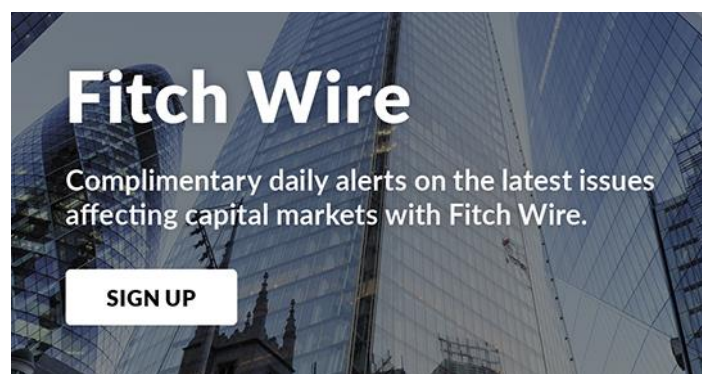


What Investors Want to Know: Corporates' Climate Vulnerability Scores

Fitch's Long-Term View of the Impact of Climate Transition Risks Across Sectors



Aurelia Britsch
+65 6576 0928
aurelia.britsch@sustainablefitch.com

William Attwell
+44 20 3530 1389
william.attwell@sustainablefitch.com

David McNeil
+44 20 3530 1942
david.mcneil@sustainablefitch.com

Climate Policy Risk Is Key

Climate Vulnerability Scores (Climate.VS) capture Fitch Ratings' view of exposure to a rapid low-carbon transition between 2025 and 2050 across sectors. We draw on the UN Principles for Responsible Investment's (PRI) Inevitable Policy Response (IPR) scenario, which reflects policy, market and technology trajectories to produce long-term forecasts across eight policy levers.

The main challenge for investors in assessing the long-term impact of climate change on their portfolios is translating broad scenario assumptions to sector and entity-level impacts. Fitch uses its analysts' detailed sector knowledge to perform this task. We believe that it is broader sector economics, and not just one measure, such as carbon output, that provides granularity to our views and differentiates our conclusions from less nuanced approaches.

Investment Strategies Look Long Term

Climate.VS were developed in response to a need in the fixed-income investment sector for a long-term view of transition risks – recognising the implications for instruments of differing maturities, and strategies open to investors to manage these risks. As such, the scores can support security selection, portfolio management, risk management, and monitoring and reporting.

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Sector.VS Definitions

Description of cumulative risks	Sector.VS				
	10	30	50	70	90
	Climate-related factors neutral to positive for sector prospects.	Fundamental demand drivers neutral to positive, despite major changes to existing business models or a need for heavy investment.	Solid demand drivers but a need for material changes to products or production methods, which may threaten profitability.	Major changes to markets, regulation and business model likely to disrupt profitability for an extended period.	One or more climate-related factors have the potential in a credible scenario to pose an existential threat to core business activities.

Note: Higher scores denote greater vulnerability
Source: Fitch Ratings

What Are Climate Vulnerability Scores?

Climate.VS measure the relative vulnerability of sectors and entities to long-term climate-related changes under a scenario that incorporates a global transition to a climate limited to 2°C above pre-industrial levels by 2050. Our analysis extends to 2050 and provides milestone assessments from 2025 in five-year intervals.

The higher the sector or entity score at a particular point in time, the greater the vulnerability under the scenario. A sector with a score of 90, for example, faces an existential threat from climate risks before 2050, whereas one with a score of 10 will experience little disruption and may even see benefits.

Scores capture risks to sectors and companies from changes to market structure, demand for goods and services, capital and operational spending, and business models from low-carbon transition that could disrupt profitability or require heavy investment to address.

We provide scores in a time series to 2050 to compare the relative vulnerability of sectors and entities at different stages in the transition.

What Is the Inevitable Policy Response?

Our core regulatory and policy risk scenario is the IPR's updated Forecast Policy Scenario (FPS), released in October 2021. Commissioned by the UN Principles of Responsible Investment (PRI), the IPR is a consortium developing scenarios around the policy response on climate change.

The FPS is not the only long-range scenario being used by market participants. Others have been published by the International Energy Agency, Intergovernmental Panel on Climate Change, World Energy Council, the US Energy Information Administration, the International Renewable Energy Agency, Royal Dutch Shell plc (AA-/Stable) and BP plc (A/Stable). However, we believe the IPR's focus on policy provides a realistic assessment of the core credit risk from climate-related changes affecting corporate and project debt issuers, while its comprehensive and integrated methodology makes it well-suited to Fitch's multi-sector scoring framework.

The FPS includes macroeconomic and industry data modelling of outcomes against eight key policy drivers:

- Carbon pricing;
- Coal phase-out policies;
- Clean power sector policies;

- Zero-emissions vehicle deployment;
- Low-carbon buildings development and retrofit;
- Clean industrial policies;
- Low emissions agriculture; and
- Ending tropical deforestation.

An earlier version of the FPS was published in 2019 and laid the basis for our pilot vulnerability report covering the utilities sector. The scenario has since been comprehensively updated, informed by a review of recent climate policy technological developments and other evidence, a survey of more than 200 national climate policy experts, and further analysis of the drivers of policy action.

Significantly, the IPR applies a 'just transition' lens to the policy forecast to capture social and political feasibility concerns in different markets (e.g. a heightened risk of asset stranding for Asia-Pacific thermal coal under a rapid transition, given the average age of the existing fleet). Other important considerations that will inevitably weigh on policy include technology costs and development, industrial competitiveness concerns and trade exposure, and energy security.

How Is the IPR's Scenario Integrated into Our Climate.VS?

The FPS is incorporated into Fitch's detailed sector-by-sector and entity-by-entity Climate.VS framework. The IPR has developed several quantitative forecasts, covering macroeconomic, energy, land use and technology deployment trends. Fitch uses these forecasts as a baseline view and then draws on the in-depth knowledge of its rating analysts on individual sectors and credits to augment and further refine our long-term vulnerability assessments.

The 2021 update to the IPR expands the value drivers to cover key drivers relating to metals and mining, aviation and other sectors rarely considered in any depth. This makes it ideal as a basis to conduct an impact assessment across the corporate sectors.

Are Climate.VS an Input to Credit Ratings?

No, Climate.VS are not a credit ratings product nor linked to the ratings process. Climate.VS represent a standalone product that combine analyst views and knowledge of long-term structural risks to creditworthiness from low-carbon transition with an external scenario.

Fundamentally, the IPR scenario is not a part of our base case but a plausible policy scenario of rapid low-carbon transition from the mid-2020s. This reflects the uncertainties inherent in the timing, pace and comprehensiveness of policy responses to climate change.

Our credit analysts already convey cases where climate and other Environmental, Social and Governance considerations have influenced ratings using our [ESG Relevance Score framework](#).

Do Climate.VS Address the Physical Risks of Climate Change?

No, the Climate.VS for corporates only reflect transition risks and our view that policy, market and regulatory risks are likely to be a far more severe threat to corporates as a whole in the first half of this century than physical risks. The scientific consensus (e.g. findings published in the Intergovernmental Panel on Climate Change 6th Assessment report cycle) is that the most frequent and severe physical risks of climate change are likely to occur from the late 2030s, but the severity of these outcomes is tied to the pace and force of early low-carbon transition from the 2020s.

How Do Physical and Transition Risks Differ?

- Physical climate risk refers to the economic impact of changes in the climate that will result in both more frequent and extreme weather events, and more gradual shifts in the environment and ecosystems, e.g. desertification and rising sea levels.
- Transition risks arise as a result of the shift to a lower-carbon economy, and can be driven by international, national and local policy changes, the emergence of 'disruptive' green technologies and changes in consumer and investor sentiment, choices and behaviours.

While transition risks are systemic in nature, physical risks of climate change are generally more geographically localised, and mitigants, such as geographical diversification and insurance coverage, will play a big role in determining the level of vulnerability for most corporates, at least in the near term. Geographical diversification is therefore a key factor that can lessen an entity's operations' or assets' exposure to physical climate risks, whether acute (specific events, such as floods or wildfires) or chronic (e.g. sea level rise).

Which Sectors Are Covered by Climate.VS?

The Climate.CV scores include all the main sectors covered by Fitch's corporate analytical teams:

- Utilities (power generation; electricity, gas and water transmission & distribution)
- Oil & Gas (O&G) and Chemicals
- Auto Manufacturing, Aerospace and Defence
- Transportation (airlines, shipping)
- Diversified Manufacturing
- Metals & Mining

- Fertilizers
- Healthcare & Pharmaceuticals
- Technology, Media & Telecommunications (TMT)
- Retail & FMCG
- Lodging & Gaming

We are in the process of publishing an in-depth report for each of these sectors that contextualises the industry's exposure to climate transition risks, and identifies specific policy, technological or market factors – based on the IPR FPS assumptions and forecasts – that inform the scoring to 2050. Each report breaks down these sectors into sub-sectors, which are individually scored.

In sectors where large issuers derive substantial business from multiple sub-sectors – or their operations are closely integrated across value chains and product line – we provide 'indicative range' scores for each five-year interval, with greater granularity to be provided at an entity level. Examples include integrated O&G producers and diversified utilities.

What Is the Geographical Coverage of the Scores?

Climate change is a global phenomenon and under the FPS, key policies – such as carbon prices – will be implemented in every region by 2050. For almost all our Climate.VS scores and associated sector reports, we therefore adopt a global view and provide sector and sub-sector scores at a global level. The notable exception is utilities, where the outlook varies more radically by region than for other sectors, e.g. with western Europe transitioning fairly rapidly to renewables, while Asia-Pacific will continue to deploy coal-fired power generation into the 2040s. Scores are therefore assigned by geographical region (EMEA, North America, APAC and Latin America).

For other sectors, the Climate.VS methodology accounts for regional variations, but an entity level. When determining entity-level scores, Fitch deploys several 'modifiers' to account for the nuanced factors specific to each entity's individual circumstances that then factor into the scores across each five-year period. The first of these modifiers is 'local regulation and state support mechanisms', which enables an adjustment that may reduce – or elevate – the level of vulnerability reflected in the entity score.

Do Trade Sanctions and Inflationary Pressures Inform the Scenario Forecast?

The IPR and Climate.VS are a long-term view (2025 to 2050) that takes plausible long-term inflation, market, commodity and technology price projections into account based on historical trends and expert forecasts. They do not take account of major geopolitical events and short-term economic cycles.

Broadly, trade and political constraints and focus on energy security concerns are already factored into the forecasts. While current trade tensions represent disruption to energy, commodity and technology value chains, we believe in the long term this should not be detrimental to low-carbon transition and long-run assumptions around deployment of low-carbon technologies on the basis of falling costs.

What Makes Fitch's Climate.VS Unique?

Our Climate.VS connect the robustness of a consortium-developed scenario backed by the UN PRI, and Fitch's methodology and analytical experience. They reflect the depth of sector knowledge of our analysts and are a collaboration with our credit analysts, and ESG and climate risk specialists.

The vulnerability scores are fully comparable across sectors and entities. They are delivered as time series out to 2050, allowing a granular view for investors looking to manage longer-term ESG credit risks.

They are assessed at regular intervals to account for technology advancement, and the evolution of governments' and corporates' sustainability strategies.

Climate.VS are one component of the comprehensive Sustainable Fitch ESG suite, which includes ESG Ratings, ESG Relevance Scores and ESG research.

How Can Climate.VS be Used in Decision-Making?

In contrast to credit ratings, which tend to be weighted towards the near future, Climate.VS provide opinions on the vulnerability of issuers and their debt instruments over a much longer time-frame. With this in mind, we identify the following main use cases:

- **Security Selection:** Climate.VS can be used to directly differentiate between two otherwise similar securities with different exposure to climate risks, while the time-profiling at five-year intervals provides a more precise view on the risk embedded in fixed-maturity instruments than 'point-in-time' scores.
- **Portfolio Construction and Screening:** The granular approach to sectors allows for a better differentiation and more sophisticated portfolio construction differentiating levels of climate risk for issuers at particular points in time. They can also be used in the implementation of relative or absolute screening policies, allowing the exclusion of issues that have higher Climate.VS from the portfolio.
- **Risk Management:** The comparable sector and entity Climate vulnerability scores allow the measurement of the exposure of portfolios, loan books and business activities to climate transition risks across time.
- **Monitoring and Reporting:** The direct comparability of scores across sectors facilitates portfolio-level reporting on embedded climate-related credit risk. It also allows the easy identification of holdings that are the source of high risk. The scores allow simulations of the effects of replacing portfolio holdings with issuers with lower scores. Climate.VS's anchor in the IPR FPS allows external reporting on the basis of a recognised climate policy scenario – an important element of climate disclosure.

Where Does Fitch's Climate.VS Sit Within Fitch's ESG Coverage?

Climate.VS are one component of the comprehensive Sustainable Fitch ESG product suite, which includes:

- **ESG Ratings:** An objective and comprehensive assessment of ESG performance at Entity, Instrument, and Framework level.
- **ESG Relevance Scores:** A proprietary scoring system, integrated within our credit ratings, that provides a value-neutral view on how different ESG risk issues specifically affect credit.
- **ESG research:** Market-leading insights and research on a variety of Environmental, Social and Governance issues, with a clear focus on implications for credit risks in the global capital markets.

Climate Vulnerability Scores – Score Distribution Grid

	Overall vulnerability level	Winners and losers	Business model disruption	Revenue	Costs	Other policy concerns	Risk of stranded assets	Mitigants	Finance
90	One or more climate-related factors have the potential in a credible scenario to pose an existential threat to core business activities.	Very high failure risk for majority of entities.	Very high. Very little potential for reinvention beyond exiting business.	Potential for complete destruction of demand under credible downside scenarios.	Market or policy-driven costs could make the business model uneconomic.	Substantial likelihood of severe regulatory intervention which will eliminate profitability, with the potential for outright bans on core product.	High risk that assets will become uneconomic before the end of their intended service life.	Few or no cost-effective mitigants. Complete business transformation required. Potential for government mitigation due to market incentive or social concerns.	Climate-related pressures on providers of finance likely to make standard financing options unavailable.
70	Major changes to markets, regulation and business model likely to threaten profitability for an extended period.	Significant numbers of entities likely to fail/become uneconomic.	Very high, only limited number of entities likely to manage transition to a profitable model.	Potential for demand destruction, policy-induced changes to relative prices of substitutes, price pressure.	Significant rises in costs, potentially threatening profitability.	Real possibility of policies with meaningful negative effect, e.g. targeting demand reduction, raising costs, or boosting substitutes.	Risk that some assets will become uneconomic before the end of their intended service life.	Some mitigants available which if successful allow businesses to survive.	Climate-related pressures reduce access to finance, making many conventional sources inaccessible, but some higher cost sources remain.
50	Solid demand drivers but material changes to products or production methods needed that may disrupt profitability.	Entities which manage the transition poorly will fail or see significantly reduced profitability.	High risks for most entities due to technology or business model transition.	Moderate weakening of demand due to changing habits, policy and substitutes.	Costs likely to rise during transition but businesses remain fundamentally profitable, albeit profitability is depressed during transition.	Policies targeted at shaping nature of product/industry.	Risk of stranded assets materialising if insufficient or poorly judged investment/mitigation	The technology for mitigation exists, but is dependent on investment/further development.	Climate-related factors reduce availability of funding, but limited amounts remain available through mainstream sources.
30	Fundamental demand drivers neutral to positive, despite major changes to existing business models or heavy investment being required.	Majority of entities will successfully transition with little impact on profitability.	Major investment needed to mitigate risks but low risk and predictable.	Fundamental demand drivers solid.	Potential for increased costs due to investment but likelihood these can be passed on.	Limited policy threat. Potentially a key sector likely to obtain policy support.	Minority of outdated assets only.	More likely to receive direct/indirect government support.	Climate-related factors unlikely to affect funding availability if companies manage their exposures.
10	Climate trend neutral to positive for sector prospects.	Possibility of business failure due to climate-related trends very low.	Limited or zero business model change required.	Clearly neutral or potentially positive effect on demand.	No or negligible impact from climate related trends.	No foreseeable negative policy implications; potential upside from policies.	Negligible risk to asset base.	None needed.	Climate-related factors do not affect funding for sector; potential for sector to benefit from additional capital availability

Source: Fitch Ratings

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