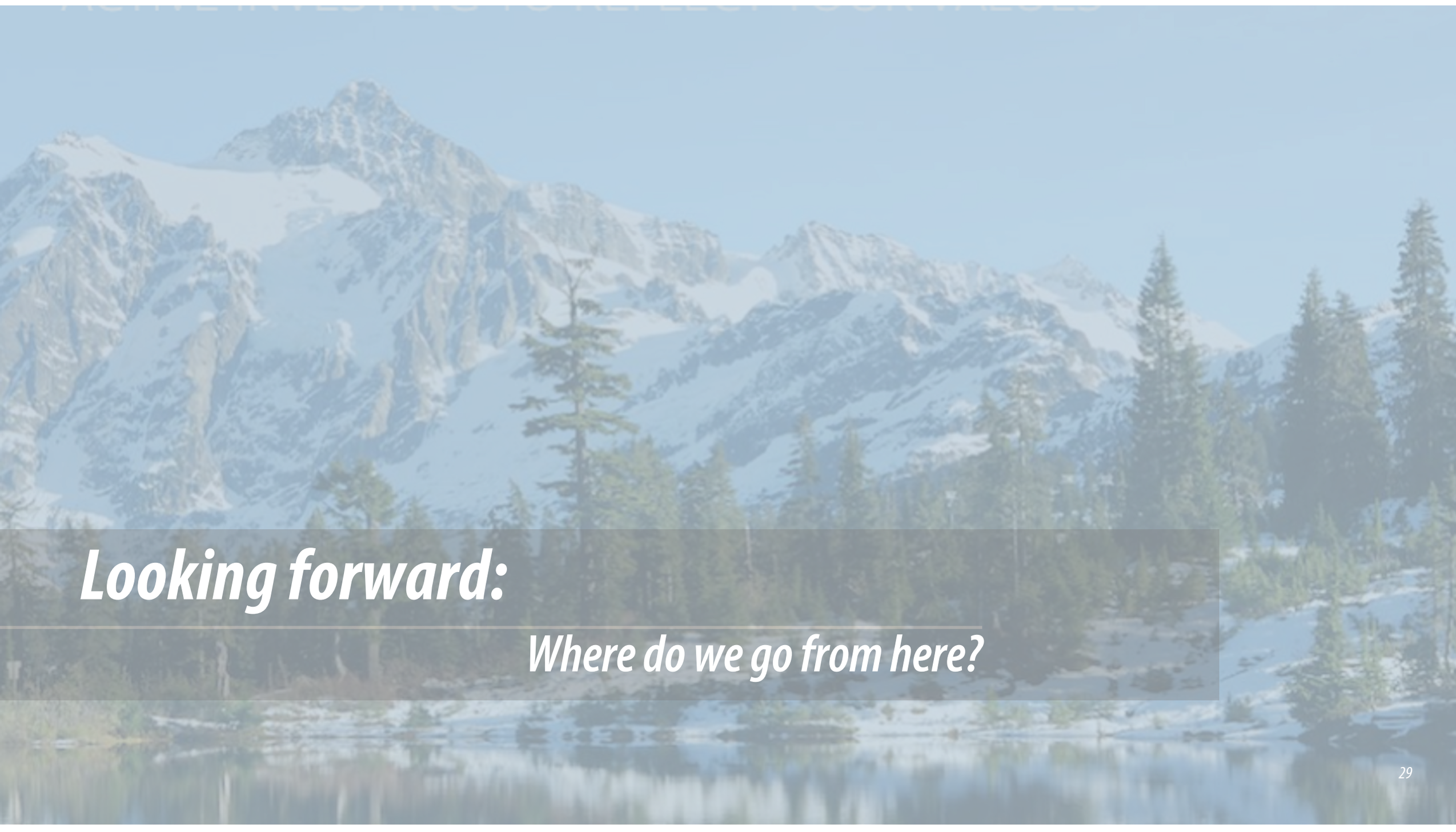
Source: BloombergNEF



Transition to Net Zero Emissions is Net Positive for the Global Workforce



Source: BloombergNEF

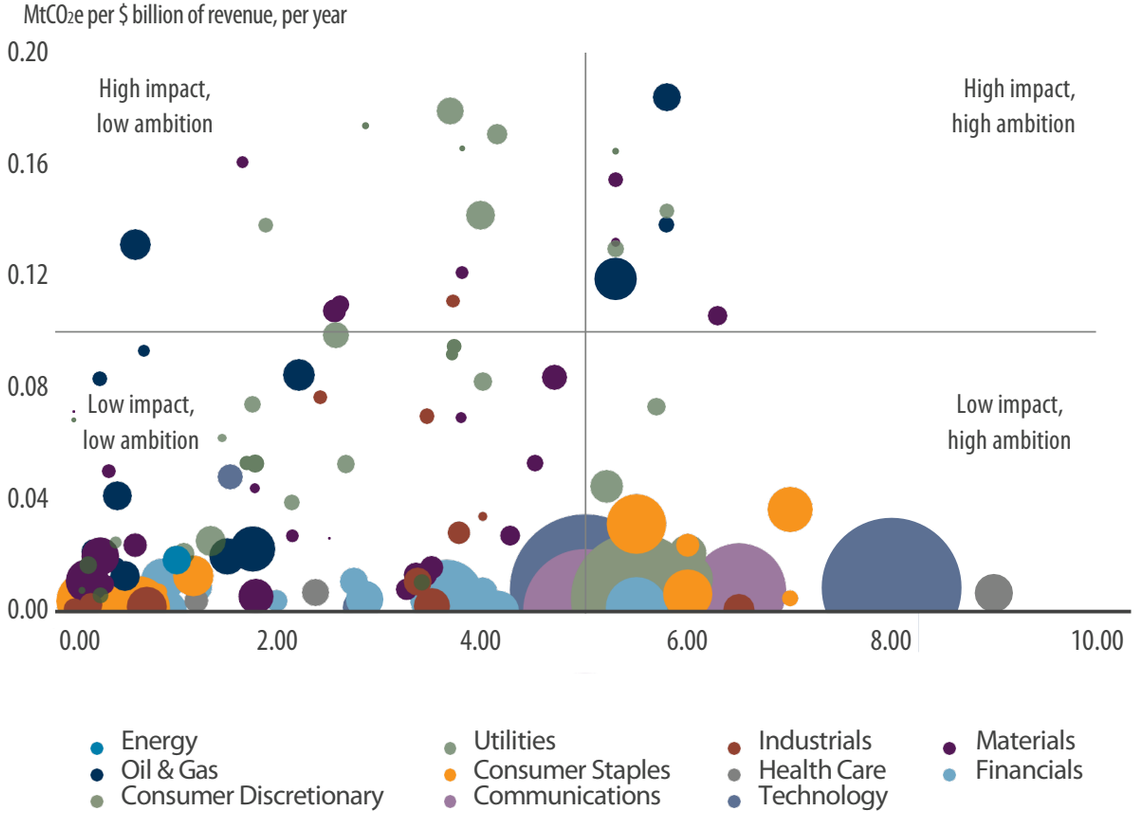


Looking forward:

Where do we go from here?

Net-Zero Targets

By score (X-axis), reductions per $ billion per year (Y-axis) and market capitalisation (bubble size)

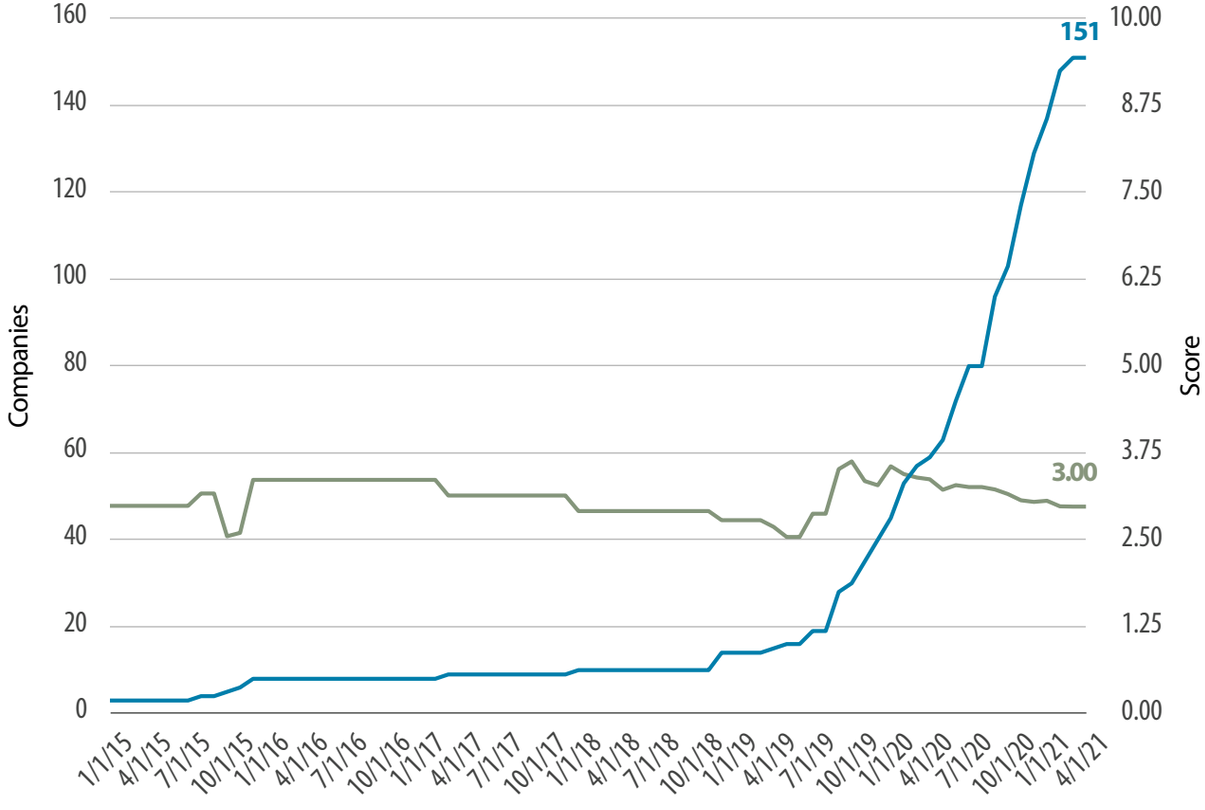


- Net-Zero Commitments from some of the largest emitting companies cover 20% of global emissions.
- Some companies' net-zero targets address more emissions than a medium-sized country.
- Shell and BP pledged to reduce more emissions than Japan emits annually.
- Net-Zero target for a mining company like Glencore would reduce more emissions than the entire country of Italy emits in a year.
- Country-level net-zero commitments are dependent on private-sector commitments and vice-versa.
- However, most net-zero commitments lack ambition or impact.

Note: Carbon reductions per year were divided by revenue to standardise companies by size. Several high-performing companies, including ThyssenKrupp, Volvo, Eni, Occidental, and Orsted, are excluded from the chart to make the data more clear. See accompanying Excel file for a full list.

Source: BloombergNEF, Bloomberg Terminal, CDP, company filings

Major Net-Zero Targets Set and Average Target Scores

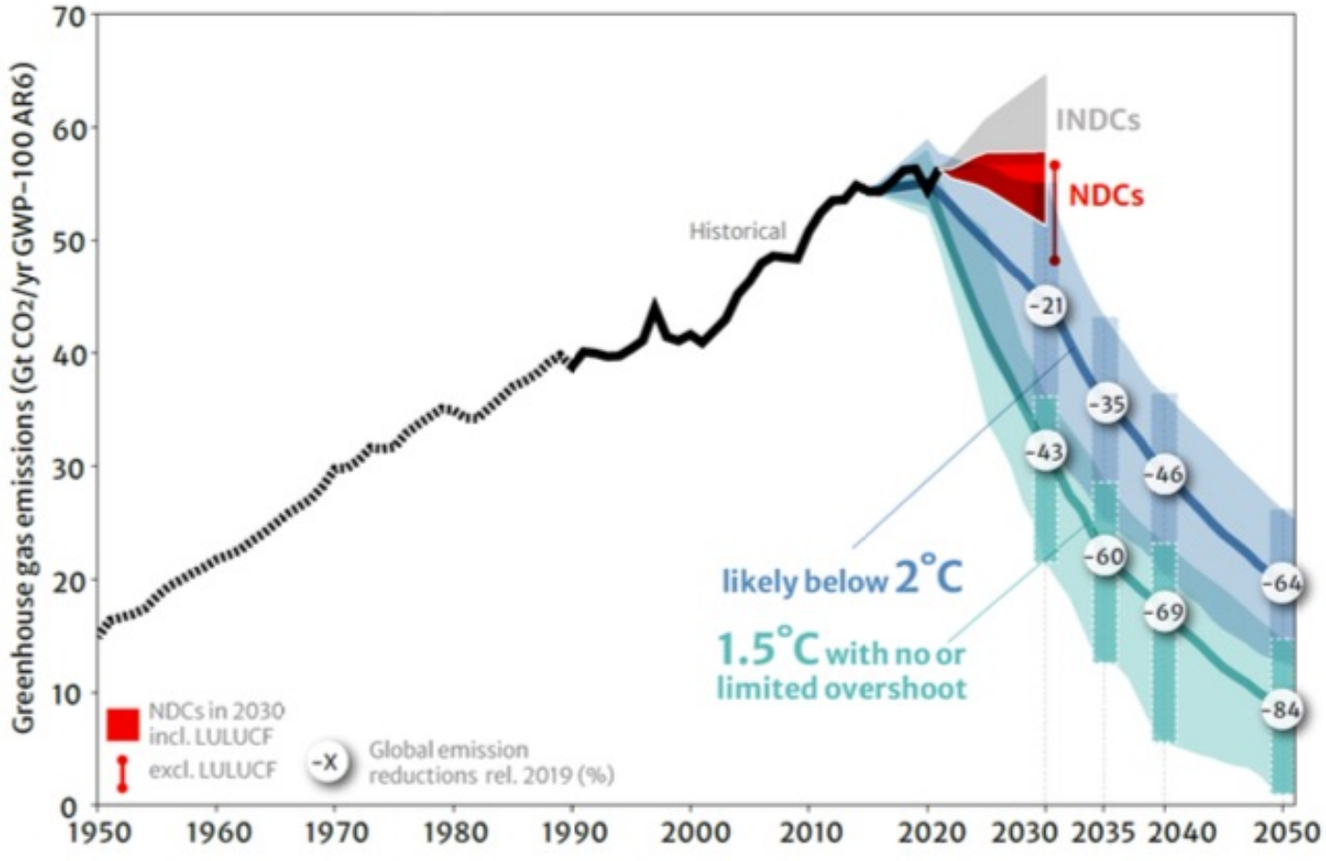


Note: Chart only shows companies that officially announced their target at a specific time.

- Two-thirds of major net-zero targets have come since 2020.
- The surge in targets has opened the door for significant greenwashing. Most companies don't plan on hitting their targets until 2050, and only plan on addressing the parts of their carbon footprint that are easiest to reduce.
- Companies with interim goals who emissions cross value chain will receive better (lower) temperature scores.
- Best net-zero targets redefine the way a company operates and generates revenue. Many companies design new products and unlock access to new customers by building around a net-zero strategy. Other companies look outside their own impact and make investments that will benefit others on their own race to net-zero.

Source: Bloomberg

Historical emissions from 1950, projected emissions in 2030 based on nationally determined contributions, and emission reductions required by the Sixth Assessment Report of the Intergovernmental Panel on Climate Change



		Reductions from 2019 emission levels (%)			
		2030	2035	2040	2050
Limit warming to1.5°C (>50%) with no or limited overshoot	GHG	43 [34-60]	60 [49-77]	69 [58-90]	84 [73-98]
	CO_2	48 [36-69]	65 [50-96]	80 [61-109]	99 [79-119]
Limit warming to 2°C (>67%)	GHG	21 [1-42]	35 [22-55]	46 [34-63]	64 [53-77]
	CO_2	22 [1-44]	37 [21-59]	51 [36-70]	73 [55-90]

Global Emissions are Still Rising, Net-Zero Targets are not Being Met

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