Scientific Climate Ratings
An EDHEC Venture

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RESEARCH INSIGHTS
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Contents

Introduction

I am delighted to introduce this Scientific Climate Ratings special issue of the EDHEC Research Insights supplement to Investment & Pensions Europe (IPE), which aims to provide institutional investors with an academic research perspective on the most relevant issues in the industry today.

We first look at the subject of turning climate science into financial insights. Climate change is now a tangible and urgent concern, with both physical and transition risks presenting significant financial consequences. Institutional investors managing long-term portfolios need science-based climate ratings, which assess the financial materiality of these risks and quantify the asset value at stake.

We then present ClimaTech, a research-driven knowledge base on efficient climate risk reduction strategies. The ClimaTech project, the largest global repository of decarbonisation and physical risk reduction strategies, provides evidence-based, comparable insights covering 103 strategies, 100+ infrastructure asset subclasses and eight sectors, resulting in the assessment of 1,800+ strategies. Scientific Climate Ratings leverages ClimaTech to adjust its ratings for company-specific strategies, provide financial insights on the true, current state of the asset value, and facilitate informed investment decisions.

We examine Scope 3 or value chain emissions, the hidden financial risks beyond the balance sheet. Scope 3 or indirect emissions occurring in a value chain typically cover the largest share of businesses' carbon footprints, but their financial risks are widely overlooked and underreported. Traditional approaches typically focus on Scope 1 and 2 emissions, which hinders assessing transition risks accurately and effectively. Accounting for Scope 3 emissions helps investors to understand the high-emitting activities within their portfolio and assess exposure to transition risks.

Finally, we assess wildfire risk in a changing climate. 2025 was marked by intense wildfire activity worldwide, damaging critical infrastructure assets. With climate change intensifying these risks, especially in Europe, investors and policymakers require credible, forward-looking, standardised tools to assess them and inform resilient capital allocation strategies.

We hope that the articles in the supplement will prove useful, informative, and insightful. We wish you an enjoyable read and extend our warmest thanks to IPE for their collaboration on the supplement.

Anthony Schrapffer, Scientific Director, Scientific Climate Ratings

Scientific Climate Ratings: Turning climate science into financial insights

Climate change is now a tangible and urgent concern, with both physical and transition risks presenting significant financial consequences.

Institutional investors managing long-term portfolios need science-based climate ratings, which assess the financial materiality of these risks and quantify the asset value at stake.

Scientific Climate Ratings, an EDHEC venture, turns climate science into financial insights, through independent, forward-looking, comparable ratings developed by the EDHEC Climate Institute.

Through an on-demand global ratings map, we assess exposure to physical (floods, heat, wildfires, storms) and transition risks (Scope 1, 2 and 3 emissions), and quantify the dollar impact.

In 2025, 6,000+ infrastructure assets across 25 countries are rated, with plans to expand to 5,000+ leading listed companies worldwide in 2026.

Climate risks are intensifying worldwide, as global warming accelerates at an unprecedented pace.[1] Global temperatures exceeded 1.5°C above pre-industrial levels in 2024, a critical threshold outlined in the Paris Agreement.[2] Climate change is no longer a distant financial concern[3], nor a 'Tragedy of the Horizon', a phrase coined by former Bank of England governor Mark Carney in a historic speech in 2015.[4] Physical risks, such as floods, storms, wildfires and heat, as well as transition risks arising from the shift to a low-carbon economy, are immediate threats affecting our lives and financial systems.

Investors are increasingly recognising these risks, which manifest as direct damage to vulnerable assets, value losses or stranded assets (relying heavily on fossil fuels). According to the research conducted by the EDHEC Infrastructure & Private Assets Institute, investors could face more than 50% portfolio value loss due to physical risks in the event of a "runaway climate change".[5]

For institutional investors, it is essential to understand the level of exposure and potential value loss when managing long-term portfolios, especially for vulnerable assets such as infrastructure. However, despite the need for systematic evaluation of these risks, a significant gap remains: Most climate risk solutions and ESG scores stop at flagging risks, without quantifying the financial materiality of climate risks.

Scientific Climate Ratings, an EDHEC venture, was established in June 2025 to address this gap by providing science-based, forward-looking ratings that translate climate risk exposure scores to concrete financial metrics, through 2035 and 2050. Born out of research from the EDHEC Climate Institute, the agency provides two rating outputs, the Climate Exposure Ratings (CER) and the Climate Risk Ratings (CRR). The ratings are adjusted to reflect company-specific adaptation strategies using ClimaTech, the world's largest knowledge base for infrastructure decarbonisation and resilience.[6]

This article aims to provide in-depth, scientific, and industry-specific insights into climate risks, highlighting the importance of assessing their financial impact for institutional investors. It explains why most climate data solutions and ESG scores fall short of providing reliable, actionable insights, and outlines how science-based climate risk assess-

1 NASA (2024). Evidence: Climate Change – Evidence. Available here: https://science.nasa.gov/climate-change/evidence

2 Copernicus (2024). Global Climate Highlights 2024. Available at: https://climate.copernicus.eu/global-climate-highlights-2024

3 Blanc-Brude, F. (2023). Climate risk: Not the day after tomorrow. Guest comment in Infrastructure Investor, November 2023. Available here: https://www.edhecinfraprivateassets.com/wp-content/uploads/2023/11/EDHECinfra_Physical-risk_Infra-Investor_Nov-2023.pdf

4 Cipollone, P. (2024). Europe's tragedy of the horizon: the green transition and the role of the ECB. Speech by Piero Cipollone, Member of the Executive Board of the ECB, Festival dell'Economia di Trento, 26 May 2024. Available here: https://www.ecb.europa.eu/press/key/date/2024/html/ecb.sp240526~ef011def12.en.html

5 Marcelo, D., F. Blanc-Brude, N. Amenc, A. Gupta, B. Jayles and N. Manocha (2023). It's Getting Physical. Available here: https://ssrn.com/abstract=4784951 or http://dx.doi.org/10.2139/ssrn.4784951

6 EDHEC Climate Institute (2025). Resilience & Transition Tech. Available here: https://climateinstitute.edhec.edu/resilience-transition-tech

ments can empower investors with decision-useful financial metrics, supporting resilient portfolios.

Climate risks explained: physical and transition

Climate risk, in general terms, refers to potential negative ('adverse') consequences that arise from the interaction with climate hazards, affecting human or ecological systems, according to the Intergovernmental Panel on Climate Change (IPCC).[7] Risks may arise not only from the potential impacts of climate change but also from human responses to it. These adverse consequences include the negative impacts on economic, social and cultural assets as well as investments, infrastructure, and services.

Climate-related risks manifest in two distinct forms according to widely adopted frameworks highlighted in the investment and finance literature: physical and transition risk.[8]

- ***Physical risk:*** It arises from direct, physical impacts of a changing climate, such as extreme weather events and long-term environmental changes.[9] They can be acute risks, such as floods, wildfires, storms and heat, or chronic risks such as rising sea levels, rising mean temperatures and changes in precipitation patterns.[10]

These risks cause immediate, observable damage to assets and operations. They can affect cash flows and create both operational and reputational risks. They can also increase supply chain costs and reduce demand, making them a direct concern for investors and issuers. In the example of the 2018 Camp Fire in California, wildfire liabilities have pushed a major utility to the brink of bankruptcy, illustrating the solvency risk that arises when hazards escalate.[11]

- ***Transition risk:*** It derives from the global shift towards a low-carbon economy, associated with actions to address mitigation and adaptation requirements. These risks are categorised into four main types by the Task Force on Climate-related Financial Disclosures (TCFD): policy, reputation, technology and market (see box 2).[12]

For instance, the shift towards net-zero carbon emissions in Germany under strict climate policies led to several 'stranded assets' (some coal-fired power plants and other 'fossil fuel' assets) due to changes in the market or regulations.[13]

Box 1. Example of 2024 Spain floods

The flash floods in Spain in 2024 offer a concrete example of physical risks in action, illustrating how localised, asset-level (micro) disruptions can scale into broader (macro-level) economic consequences.*

At the micro level, critical infrastructure such as roads, bridges, railways and power grids was severely damaged, leading to operational disruptions. At the macro level, the floods triggered insurance claims estimated at more than €3.5bn† and caused an estimated 0.2 percentage point drop in GDP for the fourth quarter of 2024, according to the Bank of Spain.‡

* World Meteorological Organisation (2024). Devastating Rainfall Hits Spain in Yet Another Flood-Related Disaster. News item, 31 October 2024. Available here: https://wmo.int/media/news/devastating-rainfall-hits-spain-yet-another-flood-related-disaster

† Spanish Floods Will Cost Insurers Over $3.8 Billion. Bloomberg, 8 November 2024. Available here: https://www.bloomberg.com/news/articles/2024-11-08/spanish-flood-insurance-claims-to-top-3-5-billion-moody-s-says

‡ Bank of Spain Estimates Floods Cost 0.2% of GDP in 4th Quarter. Insurance Journal, 20 November 2024. Available here: https://www.insurancejournal.com/news/international/2024/11/20/801861.htm

Box 2. Types of transition risks (TCFD)*

- **Policy (and legal) risk** stems from changes in policy regulations (eg, the European Green Deal, launched in 2019), which aim to promote adaptation and constrain actions that contribute to adverse impacts. For instance, implementing carbon-pricing mechanisms to target the reduction of greenhouse gas emissions, or measures to increase water efficiency for sustainable practices, can result in increased operational costs. These changes can reduce the long-term value of certain infrastructure assets, particularly those that rely on high-carbon activities, leading to 'stranded assets' risks.
- **Technology risk** arises from emerging technologies and innovations such as renewable energy and carbon capture and storage, which can change the competitive landscape and production/distribution costs of certain organisations, and disrupt parts of the existing business models.
- **Market risk** refers to shifts in supply and demand for certain products and services, considering both climate risks and opportunities into account.
- **Reputation risk** arises when public and stakeholder perceptions shift regarding an organisation's stance on the transition to a low-carbon economy.

* Task Force on Climate-related Financial Disclosures (2021).

7 Reisinger, A., M. Howden, C. Vera et al (2020). The Concept of Risk in the IPCC Sixth Assessment Report: A Summary of Cross-Working Group Discussions. Available here: https://www.ipcc.ch/site/assets/uploads/2021/01/The-concept-of-risk-in-the-IPCC-Sixth-Assessment-Report.pdf?utm_source=chatgpt.com

8 Reisinger, A., M. Howden, C. Vera et al (2020).

9 Physical Climate Risk Assessment: Practical Lessons for the Development of Climate Scenarios with Extreme Weather Events from Emerging Markets and Developing Economies. World Bank / NGFS. Available here: https://documents1.worldbank.org/curated/en/099657511082325958/pdf/IDU0004b1eec0d7f304e7c0967305183f75f92a2.pdf

10 Environmental Protection Agency (2025). Climate Risks and Opportunities Defined. Available here: https://www.epa.gov/climateleadership/climate-risks-and-opportunities-defined

11 Scientific Climate Ratings (2025). From Hazards to Losses: Our CSO on the Financial Cost of Physical Climate Risk. Available here: https://scientificratings.com/2025/08/04/from-physical-climate-hazards-to-financial-losses-qa-with-the-chief-scientific-officer-of-scientific-climate-ratings/

12 Task Force on Climate-related Financial Disclosures (2021). Climate-related Risks and Opportunities. Available here: https://www.fsb.org/2021/10/2021-status-report-task-force-on-climate-related-financial-disclosures/

13 Meinerding, C., Y. Schüler and P. Zhang (2024). Consequences of Transiting to a Climate-Neutral Economy (Research Brief No. 68 – August 2024). Deutsche Bundesbank. Available here: https://www.bundesbank.de/en/publications/research/research-brief/2024-68-transition-risk-765322

Box 3. How much will climate risk cost?

Climate-related physical and transition risks are impacting the stability of long-term investments and leading to substantial value losses. Institutional investors may face a potential loss of $10.7trn in portfolio value triggered by the materialisation of climate risks, according to a study by the World Bank Group.*

Research by the EDHEC Infrastructure & Private Assets Institute (EIPA) indicates that these risks are already material for several pension funds with significant exposure to infrastructure assets, which are inherently vulnerable to intensifying weather extremes such as floods. Investors could lose more than 50% of the value of their portfolio to such physical risks before 2050 in the event of runaway climate change, according to EIPA.†

* World Bank (2020). Pension Systems + Climate Risk: Measurement + Mitigation. Available here: https://documents1.worldbank.org/curated/en/143231601016562164/pdf/Pension-Systems-Plus-Climate-Risk-Measurement-Plus-Mitigation.pdf

† Amenc, N., F. Blanc-Brude, A. Gupta, B. Jayles, D. Marcelo and J. Orminski (2023). Highway to Hell: Climate Risks Will Cost Hundreds of Billions to Investors in Infrastructure Before 2050. Available here: https://ssrn.com/abstract=4779790 or http://dx.doi.org/10.2139/ssrn.4779790

Box 4. Case study: a Canadian pension fund*

The case study on the portfolio of a large Canadian pension fund conducted by the EDHEC Infrastructure & Private Assets Institute (EIPA) demonstrates how climate risks have materialised impacts on pension fund portfolios with infrastructure assets. This pension fund comprises 13 assets, two of which are exposed to severe flood events. The study indicated that potential damages to these two assets, if materialised, could cost $190m of the equity value in the aggregate of the pension fund's portfolio, although these assets weigh only 1% and 7% in the portfolio, respectively.

* Amenc, N., F. Blanc-Brude, A. Gupta, B. Jayles, D. Marcelo and J. Orminski (2023). Highway to Hell

Figure 1. Physical risk vs transition risk

Physical Risks

Impacts of extreme weather events (acute risk) and of long-term climate change (chronic risk)

e.g., wildfire, flood, storm, heat stress

Transition Risks

Impacts of transitioning to a low-carbon economy (new regulations, changing market dynamics etc)

e.g. sudden or poorly managed policy shift, affecting high-carbon sectors

Micro-level (Asset level)

Local, direct damage to infrastructure assets

Case study: Spain Floods, 2024

Key roads, train railways, bridges severely damaged; damages to electric grid and power outages; disruption of activity, reduction of productivity

Macro-level

Broader impact on economy, financial ripple effects, system-wide disruption

Case study: Spain Floods, 2024

€10B+ in business losses (especially in eastern Spain), €3.5B+ in insurance claims. Tourism decline, agricultural damage

Four Main Types (TCFD definition)

Policy

Arises from changes in regulations, carbon pricing mechanisms, mitigation related legal frameworks

Reputational

Tied to how the public and stakeholders perceive an organisation's position on the low-carbon transition

Technology

Emerging low-carbon technologies (like renewable energy) could disrupt existing business models, changing the competitive landscape

Market

Climate-related changes to market conditions are complex. One major risk - Shifts in supply and demand for key products and services

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Translating climate science into **actionable financial insight**

Source: TCFD, Bank of Spain.
Task Force on Climate-related Financial Disclosures (n.d.). Climate-Related Risks and Opportunities. Available here: https://www.tcfdhub.org/Downloads/pdfs/E06%20-%20Climate%20related%20risks%20and%20opportunities.pdf

Figure 1 highlights their key distinctions and real-world relevance.

The limitations of ESG scores and generic climate data providers

While managing the impacts of climate risks is becoming an essential consideration for the investment community[14], a significant gap remains in how these risks are assessed and priced. Most climate assessment solutions available are not designed to quantify the financial materiality of climate risk. Many climate data providers purely focus on exposure to climate risk, emissions and hazards, and cannot link generated information to asset values.

Environmental, social and governance (ESG) ratings and scores, which provide information about the sustainability performance of a company or a financial instrument, are widely used for assessing exposure to climate risks. These tools have played an important role for investors, who use ESG ratings as part of their sustainability strategies and comply with climate regulations and objectives.[15] However, there are ongoing discussions

14 https://www.iigcc.org/insights/adaptation-resilience-why-it-matters-how

15 https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/esg-rating-activities_en

about the transparency and objectivity of these ratings, whose methodologies and data collection methods vary widely.[16, 17] These scores also blend several different factors (governance, social and environmental), which can obscure the financial materiality.

In this context, investors predominantly rely on these available tools, which overlook the financial impacts of climate risks that could arise in the future, and lack the foundation of a robust financial modelling or a credible, scientifically grounded methodology.

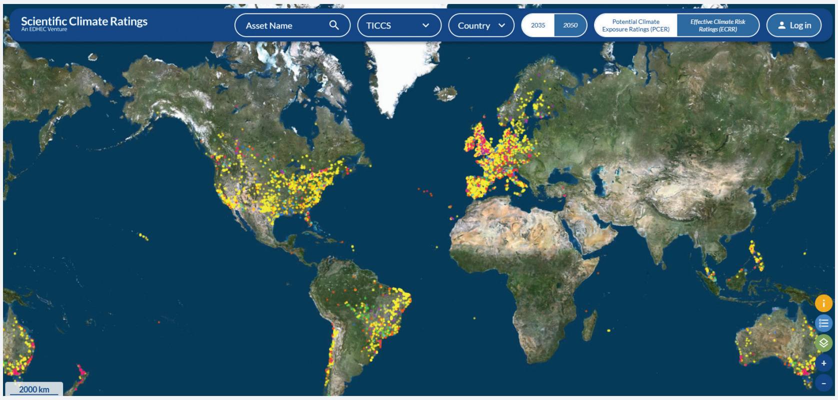
Scientific Climate Ratings: quantifying the financial materiality of climate risk

Scientific Climate Ratings, developed by the EDHEC Climate Institute, was established in June 2025 to address this gap, leveraging its unique position as the first ratings agency focused exclusively on the financial impact of climate risk. Our mission is to provide science-led, forward-looking climate risk ratings utilising transparent, granular and comprehensive data to support informed, actionable decisions for investors.

"While climate risks are accelerating, investors and issuers often treat these risks as non-financial or too vague, and financial decisions often lag behind. Also, existing ESG and climate assessment tools tend to be generic, qualitative or disconnected from financial consequences, and climate risk is usually diluted within broader environmental, social and governance scores. Our goal is to correct that by offering forward-looking, science-based ratings that translate into concrete financial metrics," explains Rémy Estran-Fraioli, CEO of Scientific Climate Ratings.[18]

Our data and methodology are grounded in peer-reviewed climate models, and globally recognised hazard projections, including those of the UN Intergovernmental Panel on Climate Change (IPCC) and Copernicus, the Earth observation component of the European Union's Space Programme.

Figure 2. Assets are given both a CER and a CRR rating



Launched as part of EDHEC Business School's 2024-28 strategic plan, Generations 2050, Scientific Climate Ratings is rooted in EDHEC's applied research ecosystem in finance and climate finance.[19] Our methodology was born out of decades of rigorous research conducted by the EDHEC Climate Institute, which addresses the financial implications of climate change. The agency also leverages foundational research from sister ventures, including Scientific Infra & Private Assets (SIPA), the EDHEC Infrastructure & Private Assets Research Institute (EIPA) and Scientific Portfolio.

Our standardised, transparent and comparable ratings set a new global benchmark for climate risk assessment, providing several competitive advantages:

● ***Dual approach to climate risk:*** We assess the financial materiality of both physical and transition risks for a more complete picture.

● ***Two ratings, one holistic view:*** The variability and complexity of climate impact require more than a single rating focusing on pure exposure. Our ratings encompass two outputs to deliver actionable financial insights (see figure 2 for a screenshot):

The Climate Exposure Rating (CER)
- Measures future climate exposure under a 'continuity' policy scenario, through 2035 and 2050. CER ratings are presented on a scale from A (low exposure) to G (high exposure), allowing for clear peer comparison.
- Computes Scope 1, 2 and 3 emissions to measure transition risk exposure accurately.
- Uses precise geolocation and asset boundaries to evaluate physical risk exposure.
- Accounts for adaptation efforts and their effectiveness, leveraging the comprehensive ClimaTech database.
- Translates the final exposure into a score and a rating designed for peer comparison.

The Climate Risk Rating (CRR)
- Quantifies dollar impact expressed as net asset value (NAV), by weighting a range of probabilities assigned to climate scenarios, including both physical and transition pathways, through 2035 and 2050 (rated from A to G).
- Calculates expected impact due to transition risk by analysing carbon costs and revenue growth.
- Computes expected impact due to physical risk through detailed geolocation and asset boundaries.
- Expressed as NAV impact, reflecting effects on cash flow and overall valuation.
- Accounts for adaptation efforts and their effectiveness by utilising the ClimaTech database.
- Translating the final exposure score into the CRR for peer comparison.

Figure 3 illustrates how our CER and CRR assess climate risk exposure and its financial impacts across diverse scenarios,

16 https://fmsb.com/wp-content/uploads/2022/07/ESG-Ratings_FMSB_Spotlight_FINAL_v2.pdf
17 https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/02/behind-esg-ratings_4591b8bb/3f055f0c-en.pdf
18 Pensions & Investments. Quantifying Climate Risk. Available here: https://www.pionline.com/partner-content/pi-quantifying-climate-risk/
19 EDHEC (2025). Scientific Climate Ratings (an EDHEC Venture). Available here: https://www.edhec.edu/en/research-and-faculty/centres-and-chairs/scientific-climate-ratings-edhec-venture

time horizons, and asset types. Together, the CER and CRR provide a holistic and science-led assessment, empowering investors and issuers to receive both a precise understanding of potential exposure and a direct, monetised assessment of future climate risks.[20]

- ***Assigns probabilities to climate scenarios:*** We evaluate risk across a full range of climate pathways, each with assigned probabilities. This allows our ratings to shift the focus from a theoretical approach based on isolated 'what if' scenarios to understand 'what is likely'. We assess risk across scenarios through two critical time zones: 2035 and 2050.[21]

- ***Precise geoshape extraction:*** Generic market solutions estimate physical risks using a generic radius approach. We assess climate risk using detailed geoshape extractions and high-resolution data, as precise spatial footprints are crucial for accurate risk assessments.

- ***Ratings adjusted to reflect adaptation and resilience strategies:*** We incorporate ClimaTech, the largest global knowledge base for infrastructure decarbonisation and resilience strategies, to re-evaluate and adjust our ratings. Backed by two years of applied research, ClimaTech offers a science-based matrix that maps strategies by infrastructure type and evaluates their levels of effectiveness, enabling evidence-based decisions and enhancing resilience.[22]

20 Scientific Climate Ratings (2025). Two Ratings, One Holistic View: Quantifying Financial Impact of Climate Risk with PCER and ECRR. Available here: https://scientificratings.com/2025/07/09/two-ratings-one-holistic-view-quantifying-financial-impact-of-climate-risk-with-pcer-and-ecrr/

21 How to Assign Probabilities to Climate Scenarios (2025). Riccardo Rebonato, Lionel Melin, Fangyuan Zhang – EDHEC Climate Institute White paper available at https://climateinstitute.edhec.edu/publications/how-assign-probabilities-climate-scenarios

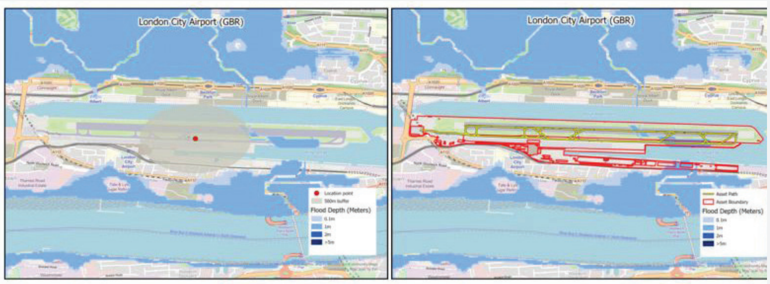
22 EDHEC Climate Institute (2025). ClimaTech Project: The Business Case for Implementing Efficient Climate Risk-Reduction Strategies. Available here: https://climateinstitute.edhec.edu/climatech-project

Figure 3. Two ratings, one holistic view: quantifying financial impact of climate risk with CER and CRR

	CER	CRR
	The Climate Exposure Rating evaluates the ***exposure*** to climate risks	The Climate Risk Rating quantifies the ***impact*** of climate risks on net asset value (NAV)
Output	→ Comparable risk rating, adjusted for validated decarbonisation and resilience measures → Global and peer-relative ranking and benchmark	+ Quantified impact on NAV
Transition risk	→ Carbon emissions for Scope 1, 2 and 3 → Carbon intensity per revenue → Carbon tax metric → Transition exposure score	+ Carbon cost-driven impact of policy and technology risks on NAV + Revenue change-driven impact of market preferences risk on NAV
Physical risk	→ Expected damages from floods, storms, wildfires and heat and respective exposure scores → Physical exposure score	+ Impact of each hazard (and all hazards combined) on NAV
Scenarios & time horizons	→ Using a 'continuity scenario' as the most likely pathway based on today's global policies and trends → Two available time horizons: from today until 2035 and 2050	+ NGFS-derived climate scenarios + One expected climate scenario based on assigned probabilities to all major climate scenarios
Decarbonisation & resilience	→ If validated, implemented decarbonisation and resilience measures are used to adjust the CER	+ If, validated, current and future decarbonisation and resilience strategies are used to compute avoided NAV loss and adjust the CRR

Source: Scientific Climate Ratings

Figure 4. Generic buffer approaches vs detailed asset boundary: the example of London City Airport



With a generic buffer of 500 metres
Average one in 100y flood depth: 0.02m
Physical damage at risk: 1.15%
Physical damage at risk: $30.82m

With detailed asset boundary
Average one in 100y flood depth: 0.22m
Physical damage at risk: 14%
Physical damage at risk: $357.2m

Climate risk is granular and asset specific. Two infrastructure assets can face vastly different exposures due to minor geographic differences or other factors such as ground elevation or proximity to water. Precise spatial granularity is essential for accurate risk assessments. At Scientific Climate Ratings, we reflect the true footprint of each asset, using detailed asset boundaries.

In the example of London City Airport, the generic radius approach (demonstrated on the left) underestimates flood depth and damage by a factor of 10 (calculating it at $30.82m), compared to our method (on the right) using detailed asset boundaries, calculating $357.2m in potential damage.

ClimaTech: A research-driven knowledge base on efficient climate risk reduction strategies

Climate risk is not limited to exposure for long-term investments, due to its potential to jeopardise the resilience and value of infrastructure assets.

It is essential to incorporate resilience and decarbonisation strategies for accurate and decision-useful climate risk assessments. However, traditional assessments do not account for the measures that have been taken or will be implemented to manage both physical and transition risks.

The ClimaTech project, the largest global repository of decarbonisation and physical risk reduction strategies, provides evidence-based, comparable insights covering 103 strategies, 100+ infrastructure asset subclasses and eight sectors, resulting in the assessment of 1,800+ strategies.

Scientific Climate Ratings leverages ClimaTech to adjust its ratings for company-specific strategies, provide financial insights on the true, current state of the asset value, and facilitate informed investment decisions.

Climate change poses significant risks for long-term investments, as physical risks arising from extreme weather events and transition risks associated with a shift to a low-carbon economy have material impacts on financial stability and asset valuation. It is essential to assess and quantify these risks with evidence-based tools and incorporate adaptation measures to navigate their financial consequences, while complying with climate reporting requirements and regulations.

While current climate risk assessment models provide valuable tools to support these efforts, a significant gap remains. Most traditional analyses focus purely on exposure scores without quantifying the financial materiality of such risks and do not provide standardised, comparable and sector-specific tools that account for not only the vulnerability of assets, but also the decarbonisation strategies and physical risk mitigation plans. They also do not assess or reflect the usefulness or effectiveness of these strategies and their real-life implementation.

The ClimaTech project was developed by the EDHEC Climate Institute to address this gap, and provide a structured, comprehensive framework that compiles company-specific strategies across 101 infrastructure types, resulting in more than 1,800 decarbonisation and resilience strategy assessments.

Scientific Climate Ratings leverages this framework to adjust its climate risk ratings for strategies that are or will be implemented, by re-evaluating exposure and its financial impact. As a result, the ratings extend beyond theoretical assumptions to reflect the true state of the asset, generate accurate financial insights, and enable better-informed investment decisions.

Accounting for climate mitigation strategies and technologies

The pressure arising from accelerating climate risks is beyond theoretical or ethical for institutional investors or limited to long-term financial consequences. Research by the EDHEC Infrastructure & Private Assets Institute (EIPA) indicates that these risks are already material for several pension funds with significant exposure to infrastructure assets, which are highly vulnerable to intensifying weather extremes such as floods.[1] According to EDHEC infraMetrics data, up to 54% of global infrastructure value may be at risk from such physical risks in the 'hot house' scenario.[2,3]

Despite the increasing recognition of these risks and their impact on asset values, most investors lack comprehensive, asset-level climate risk assessments based on sector-specific analysis, or guidance on how to mitigate climate

1 Amenc, N., F. Blanc-Brude, A. Gupta, B. Jayles, N. Manocha and D. Marcelo (2023) It's getting physical. Available at: edhec.infrastructure.institute/wp-content/uploads/2023/07/p1102.pdf Accessed on 21 December 2024.

2 Amenc, N., F. Blanc-Brude, A. Gupta, B. Jayles, N. Manocha and D. Marcelo (2023).

3 Hot house world (HHW) scenarios assume that some climate policies are implemented in some jurisdictions, but efforts are insufficient to halt significant global warming. See https://climateinstitute.edhec.edu/news/climate-scenarios-financial-risk-analysis

vulnerabilities. Moreover, there are no comprehensive tools that link infrastructure type and exposure to the most effective strategies for reducing risk. As a result, decision-makers cannot access the detailed, asset-specific insights they need to take meaningful action.

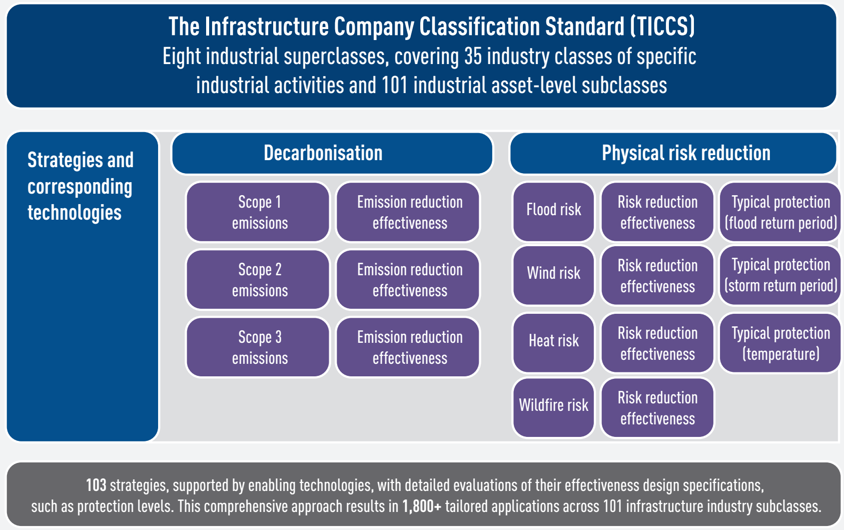
There is also a striking lack of reliable data and information from companies to assess whether they are effectively managing these risks. A recent investigation by the EDHEC Climate Institute into the sustainability disclosures of up to 50 major companies with infrastructure assets showed that fewer than a third disclosed asset-specific GHG emissions data or provided actionable plans on how to meet emissions reduction targets. Even fewer evaluated the vulnerability of their assets or reported on their climate resilience.[4]

ClimaTech: a comprehensive framework identifying most impactful risk-reduction strategies

Backed by two years of applied research and nine peer-reviewed publications, the ClimaTech project aims to address these limitations by establishing a comprehensive and evidence-based framework. ClimaTech is the largest global repository of decarbonisation and resilience measures tailored for infrastructure. Its database includes a listing of the most effective strategies and technologies, accompanied by expert analysis and quantified indicators:

- 103 strategies covering both transition (Scopes 1, 2 and 3) and physical climate risks (including floods, storms, heat and wildfires), linking them to 101 subclasses.
- Classifies infrastructure assets into eight industrial superclasses, comprising various sectors, including conventional power, transport, networked utilities, data, renewables, water infrastructure, environmental services and social infrastructure.
- Assesses each strategy for its relevance, effectiveness, key enabling technologies and protection levels offered by physical risk reduction strategies in terms of return periods, resulting in over 1,800 evaluated applications.

Figure 1. The ClimaTech project overview*



Source: ClimaTech, the EDHEC Climate Institute

* Reducing Infrastructure Climate Risk Through Technology Measures: An Overview. EDHEC Climate Institute. Available here: https://climateinstitute.edhec.edu/system/files/publications/ECI_Executive_Brief_The%20ClimaTech_Project_0.pdf

ClimaTech leverages this extensive coverage and analysis to facilitate the integration of engineering and design strategies, by also offering a critical view of their effectiveness. These processes are supported by a comprehensive and comparable database that draws insights from more than 200 academic papers, technical documents and government reports.

ClimaTech is built on a scientifically rigorous, top-down methodology that translates climate research into actionable insights. It begins with a comprehensive review of the scientific and technical literature to identify the most impactful current and emerging decarbonisation and resilience strategies, along with the enabling technologies required for their implementation.

For decarbonisation, the framework identifies effective strategies targeting Scope 1, 2 and 3 emissions, evaluates the technologies that enable them and estimates their potential to reduce emissions in practical, sector-specific contexts. For resilience, it assesses strategies designed to reduce physical climate risks, and quantifies their typical level of protection, expressed through metrics such as return periods or performance thresholds relevant to each hazard type.

To ensure scientific robustness and relevance to investors, the research outputs undergo validation by a review committee of experts from academia, infrastructure investing, sovereign wealth funds, consulting, regulation and the private sector.

Infrastructure types are categorised according to the Infrastructure Company Classification Standard (TICCS®)[5], a widely recognised taxonomy that enables consistent analysis of infrastructure assets across sectors and geographies.

Box 1. How TICCS organises infrastructure assets*

- *Superclass:* Eight broad sector categories (eg, IC70 Renewable Power)
- *Class:* 35 sector-specific divisions (eg, IC7010 Wind Power Generation)
- *Subclass:* 101 asset-specific definitions (eg, IC701010 On-Shore Wind, IC701020 Off-Shore Wind)

* Blanc-Brude, F., T. Whittaker and J. Wilde (2018).

4 Arnold, R., C. Hubert and N. Manocha (2025). Reducing Infrastructure Climate Risk Through Technology Measures: An Overview. EDHEC Climate Institute. Available here: https://climateinstitute.edhec.edu/publications/reducing-infrastructure-climate-risk-through-technology-measures-overview

5 Blanc-Brude, F., T. Whittaker and J. Wilde (2018). The Infrastructure Company Classification Standard (TICCS). EDHEC Infra & Private Assets. Available here: https://www.edhecinfraprivateassets.com/wp-content/uploads/2018/10/TICCS_2018_light.pdf

Rating climate risk beyond exposure: reflecting adaptation for informed investment decisions

Scientific Climate Ratings draws on this structured, evidence-based framework, empowering stakeholders to understand asset-specific climate risks in a systematic and actionable way, thereby bridging the gap between climate science and financial insights.

Our ratings utilise the provided indicators of ClimaTech on the effectiveness of strategies to re-evaluate exposure to climate risks and their financial impact, and to adjust its two complementary ratings: the Climate Exposure Rating (CER) and the Climate Risk Rating (CRR).

By using ClimaTech as a foundation, the first step is to conduct a consistent and science-based assessment of climate risk across asset types. What makes our approach more reflective of reality is that we do not stop there. Our ratings are adjusted to reflect the strategies that have actually been implemented or are going to be implemented. This means that an asset is not judged purely on exposure, but also on the measures taken to mitigate that exposure.

The adjustment of ratings for these strategies is critical because most infrastructure assets are already built and functioning. Simply identifying the risk is not sufficient; what matters is whether the asset has taken credible steps to reduce it, and to what extent. By accounting for this, our ratings go beyond theoretical vulnerability and aim to reflect the true, current state of the asset, enabling more meaningful comparisons and better-informed investment decisions.

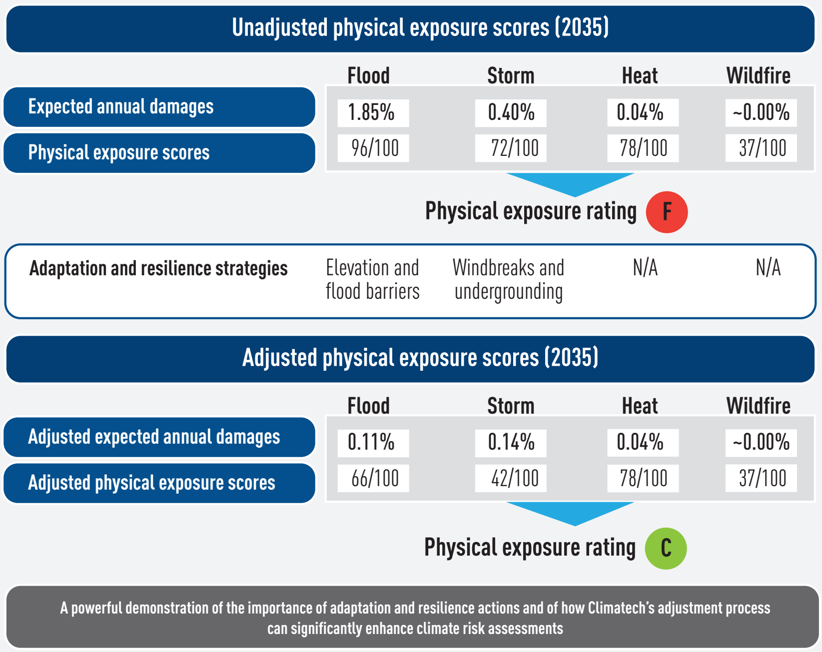
By bridging the gap between climate science and financial insights and making its database available as an open-access platform, ClimaTech empowers investors with the tools for more transparent assessments, supporting resilient infrastructure portfolios.

In a world where climate change presents material risks for infrastructure, traditional and generic analyses mostly lack the focus and data needed to assess localised vulnerabilities. The ClimaTech project offers a transformative solution by compiling over 1,800 decarbonisation and resilience strategy assessments across 101 infrastructure types. enabling accurate climate risk assessments and actionable knowledge.

Scientific Climate Ratings leverages this powerful tool to adjust its climate risk ratings and to reflect the real-world impact of implemented strategies. This innovative approach ensures that an asset is judged not just on its vulnerability, but on the credible steps taken to reduce it. As a result, our ratings empower investors with accurate, decision-useful insights to build more resilient portfolios.

Figure 2. Case study: Unadjusted and adjusted ratings for an Australian airport*

Ratings adjustments – highlighting the importance of resilience measures



Source: ClimaTech

In this case study, focusing on a large Australian airport assessed in the 2035 time horizon, the initial modelling of its flood risk resulted in a very high physical exposure score.

The ClimaTech framework allowed Scientific Climate Ratings to adjust the score by incorporating information disclosed in public sustainability reports regarding adaptation and resilience strategies, including elevation of some critical systems and the installation of flood barriers. The framework allowed the real-world impact of these interventions to be evaluated.

Flood risk dropped from 96/100 to 66/100, and the asset's overall physical exposure rating improved from F to C, illustrating the importance of incorporating the effectiveness of adaptation strategies to ensure transparent, evidence-based climate risk assessments.

* EDHEC Climate Institute (2025). From Greenwashing to Measurable Impact: Highlights from the ClimaTech Webinar. Available here: https://climateinstitute.edhec.edu/news/greenwashing-measurable-impact-highlights-climatech-webinar

Box 2. An open-access platform for broader impact

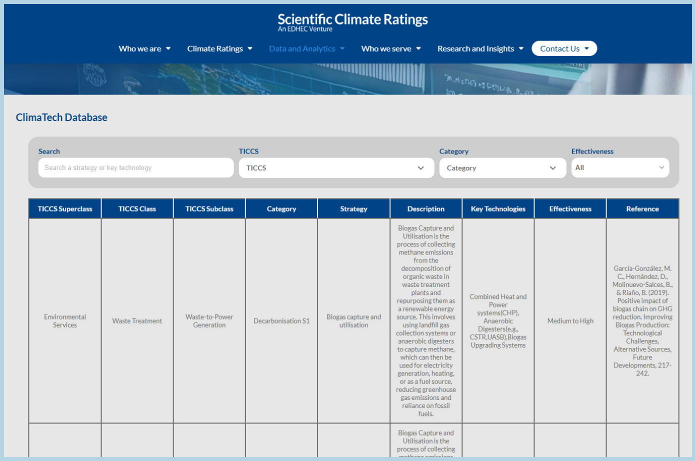
ClimaTech has been made publicly available as an open-access tool, in alignment with EDHEC's mission of conducting research for impact. An online searchable database was launched on the websites of the EDHEC Climate Institute* and Scientific Climate Ratings.†

Users can explore sector-specific strategies, apply geographic filters, and access accompanying technical documentation. Advanced use cases can be supported upon request.

* EDHEC Climate Institute (2025). ClimaTech Project: The Business Case for Implementing Efficient Climate Risk-Reduction Strategies. Available here: https://climateinstitute.edhec.edu/climatech-project

† https://scientificratings.com/data-and-analytics/#climatech

Source: Scientific Climate Ratings



The hidden financial risks beyond the balance sheet: Scope 3 or value chain emissions

Scope 3 or indirect emissions occurring in a value chain typically cover the largest share of businesses' carbon footprints, but their financial risks are widely overlooked and underreported.

Traditional approaches typically focus on Scope 1 and 2 emissions, which hinders assessing transition risks accurately and effectively.

Accounting for Scope 3 emissions helps investors to understand the high-emitting activities within their portfolio and assess exposure to transition risks.

Scientific Climate Ratings utilises a robust approach to create consistent and comparable Scope 3 estimates, enabling investors to quantify the financial impacts of these risks and take action.

Scope 3 emissions, known as value chain emissions, are the largest contributor to greenhouse gas (GHG) emissions.[1] These indirect emissions occur in a company's entire value chain through resources that are not owned or controlled by the company, and have a significant impact on climate change, businesses and portfolios. Value chain emissions are key to assessing transition risks, associated with a shift to a low-carbon economy amid climate change.[2]

Despite their substantial role, Scope 3 emissions are widely overlooked, according to the Carbon Disclosure Project (CDP).[3] Most large companies mainly account and report on the emissions from their operations, including Scope 1 (direct GHG emissions from controlled or owned sources) and Scope 2 (indirect emissions from the generation of purchased energy).[4] The progress on Scope 3 is still falling short despite increasing recognition of these emissions.[5] Failure to address them can result in incomplete transition risk assessments, reputational damage, customer loss, regulatory penalties, and reduced access to capital.[6] Accounting for Scope 3 emissions, on the other hand, can help investors to understand the hidden financial risks related to high-emitting activities in their portfolio.[7]

In this article, we explain Scope 3 emissions encompassing both upstream and downstream activities, the importance and challenges around these emissions, and how our ratings incorporate them to assess exposure to transition risks and their financial impacts.

Assessing transition risk beyond Scope 1 and 2 emissions

Transition risks are one of the two major categories of climate risks, alongside physical risks, which refer to physical impacts of climate change such as wildfires and floods. The Task Force on Climate-related Financial Disclosures (TCFD) describes transition risks as risks related to the transition to a lower-carbon

1 Greenhouse Gas Protocol (2022). Scope 3 Detailed FAQ. Available here: https://ghgprotocol.org/sites/default/files/2022-12/FAQ.pdf

2 Ducoulombier, F. (2024). Scope for Divergence: The Status of Value Chain Emissions Accounting, Reporting and Estimation and Implications for Investors and Standard Setters. EDHEC Climate Institute. Available here: https://climateinstitute.edhec.edu/news/scope-divergence-status-value-chain-emissions-accounting-reporting-and-estimation-and

3 CDP (2024). Scope 3 Upstream: Big Challenges, Simple Remedies. Available here: https://cdn.cdp.net/cdp-production/cms/reports/documents/000/007/834/original/Scope-3-Upstream-Report.pdf

4 Greenhouse Gas Protocol (2022). FAQ: Frequently Asked Questions – GHG Protocol Standards. Available here: https://ghgprotocol.org/sites/default/files/2022-12/FAQ.pdf

5 CDP (2024). Scope 3 Upstream: Big Challenges, Simple Remedies.

6 Amenc, N., F. Blanc-Brude, B. Jayles, A. Gupta, D. Marcelo and J. Orminski (2023). Highway to Hell: Climate Risks Will Cost Hundreds of Billions to Investors in Infrastructure Before 2050. EDHEC Infra & Private Assets. Available here: https://www.edhecinfraprivateassets.com/wp-content/uploads/2023/12/Highway-to-hell.pdf

7 United Nations Environment Programme Finance Initiative (UNEP FI) (2024). NZAOA Scope-3 Discussion Paper. Available here: https://www.unepfi.org/wordpress/wp-content/uploads/2024/12/NZAOA-Scope-3-discussion-paper_final.pdf

economy.[8] According to TCFD, this shift may entail extensive policy, legal, technology and market changes aimed at addressing mitigation and adaptation requirements.[9]

In the context of investments, transition risks entail significant impacts on financial assets[10], such as value revenue loss (due to lower demand). Some assets risk losing almost all value if they fail to align with the transition.[11]

These risks have direct or indirect links to carbon and other greenhouse gas (GHG) emissions, and they are central to the major regulations developed by international bodies such as the European Sustainability Reporting Standards (ESRS) and the International Sustainability Standards Board (ISSB).[12]

The GHG Protocol (a standardised framework for measuring and managing emissions) defines them under three scopes covering direct and indirect emissions: Scope 1, Scope 2 and Scope 3 (see box 2).[13]

Most transition risk assessments traditionally focus on direct emissions and carbon tax[14] implications.[15] Central banks and the Network for Greening the Financial System (NGFS) utilise carbon taxes to proxy transition risk in their climate scenarios. That is why estimating carbon emissions reliably is important.[16]

While companies and third-party organisations have made progress in measuring these emissions, they mainly focus on Scope 1 (the directly owned emissions by company) and Scope 2 emissions (embodied in the energy they purchase), overlooking Scope 3 emissions also known as value chain emissions.[17]

In the following section, we explain Scope 3, its significant role for assessing transition risks effectively, and the challenges around accounting for their impact.

Scope 3 emissions at a glance: upstream and downstream

Scope 3 emissions refer to indirect emissions from sources that are not directly owned or controlled by the company, occurring the entire value chain (see box 1). The GHG Protocol estimates that Scope 3 accounts for 75% of total (Scope 1, 2 and 3) emissions of companies on average[18] and can also represent over 90% of a company's total emissions.[19] These indirect emissions encompass eight upstream and seven downstream subcat-

Box 1. Transition risks: a definition for investors

The EDHEC Climate Institute defines "(climate) transition risk" as a situation in which climate policies and regulations are introduced late and abruptly, or when technological shocks occur, negatively affecting the performance of fossil fuel and high-carbon firms, and thus the value of their financial contracts.* In this context, investors cannot fully anticipate the potential shocks to performance and assets. Losses from stranded assets, which are exposed to fossil fuels, could then cause implications for financial stability (eg, revenue loss, lower profits, need for higher returns to compensate investors). Therefore, assessing potential financial losses that investors may face is essential to mitigate these risks.

Transition risks are particularly important for infrastructure projects. According to a study by EDHEC Infra & Private Assets, a disorderly scenario could result in substantial value losses for infrastructure investments, amounting to nearly $600bn by 2050.†

* EDHEC Climate Institute (2025). Glossary. Available here: https://climateinstitute.edhec.edu/glossary

† Amenc, N., F. Blanc-Brude, B. Jayles, A. Gupta, D. Marcelo and J. Orminski (2023). Highway to Hell: Climate Risks Will Cost Hundreds of Billions to Investors in Infrastructure Before 2050. EDHEC Infra & Private Assets. Available here: https://www.edhecinfraprivateassets.com/wp-content/uploads/2023/12/Highway-to-hell.pdf

Box 2. Scope 1, 2 and 3 emissions*

Scope 1 emissions: Direct GHG emissions occurring from sources that are owned or controlled by the company. (For example, emissions from chemical production in owned or controlled process equipment.)

Scope 2 emissions: Indirect GHG emissions from the generation of purchased energy consumed by the company. (For example, emissions that happen at the facility that generates the steam, electricity, heat or cooling.)

Scope 3 emissions: Other indirect GHG emissions occurring from sources not owned or controlled by the company. They are also referred to as value chain emissions. (For example, the extraction and production of purchased materials or the transportation of purchased fuels.) They account for the majority of the total corporate carbon footprint (CCF) of many organisations.

* Greenhouse Gas Protocol (2004).

8 Task Force on Climate-related Financial Disclosures (n.d.). Climate-Related Risks and Opportunities. Available here: https://www.tcfdhub.org/Downloads/pdfs/E06%20-%20Climate%20related%20risks%20and%20opportunities.pdf

9 Amenc et al (2023). Highway to Hell.

10 Scientific Climate Ratings (2025). Technical Documentation: Scope 3 Carbon Intensity Estimations. Available here: https://scientificratings.com/data-and-analytics/

11 Amenc et al (2023). Highway to Hell.

12 Blanc-Brude, F., F. Nugier and D. Marcelo (2022). Carbon Footprints and Financial Performance of Transport Infrastructures: the Case of Airports — Transition Risk Assessment Using Traffic and Geospatial Data. Available at SSRN: https://ssrn.com/abstract=4695288 or http://dx.doi.org/10.2139/ssrn.4695288

13 Greenhouse Gas Protocol (2004). The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition). Available here: https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf

14 Carbon taxes are imposed on the carbon content of fossil fuels, in order to encourage businesses to reduce carbon emissions, as a policy instrument.

15 EDHEC Climate Institute (2025). Transition Risks. Available here: https://climateinstitute.edhec.edu/transition-risks

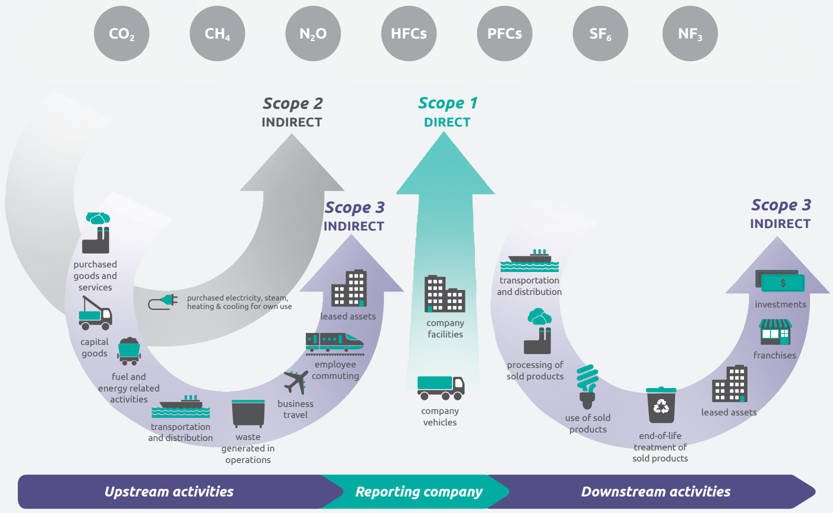
16 Amenc, N., F. Blanc-Brude, B. Jayles, A. Gupta, D. Marcelo and J. Orminski (2023). Highway to Hell: Climate Risks Will Cost Hundreds of Billions to Investors in Infrastructure Before 2050. EDHEC Infra & Private Assets. Available here: https://www.edhecinfraprivateassets.com/wp-content/uploads/2023/12/Highway-to-hell.pdf

17 Amenc et al (2023). Highway to Hell.

18 CDP (2022). Relevance of Scope 3 Categories by Sector: Technical Note. Available here: https://cdn.cdp.net/cdp-production/cms/guidance_docs/pdfs/000/003/504/original/CDP-technical-note-scope-3-relevance-by-sector.pdf

19 Greenhouse Gas Protocol (2022). Scope 3 Detailed FAQ. Available here: https://ghgprotocol.org/sites/default/files/2022-12/Scope%203%20Detailed%20FAQ.pdf

Figure 1. GHG Protocol's scopes and emissions across value chains*



* Greenhouse Gas Protocol & Carbon Trust (2013). Technical Guidance for Calculating Scope 3 Emissions: Supplement to the Corporate Value Chain (Scope 3) Accounting & Reporting Standard. Available here: https://ghgprotocol.org/sites/default/files/standards/Scope3_Calculation_Guidance_0.pdf
Source: GHG Protocol

Figure 2. Upstream and downstream subcategories*

Upstream or downstream	*Scope 3 category*
Upstream scope 3 emissions	**1.** Purchased goods and services **2.** Capital goods **3.** Fuel- and energy-related activities (not included in scope 1 or scope 2) **4.** Upstream transportation and distribution **5.** Waste generated in operations **6.** Business travel **7.** Employee commuting **8.** Upstream leased assets
Downstream scope 3 emissions	**9.** Downstream transportation and distribution **10.** Processing of sold products **11.** Use of sold products **12.** End-of-life treatment of sold products **13.** Downstream leased assets **14.** Franchises **15.** Investments

* Greenhouse Gas Protocol Team (2013). Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Available here: https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporing-Standard_041613_2.pdf
Source: GHG Protocol

egories, as defined by the GHG (see figure 1).

Upstream emissions include activities that occur before a product reaches the company's operations (eg, raw material extraction, supplier production processes and the transportation of inputs). Downstream emissions occur after a product leaves the company, and include emissions from the distribution, use, and disposal of the product or service.[20]

Downstream activities, which reflect the operational phase of a product that end-users interact with, tend to be more sensitive to changes in regulations, market demands, and consumer behaviour.[21] They often represent a larger share of a product's total lifecycle emissions, which serves as a more significant driver for reputational and financial risks.[22] Estimating downstream emissions can facilitate the assessment of transition risks and mitigate risks associated with product performance and market competitiveness in a transitioning economy.[23]

Encompassing both upstream and downstream activities, value chain emissions are material to navigating financial risks linked to climate change. Investors need to consider them to understand the climate risks associated with portfolios, accurately assess transition risks, and incorporate them into their investment decision-making.[24]

However, although they constitute the majority of total corporate emissions, most traditional assessments of transition risks do not consider the impact of Scope 3 emissions and other triggers of transition risk beyond carbon taxation.[25] This approach can be misleading for several reasons and could lead to incomplete climate risk assessments.[26]

20 Scientific Climate Ratings (2025). Technical Documentation: Scope 3 Carbon Intensity Estimations. Available here: https://scientificratings.com/data-and-analytics/

21 Scientific Climate Ratings (2025). Technical Documentation: Scope 3 Carbon Intensity Estimations. Available here: https://scientificratings.com/data-and-analytics/

22 Ducoulombier. F. (2024, March). Scope for divergence: A review of the importance of value chain emissions, the state of disclosure, estimation and modelling issues, and recommendations for companies, investors, and standard setters. EDHEC-Risk Climate Impact Institute. Available here: https://climateimpact.edhec.edu/sites/ercii/files/pdf/ercii_pc_scope_for_divergence_march24.pdf

23 Scientific Climate Ratings (2025). Technical Documentation: Scope 3 Carbon Intensity Estimations. Available here: https://scientificratings.com/data-and-analytics/

24 IIGCC (2024). 2024 Scope 3 Supplementary Guidance. Available here: https://www.iigcc.org/resources/iigcc-supplementary-guidance-scope-3-emissions-of-investments

25 CDP (2024). Scope 3 Upstream: Big Challenges, Simple Remedies. Available here: https://cdn.cdp.net/cdp-production/cms/reports/documents/000/007/834/original/Scope-3-Upstream-Report.pdf

Firstly, since it makes up the largest part of the overall picture, overlooking Scope 3 would mean ignoring the biggest segment of a company's carbon footprint and its related transition risks. Transition risks associated with Scope 3 emissions can have a significant impact on companies' revenues, especially because these emissions are often higher than those of Scope 1 and 2.[27]

Secondly, these emissions play an essential role in understanding often-underestimated risk factors in relation to assessing companies' exposure to carbon-intensive activities within their value chains. While the transition risks stemming from Scope 1 and 2 emissions are primarily proxied directly through a carbon tax, Scope 3 emissions have a broader impact as they are closely linked to consumer behaviour and policy regulations.[28] For instance, while the electrification of port operations (ships are required to use onshore electricity instead of fuel) may increase Scope 2 emissions, it reduces the overall carbon output, particularly in Scope 3.

Higher Scope 3 emissions can lead to increased future transition risks, with significant impacts to asset values and operating costs if they are not addressed.[29] Measuring and managing value chain emissions can reduce the financial impacts of climate risks. Therefore, incorporating Scope 3 along with Scope 1 and 2 is crucial for assessing transition risks related to climate change.

Accounting for Scope 3 emissions: how our ratings assess transition risks

Accurately assessing all scopes of carbon emissions is essential for evaluating climate-related transition risks and informing decision-making for investors. It is essential not to limit estimations to Scope 1 emissions and Scope 2 emissions, which commonly represent the tip of the iceberg. Scope 3 or value chain emissions play a significant role in measuring carbon emission intensities to estimate transition risks.

To effectively quantify transition risk, Scientific Climate Ratings leverages the methodology and advanced financial models developed by the EDHEC Climate Institute, which go beyond conventional climate risk assessments. We evaluate exposure to transition risks and assess their financial impacts by considering all direct and indirect carbon emissions of companies.[30]

Box 3. Complexities and limitations around Scope 3

While climate reporting is rapidly evolving, accounting for indirect value chain emissions or Scope 3 has some limitations. Reporting Scope 3 emissions remains largely voluntary, although reporting Scope 1 and 2 emissions is mandatory. The absence of accessible, quality primary data, the lack of methodologies, reliance on industry average data, or potential double-counting of emissions between reporting entities can hinder the generation of reliable, company-level information.*,†

Moreover, the varied and complex nature of value chains across assets, sectors and business models can lead to more limitations.‡ As a result, most carbon emissions estimates use Scope 1 and Scope 2 as proxies of carbon footprint.‡‡

* Ducoulombier, F. (2024). Scope for Divergence: The Status of Value Chain Emissions Accounting, Reporting and Estimation and Implications for Investors and Standard Setters. EDHEC Climate Institute. Available here: https://climateinstitute.edhec.edu/news/scope-divergence-status-value-chain-emissions-accounting-reporting-and-estimation-and

† Amenc et al (2023). Highway to Hell.

‡ IIGCC (2024). 2024 Scope 3 Supplementary Guidance. Available here: https://www.iigcc.org/resources/iigcc-supplementary-guidance-scope-3-emissions-of-investments

‡‡ Amenc et al (2023). Highway to Hell.

Our assessments are based on carbon intensities (the ratio of carbon emissions per total assets)[31] and carbon tax (levied on the carbon content of fossil fuels)[32], which aims to reduce the carbon footprint. Carbon tax represents a significant risk, particularly for companies that heavily emit carbon. We define these risks as "transition risks" and use carbon emissions (Scope 1, 2 and 3) as key metrics to assess these risks.[33] Our methodology also uses asset-specific decarbonisation and adaptation strategies to re-evaluate and adjust the various components of our ratings, using the database of ClimaTech.[34]

Our ratings incorporate both upstream and downstream as key inputs for Scope 3 evaluations.[35] To establish estimates of Scope 3 carbon intensities for various infrastructure sectors, we employ a diverse range of data sources, including corporate disclosures, sector-level and macroeconomic datasets, and infrastructure-specific references. Our models are validated against emission estimates from different international organisations such as the World Bank, WRI and EIA and our metrics are aligned with recognised global

26 Schrapffer, A. (2025). Introducing EDHEC Climate Institute: a new interdisciplinary hub for climate research and action. EDHEC Vox. Available here: https://www.edhec.edu/en/research-and-faculty/edhec-vox/introducing-edhec-climate-institute-new-interdisciplinary-hub-climate-research-action-schrapffer

27 Amenc, N., F. Blanc-Brude, B. Jayles, A. Gupta, D. Marcelo and J. Orminski (2023). Highway to Hell: Climate Risks Will Cost Hundreds of Billions to Investors in Infrastructure Before 2050. EDHEC Infra & Private Assets. Available here: https://www.edhecinfraprivateassets.com/wp-content/uploads/2023/12/Highway-to-hell.pdf

28 Schrapffer, A. (2025). Introducing EDHEC Climate Institute: a new interdisciplinary hub for climate research and action. EDHEC Vox. Available here: https://www.edhec.edu/en/research-and-faculty/edhec-vox/introducing-edhec-climate-institute-new-interdisciplinary-hub-climate-research-action-schrapffer

29 Amenc et al (2023). Highway to Hell.

30 Scientific Climate Ratings (2025). Technical Documentation: Scope 3 Carbon Intensity Estimations. Available here: https://scientificratings.com/data-and-analytics/

31 Amenc et al (2023). Highway to Hell.

32 https://taxfoundation.org/taxedu/glossary/carbon-tax/

33 https://scientificratings.com/data-and-analytics/#transition-risk-data

34 Scientific Climate Ratings (2025). Technical Documentation: Scope 3 Carbon Intensity Estimations. Available here: https://scientificratings.com/data-and-analytics/

35 Methodology note: We focus on the operational upstream and downstream activities of infrastructure assets, and exclude emissions from the construction and disposal phases. By restricting our analysis to the operational stage, we can more clearly link transition risks to the everyday usage of an asset's products and services.

standards, like the GHG Protocol and the Partnership for Carbon Accounting Financials (PCAF).

This approach supports our two outputs, the Climate Exposure Ratings (CER) and the Climate Risk Ratings (CRR). The CER assesses exposure to transition risks, and computes three scores: Carbon intensity (Scope 1 + 2), Carbon intensity upstream Scope 3 and Carbon intensity downstream Scope 3.

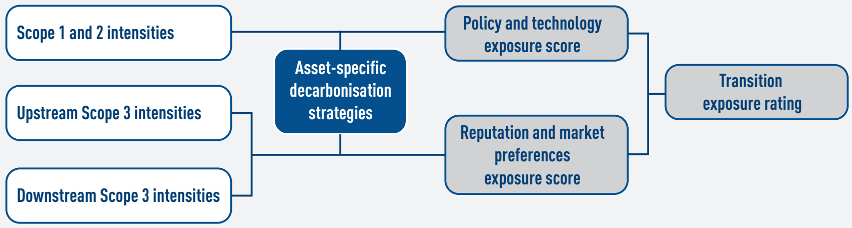
The CER provides an assessment of future transition exposure, which encompasses all financial costs resulting from policies and technologies to combat climate change (eg, carbon taxes), shifts in market preferences (eg, reduced demand for local flights in favour of rail travel), and changes in values and reputation (eg, consumers may avoid companies that damage the environment).[36]

For CRR we similarly use the transition risk exposure as part of our model to quantify the financial impact of transition risks, presented in net asset value (NAV) terms, using multiple scenario pathways weighted by probability.[37]

36 Scientific Climate Ratings (2025). Potential Climate Exposure Rating Methodology: Covering Transition and Physical Risks of Infrastructure Assets (V1.00.00). Available here: https://publishing.scientificratings.com/sitepublicmethodologies/potential_climate_exposure_rating_methodology.pdf

37 Scientific Climate Ratings (2025). Effective Climate Risk Rating Methodology: Covering Transition and Physical Risks of Infrastructure Assets (V1.00.01 – July 2025). Available here: https://publishing.scientificratings.com/sitepublicmethodologies/effective_climate_risk_rating_methodology.pdf

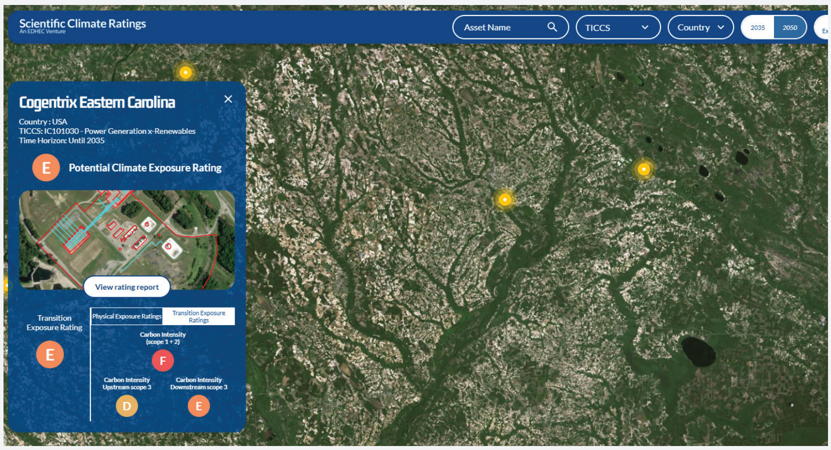
Figure 3. Transition risk assessment: CER key rating drivers*



* https://scientificratings.com/climate-exposure-ratings/

Source: Scientific Climate Ratings

Figure 4. The example of US energy company Cogentrix*



The example of Cogentrix, a power generation company located in the US, illustrates how our CER assess exposure to transition risks until 2035 and compute ratings scores presented from A (the lowest) to G (the highest).

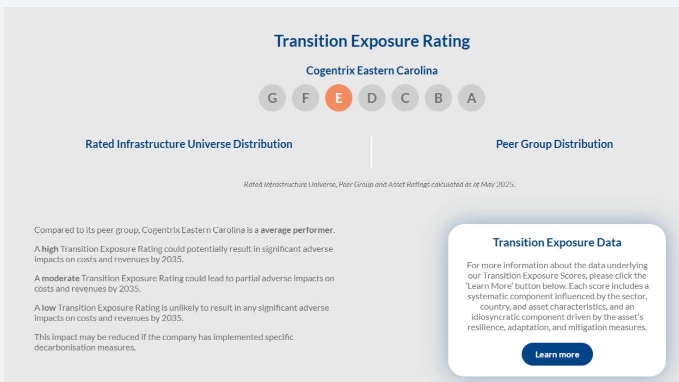
This asset is rated F for Carbon intensity (Scope 1 + 2), D for Carbon intensity upstream Scope 3 and E for Carbon intensity downstream Scope 3.

* https://scientificratings.com/climate-exposure-ratings/

Source: Ratings Coverage Map, Scientific Climate Ratings

Figure 5. Transition exposure rating report for Cogentrix*

Our ratings coverage map also enables investors to read and export rating reports, including physical and transition risks findings, and comparable insights showing how they rank versus peers (over 6,000 rated infrastructure assets across eight TICCS®† industrial superclasses). In this example, the report showing transition exposure rating indicates that the asset is an 'average performer' compared to its peer group. This asset is rated F for Carbon intensity (Scope 1 + 2), D for Carbon intensity upstream Scope 3 and E for Carbon intensity downstream Scope 3.



* https://scientificratings.com/map

† The Infrastructure Company Classification Standard (TICCS®) is a leading framework for classifying infrastructure investments. Available here: https://edhecinfraprivateassets.com/private-infrastructure/ticcs/

Source: Ratings Coverage Map, Scientific Climate Ratings

Integrating value chain emissions, driving informed investment decisions

The shift to a low-carbon economy in response to climate change is generating significant transition risks that can affect asset values and portfolio performance. Scope 3 is often where major emissions sources exist within investment portfolios. Recognising Scope 3 emissions in climate risks assessment is of material relevance, as investors face the risk of becoming exposed to transition risks via the value chains of the assets they invest in.[38]

Accounting for Scope 3 emissions enables a comprehensive assessment of exposure to these risks, since they include indirect emissions from both upstream and downstream activities. Although these emissions can be notoriously hard to measure and are often underreported, they constitute the largest share of all company emissions and cannot be ignored.

At Scientific Climate Ratings, we assess transition risks with a robust methodology that evaluates the full scope of transition-related risks of climate change. Compared to traditional approaches that overlook indirect Scope 3 emissions within the complete value chain and solely focus on direct emissions and carbon tax implications, we provide a broader and complete picture on transition risks. Our approach involves a comprehensive assessment of Scope 1, 2 and 3 carbon intensities to calculate transition risks. This framework allows CER and CRR to assess exposure to transition risks and quantify the financial impacts of these risks.

Our ratings turn climate science into financial insights, delivering decision-useful transition risk metrics. Ultimately, this comprehensive analysis empowers investors to accurately price transition risks and develop informed strategies. In an era defined by climate adaptation and action, incorporating Scope 3 emissions into investment decision-making is not just a 'good to have'; it is an imperative for navigating the risks and opportunities of the climate transition.

38 IIGCC (2024). Investor Approaches to Scope 3: Its Importance, Challenges and Implications for Decarbonising Portfolios. Available here: https://www.iigcc.org/hubfs/2024%20resources%20uploads/IIGCC_Investor-approaches-to-scope-3_Final_Jan-2024.pdf

Assessing wildfire risk in a changing climate:
Navigating the 'Pyrocene era'

2025 was marked by intense wildfire activity worldwide, damaging critical infrastructure assets.

With climate change intensifying these risks, especially in Europe, investors and policymakers require credible, forward-looking, standardised tools to assess them and inform resilient capital allocation strategies.

Scientific Climate Ratings, developed by the EDHEC Climate Institute, integrates satellite data, global hazard maps, detailed asset boundaries and asset-specific financial metrics to quantify climate risk through 2035 and 2050 horizons across various geographies and sectors

Introduction

At Scientific Climate Ratings, we provide science-based tools to support the investment community in adapting to intensifying wildfires and other physical risks. Our methodology translates complex fire hazard maps and asset-level data into decision-useful exposure scores and financial metrics.

This article examines escalating wildfire risks, explains their links to climate change, and outlines how our ratings evaluate these hazards to empower infrastructure investors and operators.

We also take a deep dive into the acute wildfire events that swept Europe over the summer of 2025, the world's fastest-warming continent according to Copernicus[1], amid fears that the world is entering a new age of fire: the 'Pyrocene era'.[2]

While wildfire risks have complex drivers, a clear pattern is emerging: a warming climate leads to more frequent and larger fires, which in turn release the carbon stored in vegetation, reinforcing the warming trend.

Despite the increasing scale of these risks, wildfire exposure and its financial impacts can be assessed, quantified and mitigated, enabling the implementation of effective adaptation measures.

A closer look at wildfire risks

Wildfires, also known as forest fires or bushfires, are hard-to-control and fast-spreading blazes that occur in vegetation, such as forests, grasslands and shrublands. They can ignite from small sources like human activity or lightning, or larger causes like volcanic activity. They can rapidly intensify and spread in unfavourable conditions, especially in drier regions. When combined with strong winds, they can leap from tree to tree and consume everything in their path.

Vegetation plays an essential role in wildfires[3], acting both as a fuel source and as a factor that influences fire activity. For instance, sites with dense surface vegetation (such as open areas and rides), flammable species (like bracken, gorse and eucalyptus), large areas of brash, as well as dead or dying trees, are among the habitats that carry a higher fuel load and pose a greater fire hazard.

While wildfires are historically nature's way of clearing out dead underbrush and restore nutrients, scientists warn that climate change is driving more intense and frequent fires worldwide.

Global warming is amplifying fire activity[4] by increasing both the likelihood of wildfires, notably through longer fire seasons, and the scale at which they occur. Factors that drive wildfires, such as temperature, soil moisture and the presence of trees, shrubs and other potential fuel[5], are generally affected by climate change in ways that increase the likelihood of wildfire occurrence and spread.

While vegetation burning is a natural part of the carbon cycle, forests are often promoted as carbon storage solutions, for example, in carbon offsets and credit-related projects. However, their vulnerability to fires undermines their effectiveness as long-term carbon sinks and weakens their role as a natural climate-mitigation strategy. In addition to climate change, land use and forest management also contribute to wildfire risk.

Given the escalating threat, it is crucial to understand how these events can be tracked and quantified.

1 Copernicus (n.d.). Why are Europe and Arctic heating faster than the rest of the world. Available here: https://climate.copernicus.eu/why-are-europe-and-arctic-heating-faster-rest-world

2 The Pyrocene era is a term proposed to describe a new epoch under the global influence of human-caused fire activity, suggested by Stephen J. Pyne, Professor Emeritus of Environmental History at Arizona State University. See Pyne, S. (2021). The Pyrocene: How We Created an Age of Fire, and What Happens Next. University of California Press, Berkeley.

3 Forest Research (2025). Wildfire. Available here: https://www.forestresearch.gov.uk/climate-change/risks/wildfire/

4 NASA (2025). Wildfires and Climate Change. Available here: https://science.nasa.gov/earth/explore/wildfires-and-climate-change/ science.nasa.gov

5 UNEP/World Environment Situation Room (2025). Wildfires | WESR – Climate Change Impacts. Available here: https://wesr-climate.unepgrid.ch/climate/impacts/wildfires

How can we monitor and measure wildfires?

As fire activity intensifies under a changing climate, the need for accurate and timely monitoring becomes essential. Wildfires are measured using a combination of satellite imagery, ground-based assessments and geospatial analysis.

One major monitoring platform, the Copernicus Atmosphere Monitoring Service (CAMS)[6], uses near-real-time observations of the location to estimate the emissions through its Global Fire Assimilation System (GFAS). CAMS utilises the fire radiative power (FRP), a measure of heat output from a fire, to address how quickly fuel is being consumed. These observations are derived from sensors that detect the heat signal. Higher values of FRP correspond to higher values of wildfire emissions.

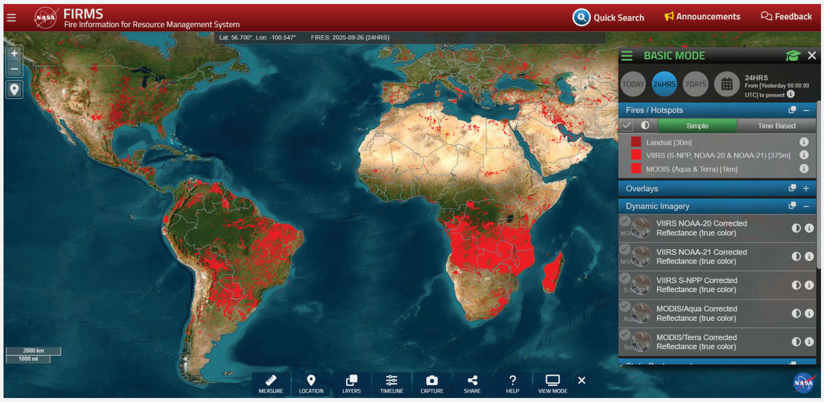
Part of the Copernicus programme, Emergency Management Service (EMS)[7], also comprises EFFIS, a service to protect forests in the EU and neighbouring countries.

NASA also monitors wildfires globally using various satellite systems, including the Fire Information for Resource Management System (FIRMS)[8], which identifies the location, extent and intensity of wildfire activity (see figure 1). The current FIRMS application relies on several sources, including the Moderate Resolution Imaging Spectroradiometer (MODIS)[9] and the Visible Infrared Imaging Radiometer Suite (VIIRS).[10]

The Fire Weather Index (FWI)[11] is the most widely recognised model for assessing fire risks. It accounts for the effects of fuel moisture and wind on fire behaviour and spread. The higher the FWI is, the more favourable the triggering meteorological conditions become. Used daily by fire services and environmental agencies, FWI helps predict fire outbreaks and efficiently allocate resources.

Building on the data collected through wildfire monitoring, Scientific Climate Ratings systematically assesses exposure and quantifies the financial impact of wildfires.

Figure 1. NASA's Fire Information for Resource Management System (FIRMS)



Source: NASA FIRMS

Redefining wildfire risk: asset-level, financially driven ratings

At Scientific Climate Ratings, our methodology developed by the EDHEC Climate Institute evaluates wildfire risks with a stepwise progression. The ratings assess potential physical exposure (through 2035 and 2050 horizons) and quantify the potential damage for each asset.[12]

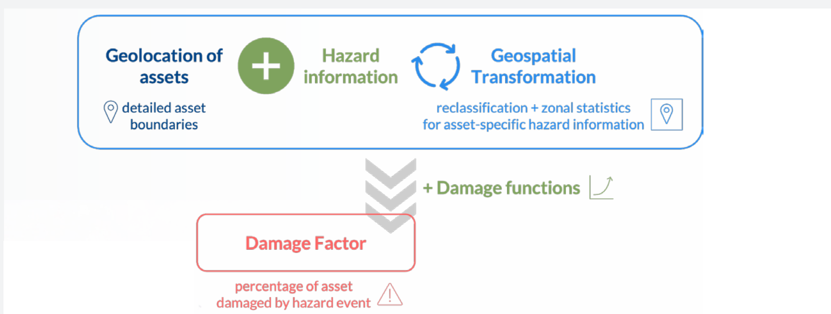
Our approach takes a step further beyond traditional climate risk assessments by also incorporating financial information for each identified asset (eg, asset value), along with global climate hazard information, which includes NASA's global monthly burnt data from 2001 to 2024 (MODIS satellite imagery) and the FWI (see figure 2). We develop our data further to construct a probability map of areas affected by wildfires, representing the current period of 2025.

Moreover, our ratings use detailed asset boundaries, which provides more accurate risk estimations compared to generic radius solutions using an approximate buffer. This methodology enables accurate and broadly applicable results, covering various sectors and countries.

We can illustrate this approach in the example of the SJC Bioenergia Sugar & Ethanol plant in Brazil (shown in figure 4). The generic radius approach (on the left) produces an underestimation of wildfire value-at-risk by at least $8m compared to the damage estimations of our detailed asset boundary approach.

Our Climate Exposure Ratings (CER) leverages this approach to compute an exposure rating from A (lowest risk) to G (highest risk) for each asset.[13] The example of the Astur-Leonesa Toll Road (AP-66), a critical motorway in Spain between Asturias and the Castilian

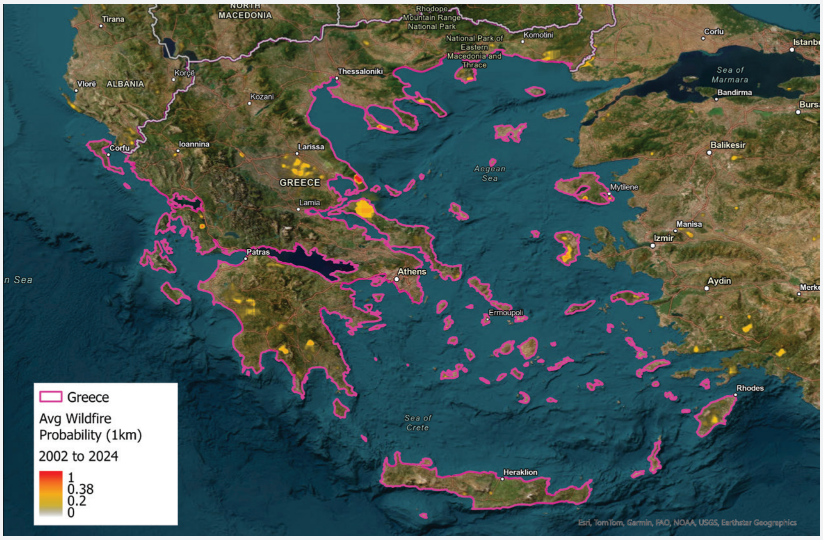
Figure 2. General approach to calculating physical risk*



* https://scientificratings.com/data-and-analytics/#physical-risk-data
Source: Technical Documentation – Physical Risk: Wildfires, Scientific Climate Ratings

6 https://atmosphere.copernicus.eu/
7 https://emergency.copernicus.eu/
8 https://firms.modaps.eosdis.nasa.gov/map/
9 https://modis.gsfc.nasa.gov/
10 https://www.nesdis.noaa.gov/current-satellite-missions/viirs
11 https://climate.copernicus.eu/fire-weather-index
12 https://scientificratings.com/climate-exposure-ratings/
13 Methodology available here: https://scientificratings.com/data-and-analytics/#physical-risk-data

Figure 3. Greece: average wildfire probability (1km) 2002–24



Source: EDHEC Climate Institute

Figure 4. Example of wildfire damage to the SJC Bioenergie Sugar & Ethanol Plant in Brazil*

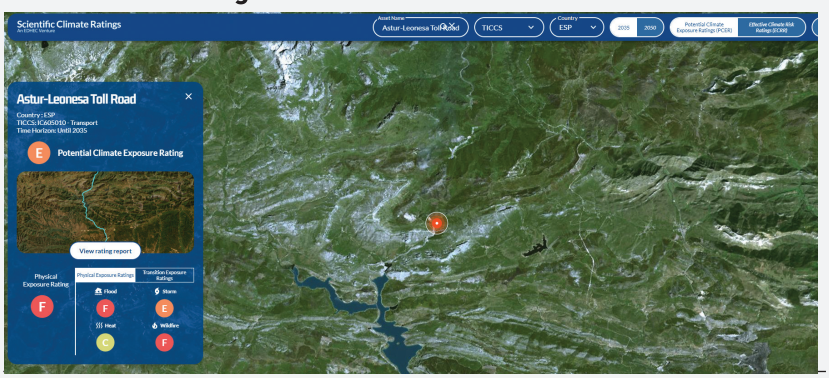
Typical solution: Generic buffer of 500 metres and resulting wildfire risk estimation.
Average wildfire probability: 16.7%
Physical damage at risk: 20.0%
Physical value at risk: $121m

Our solution: Detailed asset boundary and resulting wildfire risk estimation, which is more accurate.
Average wildfire probability: 17.2%
Physical damage at risk: 21.4%
Physical value at risk: $129m

* Technical Documentation – Physical Risk: Wildfires, Scientific Climate Ratings, Methodology available here: https://scientificratings.com/data-and-analytics/#physical-risk-data

Source: Technical Documentation – Physical Risk: Wildfires, Scientific Climate Ratings

Figure 5. Example of Astur-Leonesa Toll Road: assessment of wildfire risk through CER*



* https://scientificratings.com/map/ Source: Ratings Coverage Map, Scientific Climate Ratings

Meseta, demonstrates its real-world application. Spain is one of the countries most impacted by climate change in southeastern [southwestern?!]Europe.[14] The Physical Exposure Rating of this transport is rated F, indicating higher wildfire risks (figure 5).

The detailed report indicates that compared to its Peer Group, Astur-Leonesa Toll Road is "a laggard", suggesting a significant physical damage to the asset (incorporating all four physical risks, including wildfire), which could affect its financial valuation by 2035 (figure 6).

Tackling climate-driven blazes with resilience

Wildfires are no longer rare or localised. They are a systemic and financial risk for today and the upcoming decades. According to a UNEP report, extreme fires worldwide are expected to increase by up to 14% by 2030, 30% by the end of 2050 and 50% by the end of the century.[15]

Climate change is amplifying wildfire activity, and these events are becoming increasingly unpredictable and challenging to manage. Climate change is also exerting stress on ecosystems, reducing the ability of vegetation to store carbon, and increasing the vulnerability to fires. It is essential to understand, monitor and measure these risks using a combination of satellite imagery, ground-based assessments, geospatial analysis and global hazard information.

Scientific Climate Ratings takes a step further beyond traditional hazard information and generic climate risk assessments, by assessing potential physical exposure (through 2035 and 2050 horizons) and quantifying the potential damage for each asset.[16] We develop our data further to construct a probability map of affected areas.

With forward-looking, standardised climate risk ratings, Scientific Climate Ratings equips stakeholders to make informed investment and policy decisions to navigate wildfire risks and improve resilience.[17]

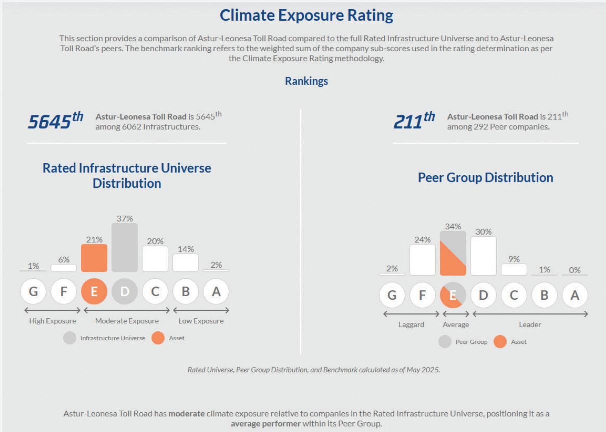
14 https://sdgs.un.org/basic-page/spain-34140

15 United Nations Environment Program, and GRID-Arendal (2022). Spreading like Wildfire: The Rising Threat of Extraordinary Landscape Fires. Available here: https://www.unep.org/resources/report/spreading-wildfire-rising-threat-extraordinary-landscape-fires

16 https://scientificratings.com/climate-exposure-ratings/

17 Full report and data here: https://scientificratings.com/map/

Figure 6. Example of Astur-Leonesa Toll Road: the rating report on physical exposure (infrastructure universe and peer group distributions)*



* https://scientificratings.com/map/

Source: Ratings Coverage Map, Scientific Climate Ratings

Box 1. Is Europe entering a new age of fire?

Satellite image showing smoke from large wildfires in Turkey and Greece, July 2025, EUMETSAT

Wildfires have swept across Europe with unprecedented scale, intensity and unpredictability in the summer of 2025, fuelling concerns that we are entering a new age of fire: the Pyrocene era.

As the world's fastest-warming continent,* Europe faced its most destructive wildfire season since records began in 2006.† As of 2 September 2025, more than 1,923 fires have burned across over 986,000 hectares. up from 227,627 hectares recorded in the same period last year, according to Copernicus European Forest Fire Information System (EFFIS).‡

Among the most severely affected countries were Greece, Turkey, Spain and Portugal, where fires forced mass evacuations, damaged homes and critical infrastructure and led to mounting economic costs.

Several factors are converging to amplify wildfire risk in southern Europe: the abandonment of agricultural land, vegetation overgrowth, and rising temperatures and droughts create ideal conditions for large-scale, high-intensity fires.‡‡

* Copernicus (n.d.). Why Are Europe and the Arctic Heating Faster than the Rest of the World. Available here: https://climate.copernicus.eu/why-are-europe-and-arctic-heating-faster-rest-world

† https://www.politico.eu/article/eu-wildfire-season-record-european-forest-fire-information-system/

‡ https://joint-research-centre.ec.europa.eu/projects-and-activities/natural-and-man-made-hazards/fires/current-wildfire-situation-europe_en

‡‡ European Court of Auditors (2025). EU Funding to Tackle Forest Fires (Special Report 16/2025). Available here: https://www.eca.europa.eu/en/publications?ref=SR-2025-16

Box 2. Greece and Turkey's hotter, drier summers have made this region vulnerable

While most of Southern Europe has been literally 'on fire', Greece and Turkey were particularly ravaged since early June, as hotter, drier summers made the Mediterranean region increasingly vulnerable. Both countries demonstrated extremely high Fire Weather Index (FWI) values, a meteorologically based index used worldwide to estimate fire danger.

In June and July, massive blazes swept through Greek cities and islands, reaching Chios, Crete (the largest island), west of Athens, Evia, Kythira and Attica, forcing tens of thousands of people to be evacuated from their homes. By August, fast-moving fires in Keratea, Patras and Zakynthos caused significant destruction.

As temperatures reached 42.4°C in central Greece, strong winds made it harder to contain blazes, despite earlier measures to reinforce firefighting teams by Greek authorities. The fires destroyed homes and critical infrastructure, also causing power cuts. According to the National Observatory of Athens, by mid-August, approximately 45,000 hectares had burned in the country.

In neighbouring Turkey, several major cities battled extensive fires in the same period. In June, more than 50,000 people were evacuated in the western province of Izmir, near the Aegean Sea, one of the worst-hit cities. Fanned by fierce winds, the fires led to the closure of main roads and a temporary shutdown of the airport, as well as disruptions in water supply and damage to electricity grids.

Bursa, Manisa, Bilecik and Hatay, located in the north and southeast, also experienced mass evacuations. More than 17 people have died, including 10 firefighters and volunteers in the western city of Eskișehir in July. In Çanakkale, the Dardanelles Strait, one of the world's largest shipping routes, was temporarily shut down in August.

A recent study promptly identified global warming as a key factor. Research by the World Weather Attribution group at Imperial College London* indicated that climate

Greece wildfires up to August 2025

Turkey wildfires up to August 2025

change caused by humans made fire-prone conditions in Greece and Turkey "about 10 times more likely".

While most fires were spread more easily due to the vegetation (highly flammable Calabrian pine) across this region, the blazes sweeping the southeastern cities were also affected by human activities like stubble burning and litter in rural areas.

* https://www.worldweatherattribution.org/weather-conditions-leading-to-deadly-wild-fires-in-turkiye-cyprus-and-greece-made-10-times-more-likely-due-to-climate-change/
Source for maps: EDHEC Climate Institute

Box 3. Many other nations in Europe also battled major fires

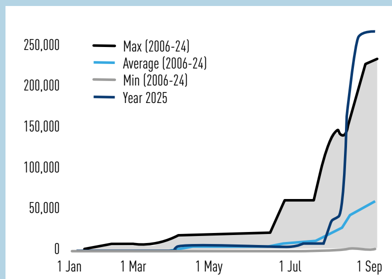
Other countries in Europe, including Cyprus, France, Germany, Italy, Bulgaria, North Macedonia, Albania, Croatia, Montenegro and the UK, have also battled major fires.

Most recently, the Iberian Peninsula (comprising Spain and Portugal) experienced record-burnt areas following the heatwave in southern Europe. The worst-affected regions included Castile and Leon, Galicia, Extremadura and Asturias in Spain, and Arganil and Sátão in Portugal.

The most recent fires reflect worrying predictions about future wildfire risks in Europe. Recent data from Copernicus EFFIS shows that the total area burned across the EU has been well above the 2006-24 average since July*, indicating an upward trend driven by climate change.

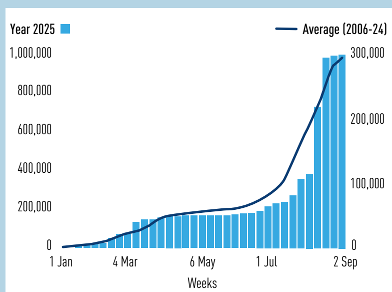
* https://forest-fire.emergency.copernicus.eu/apps/effis.statistics/

Portugal: weekly cumulative burnt area (ha)



Source: Copernicus EFFIS, data to 2 September 2025
https://forest-fire.emergency.copernicus.eu/apps/effis.statistics/seasonaltrend

Burnt area in the EU (ha)



Source: Copernicus EFFIS, data to 2 September 2025 (fires of 30ha or larger)
https://forest-fire.emergency.copernicus.eu/apps/effis.statistics/seasonaltrend

What We Do

Scientific Climate Ratings is an independent rating agency under EDHEC Ventures.
We provide transparent, standardised assessments of climate risk exposure
and its financial impact, leveraging our award-winning research expertise
in climate finance and quantitative analysis.
We focus on two areas:

Transition Risk

Financial impacts arising from the shift to a low-carbon economy, including policy changes.

Physical Risk

Damages and disruptions caused by climate hazards.

FROM EXPOSURE to… FINANCIAL IMPACT

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