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Net Zero & Climate Risk

Green Quadrant: Climate Financial Data And Analytics Providers

By Emma Cutler, Gus Brewer
With Ryan Skinner

September 2024

This version of the report contains Verdantix's summary of MSCI's offerings to help prospective customers evaluate whether the vendor is a good fit for their requirements. It does not contain other vendor profiles.

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This report provides an independent, fact-based benchmark of 10 prominent climate financial data and analytics providers. Based on the proprietary Verdantix Green Quadrant methodology, our analysis draws on vendor responses to a 50-point questionnaire, live product briefings and customer interviews to assess vendors across 11 capability categories and 11 measures of market momentum. The market for climate financial data and analytics has developed in recent years, as financial institutions seek transparent climate data and analytics to support decision-making for financial product development, investment allocation, portfolio optimization, climate-related risk mitigation and valuations. As a result, data providers have innovated to offer capabilities spanning physical and transition risk analysis at the asset and portfolio levels, net zero targets and tracking, transition plans, biodiversity and nature, carbon offsets and renewable energy certificates (RECs), and climate change opportunities.

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Organizations mentioned

Aquantix, Arabesque, a.s.r., Banco de Portugal, Bank of America, Baringa, Beyond Ratings, Black Knight, BlackRock, Bloomberg, BloombergNEF, BNP Paribas, BNY Mellon, Breckinridge Capital Advisors, Burgiss, CAER, Cambridge Econometrics, Carbon Delta, CDP, Citigroup, Clarity AI, Climate Bonds Initiative, CNI, Coalition of Finance Ministers for Climate Action, Confluence Technologies, Crédit Agricole, Deutsche Börse Group, Dun & Bradstreet, DWS, Ecofin, Erasmus University Rotterdam, Ethix, European Central Bank, EVA Dimensions, Fabric, FactSet, Flood Re, Four Twenty Seven, Foxberry, FTSE Russell, GIC, Glasgow Financial Alliance for Net Zero (GFANZ), Goldman Sachs, Government Pension Investment Fund of Japan, Horizon 2020, HSBC, ICE (Intercontinental Exchange), International Energy Agency (IEA), Investment Metrics, ISS, Lazard Asset Management, Level 11 Analytics, London Stock Exchange, LSEG (London Stock Exchange Group), MetLife, Microsoft, Moody's, Morningstar, MSCI, My Green Lab, New York Stock Exchange (NYSE), NGFS (Network for Greening the Financial System), Nordea, oekom research, OMERS, OPTrust, Ortec Finance, PGIM, Predict Ability, Qontigo, Quantis, Refinitiv, Risk Management Solutions (RMS), Riskthinking.ai, risQ, RobecoSAM, Royal Bank of Canada, Royal Mail, S&P Global, Santander, Shades of Green, SoftBank, Southern California Edison, State Street, StatPro Group, Sustainalytics, Task Force on Climate-related Financial Disclosures (TCFD), Task Force on Nature-related Financial Disclosures (TCFD), The Climate Service, The Reporting Exchange, Trove Research, Trucost, Truevalue Labs, UK Natural History Museum, UN, UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), Urgentem, US Federal Reserve Board, Vigeo Eiris, XDI.

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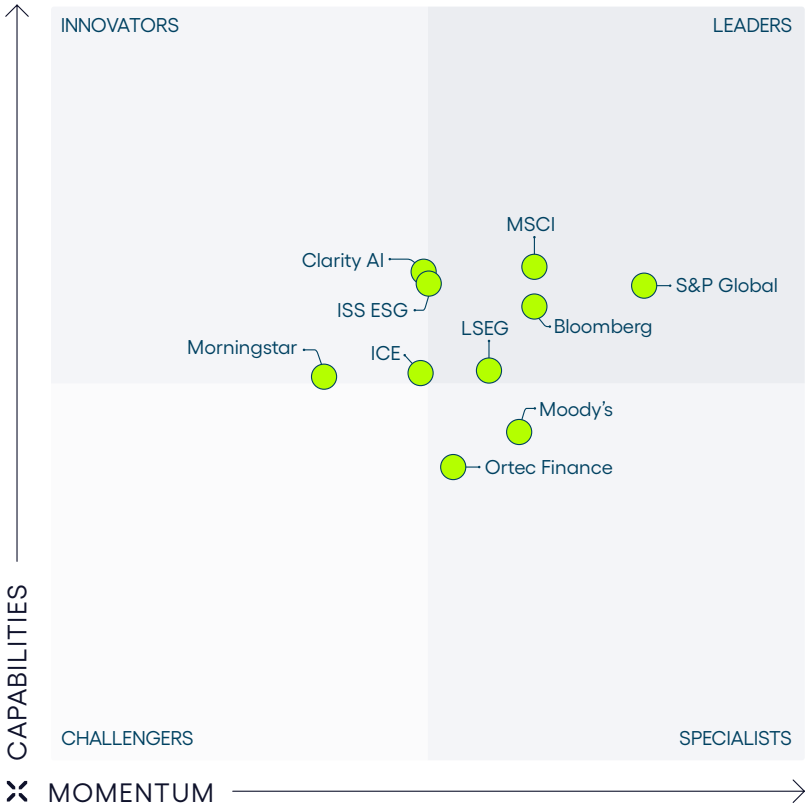
Summary for decision-makers

- Financial institutions require climate data and analytics to support decision-making for financial product development, investment allocation, portfolio optimization, climate-related risk mitigation and valuations. This report provides an independent, fact-based benchmark of 10 prominent climate financial data and analytics providers, to inform purchasing decisions.
- Vendors can also use this report to understand recent innovations and gaps in the market.
- The analysis draws on responses to a 50-point questionnaire, live product briefings and customer interviews, to assess vendors across 11 capability and 11 market momentum measures.
- Four vendors feature in the Leaders' Quadrant: Bloomberg, LSEG, MSCI and S&P Global. These have breadth and depth of capabilities, while maintaining strong market momentum.
- Clarity AI and ISS ESG have capabilities on a par with, and sometimes exceeding, the top-scoring vendors in the Leaders' Quadrant.
- Other vendors included are ICE, which focuses on solutions for fixed income assets; Moody's, which offers high-quality physical risk and portfolio analysis capabilities; Morningstar, which provides detailed credibility analyses of transition plans and net zero targets; and Ortec Finance, with rigorous and unique climate risk insights.

Figure 10

Green Quadrant for climate financial data and analytics providers 2024



Source: Verdantix analysis

The state of the climate financial data and analytics market

The market for climate financial data and analytics has developed in recent years, partially in response to criticism from regulators and financial institutions that ESG ratings lack transparency. Specifically, ESG ratings, which became popular in the 2010s, combine a multitude of ESG factors into a single score or ranking. However, studies have shown that ratings vary significantly across providers. For example, a 2022 study published in 'Review of Finance' found that firms rated in the top 10% by one ratings provider could score below average according to another. As scrutiny of sustainability claims has increased, buyers of ESG ratings – primarily financial institutions – require raw data and clear, defensible analytics. Data providers have met this demand by building out capabilities in sustainability-related products, such as climate financial data and analytics, which Verdantix defines as:

> *"Data, analytics, models and tools on climate-related topics for use by financial market participants to support decision-making for financial product development, investment allocation, portfolio optimization, climate-related risk mitigation and valuations."*

This Green Quadrant report assesses and benchmarks 10 leading vendors of climate financial data and analytics. The report will help sustainability professionals at financial institutions select climate data providers based on their needs. Specifically, the report answers the following customer questions:

- **What is the current state of the climate financial data and analytics market?**
- **How are vendors innovating to meet evolving customer needs for climate data?**
- **What differentiates vendors in this space?**
- **Who are the leading climate financial data and analytics vendors?**
- **What should a buyer look for when selecting a climate data and analytics provider?**

To answer these questions, Verdantix evaluated 10 vendors using a 50-point questionnaire and live product demonstrations lasting two hours each. We also conducted 15 interviews with buyers of climate financial data. The analysis uses the proprietary Verdantix Green Quadrant methodology, which provides an evidence-based, objective assessment of vendors offering comparable products or services.

The climate financial data and analytics market is growing, as interest in green finance skyrockets

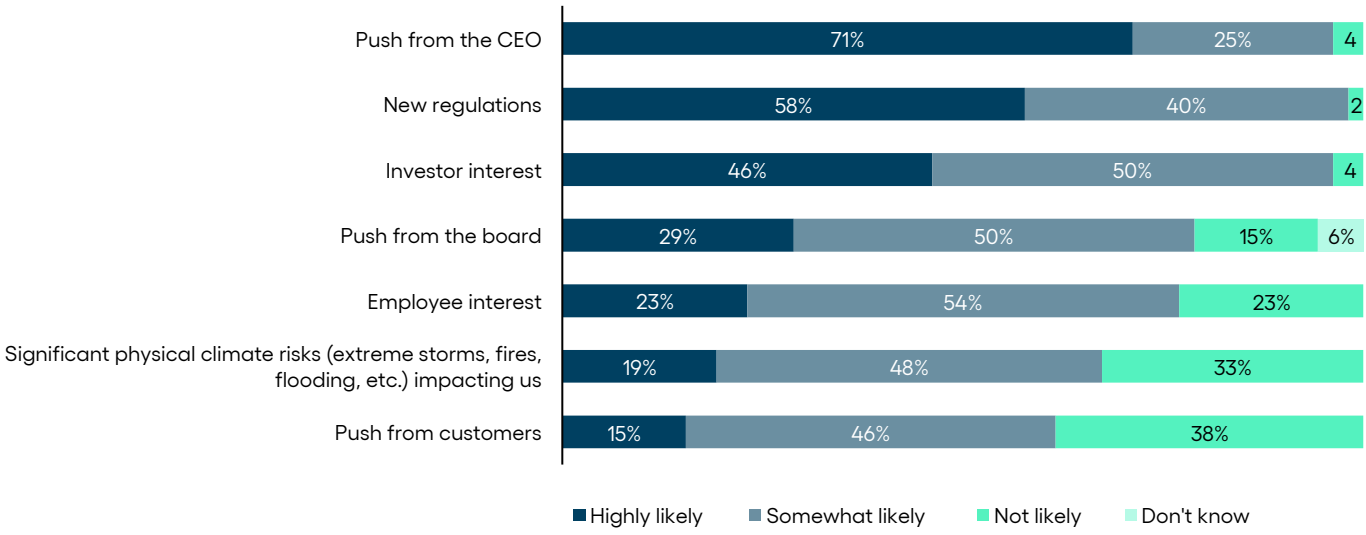
The climate financial data and analytics market was worth $468 million in 2022 and is forecast to reach $1.3 billion in 2028, with a five-year CAGR of 19% (see Verdantix Market Size And Forecast: Climate Financial Data And Analytics 2022-2028 (Global)). For large vendors, climate data and analytics make up a small share of overall revenue, but many report that the segment is fast-growing, saying that it is "an important source of growth" and "accounts for a notable share". Key drivers of this growth are:

- **Internal and external stakeholder demands.**
  In a Verdantix survey of sustainability leaders, 71% of financial services respondents said that 'push from the CEO' is highly likely to increase ambition and activity level on climate initiatives, while 46% described investor interest as critical (see **Figure 1**). Furthermore, at financial institutions, there is recognition that climate risks are material, with many already experiencing impacts. A separate Verdantix survey of risk managers asked about the materiality of climate risks in the last 12 months: results show that climate risks to physical assets were 'very material' for one in four respondents from financial services firms. A similar number said the same for energy transition risks (see **Figure 2**).

Figure 1

Push from the CEO, new regulations and investor interest drive activity on climate initiatives in financial services firms

Over the next 12 months, which of the following are most likely to increase your firm's ambition and activity level on climate initiatives?



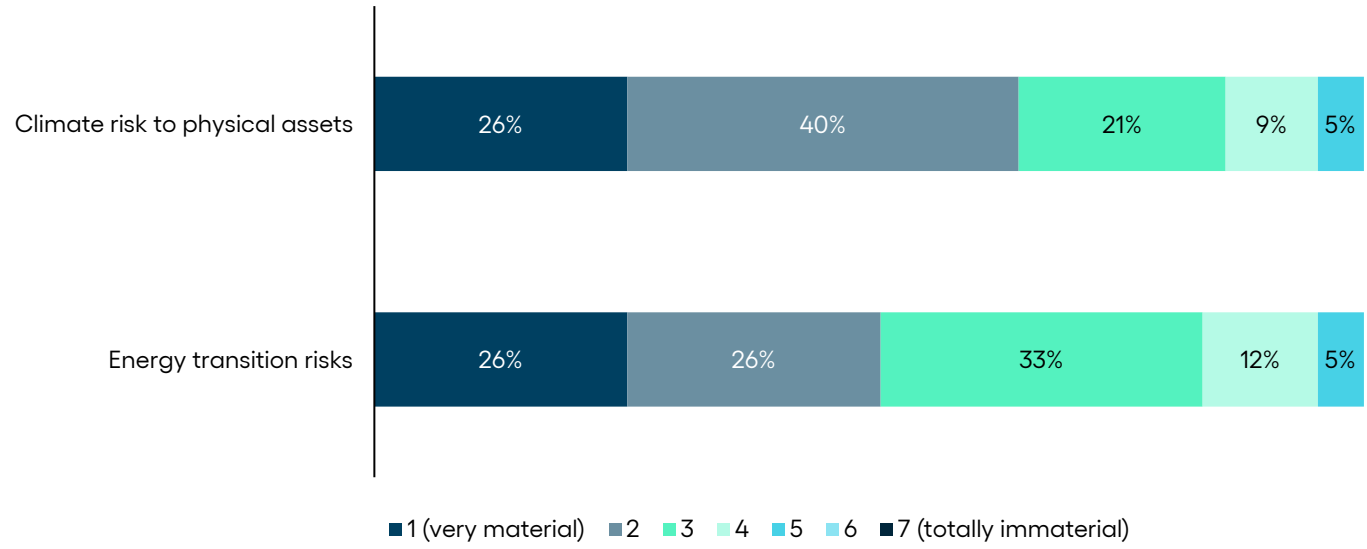
Note: Data labels are rounded to zero decimal places; percentages less than 5% are written as numbers; respondents are all sustainability leaders at financial services firms with annual revenues greater than $250 million.
Source: Verdantix Global Corporate Net Zero & Climate Risk Survey 2024

N=52

Figure 2

Financial services firms already experience material impacts from climate change

In the last 12 months, how material have the following risks been for your firm?



Note: Data labels are rounded to zero decimal places; respondents are all risk leaders at financial services firms with annual revenues greater than $250 million.
Source: Verdantix Global Corporate Net Zero & Climate Risk Survey 2024

N=43

- **New regulations and inter-governmental initiatives.**
  In the Verdantix 2024 net zero and climate risk global corporate survey, financial services firms selected new regulations as the second most likely force to increase ambition and activity level on climate initiatives. For example, the Sustainable Finance Disclosure Regulation (SFDR) applies to EU-based financial institutions and those with EU subsidiaries or that provide services in the EU (see Verdantix Market Insight: New SFDR Requirements And The Supplier Landscape). Globally, a growing number of firms are also subject to mandatory climate risk disclosures, and voluntary initiatives are on the rise. In 2023, the Coalition of Finance Ministers for Climate Action committed to increasing climate finance and aligning financial flows with the Paris Agreement.

- **Net zero industry alliances.**
  The Glasgow Financial Alliance for Net Zero (GFANZ) is composed of eight sector-specific alliances targeting asset owners, banks, asset managers, and others. These alliances seek to increase ambition on net zero commitments, drive engagement, and support members as they work to align their activities with the goals of the Paris Agreement. GFANZ has grown from 160 members in April 2021 to over 675 members in December 2023, showcasing the growing importance of climate for financial institutions.

Climate data and analytics are a necessary part of financial institutions' activities

The climate data now available to financial institutions open the door for a wide range of sophisticated analytics to assess and mitigate GHG emissions and climate risk. Increasingly, this type of information is essential for financial market participants, and there has been growth in guidelines and recommendations for using climate data in financial decision-making. For example, the Climate Financial Risk Forum has issued guides for financial firms regarding risk management, scenario analysis, disclosures and innovation. The forum also provides detailed information on a wide variety of data and tools providers. In the US, the Federal Reserve Board published the results from its pilot climate scenario analysis exercise in May 2024, highlighting lessons learned – such as the need for better data, and challenges around modelling climate risk.

Financial services firms use climate data to inform strategy and ensure compliance

Financial institutions use climate data to support a variety of investment and risk management decisions (see Verdantix Strategic Focus: Five Ways Financial Services Firms Get Value From Climate Financial Data And Analytics). Specifically, climate data and analytics support:

- **Regulatory reporting.**
  As new regulations – such as the SFDR and the Corporate Sustainability Reporting Directive (CSRD) – come into effect, financial institutions require a breadth of climate data for compliance. For example, the SFDR obliges firms to disclose data on 18 principal adverse impact (PAI) indicators, such as GHG emissions, carbon footprint, GHG intensity of investees, exposure to firms active in the fossil fuel sector, share of non-renewable energy consumption and production, and energy consumption intensity in high-impact climate sectors (see Verdantix Market Insight: New SFDR Requirements And the Supplier Landscape). Similarly, one sustainability analytics manager that we interviewed said they sought out a climate data provider because "we needed a new carbon accounting solution to support disclosure driven by regulation from the CSRD and ISSB [International Sustainability Standards Board]. We're also anticipating additional regulation in other places".

- **Alignment of portfolios with climate targets.**
  Many interviewees stated that achieving net zero goals and investing for positive impact was their primary reason for seeking out climate financial data and analytics. Pressure comes externally from clients, as well as internally, as financial institutions set their own climate goals. When we asked interviewees about their motivation for investing in climate financial data, some responses we received were: "I run a responsible fund", "client demand" and "we needed data to achieve our own net zero targets".

- **Risk management.**
  Currently, many climate data vendors provide calculations for physical and/or transition climate value at risk (CVaR), which quantifies portfolio-level losses due to climate change. The most comprehensive solutions quantify market, credit and operational risks. Climate scenario analysis is also a valuable tool for stress-testing a portfolio or fund against possible future climate conditions. However, analytics must continue to improve. An insurance firm told us: "Including climate risk in investment decisions is part of the plan for next year. But we need data that show the impact of firms' adaptation actions, and transition risk models need to be developed using more than just carbon price – they should also include changes in regulations and technology".

- **Internal communication and analytics.**
  Many Tier 1 financial institutions prefer to access raw data and conduct their own climate analytics in house. For many, this means integrating climate data into their own internal data management systems. Other firms prefer to use climate data primarily for communication purposes. For example, a pension plan manager told us that they like to use high-level climate risk analysis to present the possible impact of climate change on returns to senior management.

- **Financial product development.**
  Financial product developers and index constructors use climate financial data to create exchange-traded funds (ETFs) and indices that track emissions and net zero progress. Consider the MSCI ACWI Climate Action Index, which tracks the performance of firms in terms of contributions to the climate transition, and the ACWI Climate Change Index, which incorporates climate risks and opportunities. Climate financial data and analytics also underpin sustainability-linked bonds. For example, the Climate Bonds Initiative maintains a database of bonds that have undergone a rigorous third-party review assessing contributions to the goals of the Paris Agreement. Financial institutions also use climate data to develop funds that align with Articles 8 and 9 of the SFDR.

Buyers want transparency and recency when data are available, and effective modelling when they are not

Over the past several years, climate knowledge within financial institutions has grown tremendously; sustainability teams within financial institutions have expanded considerably and a search for openings in sustainability, ESG or climate on any of their websites often returns dozens of roles. Numerous vendors told us that as little as five years ago, their engagements with buyers needed to start with extensive education. Now, buyers come to them with a clearer understanding of what information they want and why climate data are valuable. With this rise in maturity, buyers are also becoming more selective. Key differentiators for these firms are:

- **Transparent data and models that are fit for purpose.**
  Regulatory demands require that financial services firms can explain the data and models they use. Transparency is key, and many prefer to look at the raw data, either for their own analytics or to validate calculations. Firms understand that climate financial data are far from perfect. They often work with more than one vendor, taking advantage of the strengths of each. A manager at an investment management firm said: "The two vendors we work with are complementary – one is stronger on emissions data, the other is stronger on policy". Firms also compare results from different vendors to identify discrepancies.

- **Current information with timely updates.**
  Emissions and climate risk are constantly changing, and data quickly become outdated. An asset manager told us that one thing they like about their vendor is that "updates occur almost in real time, and can be integrated very quickly into data management systems". Another interviewee mentioned periodically updating scenarios to account for changing global conditions.
- **Models that can accurately fill data gaps.**
  When it comes to emissions and climate risk, data gaps are inevitable. Many businesses do not report climate data, or their disclosed data are low-quality. To increase the breadth of coverage, buyers of climate financial data look for vendors who can fill these data gaps. One sustainability analytics manager told us that a key deciding factor when they were selecting a climate data provider was a high-quality ML (machine learning) model to estimate emissions.
- **Vendors who are willing to engage as partners.**
  Despite the rapid increase in maturity in recent years, the climate financial data and analytics space is still new. There are many unanswered questions about how these data should be used to support decision-making. Financial institutions want vendors who can provide support as they build out their climate capabilities. One interviewee said: "We looked at over 10 climate data providers...We wanted someone who would grow the product with us and was willing to put time and resources into a partnership".
- **User-friendly, comprehensive platforms to access data.**
  In addition to integrating data into internal systems, buyers appreciate proprietary platforms that are easy to use and have good visualizations. Users like being able to access all climate financial data and analytics in one place. Platforms that also incorporate traditional financial data are particularly valuable. An asset manager told us: "We use this vendor every day for other things, so it's really helpful to have ESG data in the same platform".

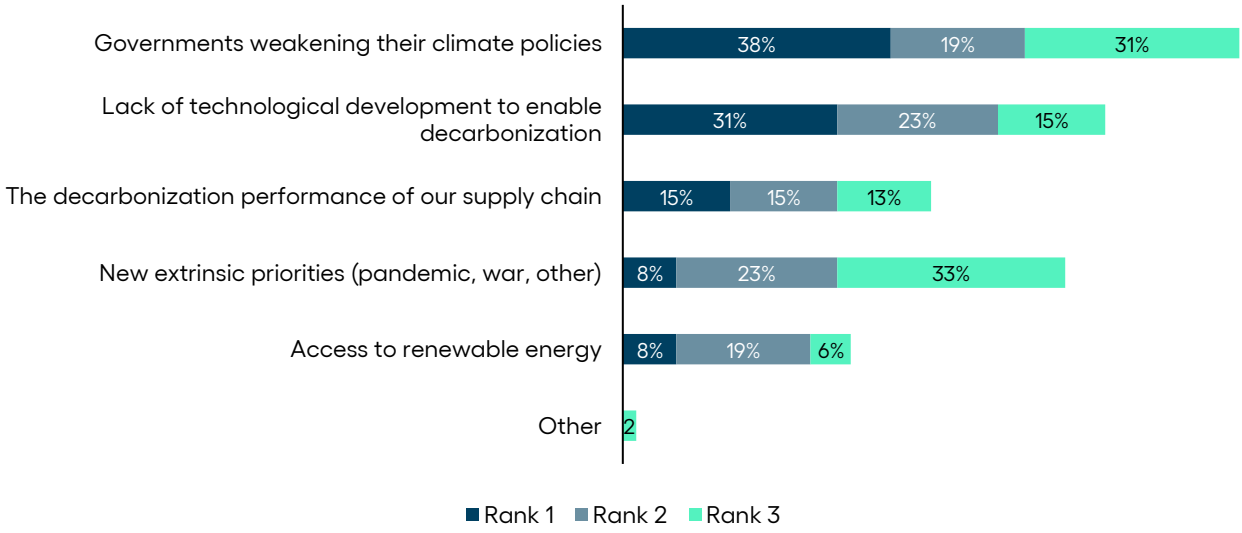
Financial data providers position themselves in an uncertain market

There is a lot of uncertainty as to how the market for climate financial data will unfold in the coming years. Current users are maturing, new regulation is coming into effect, and climate risks are materializing. As a result, many buyers are looking for new products that address increasingly complex use cases. At the same time, many are hesitant to fully commit. ESG backlash, for example, is driving some financial institutions to pull back on commitments. Particularly in the US, numerous financial institutions have walked back climate commitments, upped investments in fossil fuels and withdrawn from climate alliances. Additionally, regulation remains uncertain; this is one of the primary external factors inhibiting firms' climate action (see **Figure 3**). The potential for growth is huge: over half of financial institutions in the Verdantix risk management global corporate survey plan to increase spend on climate risk digital solutions (see **Figure 4**). However, with so many moving parts, it is impossible to know how quickly the market for new products will grow.

Figure 3

Weakening climate policies are a large threat to firms' climate targets

Select and rank the three external factors that represent the greatest risk to your firm hitting its emission reduction targets



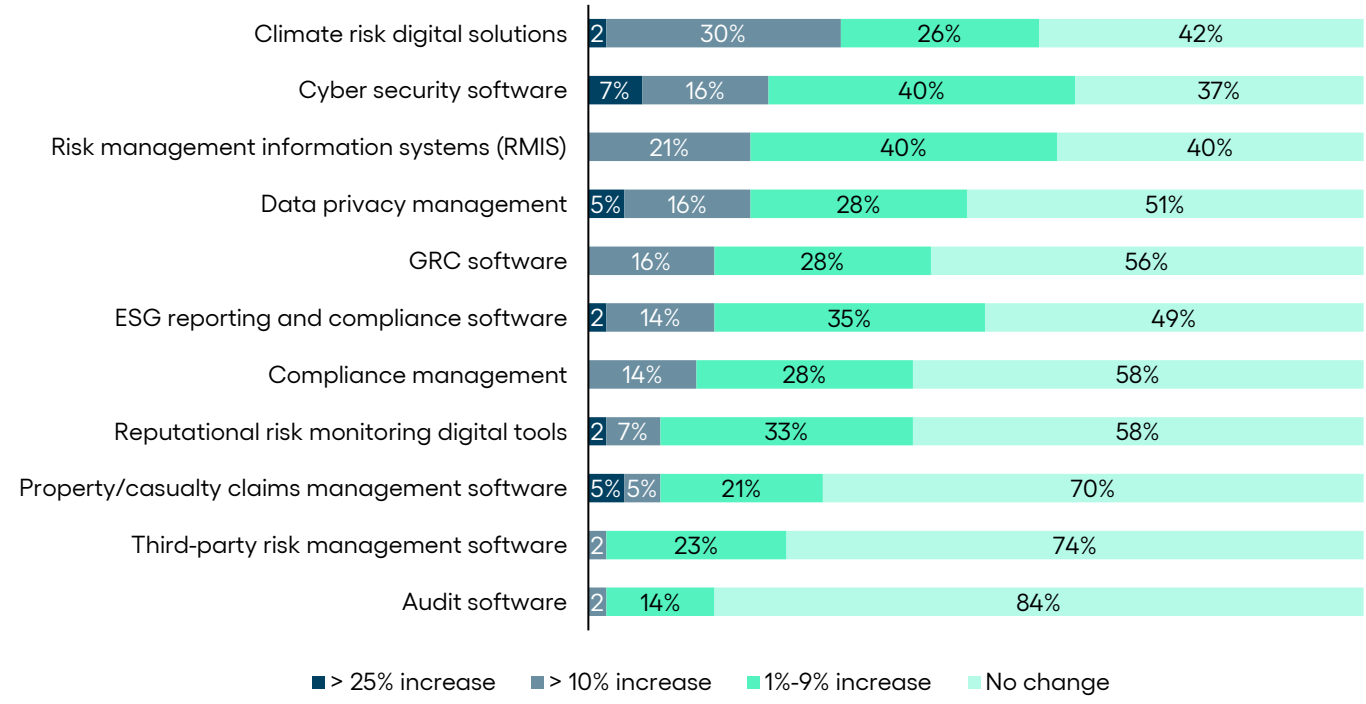
Note: Data labels are rounded to zero decimal places; respondents are all sustainability leaders at financial services firms with annual revenues greater than $250 million.
Source: Verdantix Global Corporate Net Zero & Climate Risk Survey 2024

N=52

Figure 4

A majority of financial services firms plan to increase spend on climate risk digital solutions in the next two years

To what extent will your firm change its spend on the following risk management software products in the next two years?



Note: Data labels are rounded to zero decimal places; percentages less than 3% are written as numbers; respondents are all risk leaders at financial services firms with annual revenues greater than $250 million.
Source: Verdantix Global Corporate Net Zero & Climate Risk Survey 2024

N=43

Figure 5

Acquisitions in the climate financial data and analytics market, 2019-2024

Buyer	Acquired firm and year
Arabesque	The Reporting Exchange (2021)
BlackRock	Baringa (2021)
Confluence Technologies	StatPro Group (2019)
	Investment Metrics (2021)
Deutsche Börse	ISS (2020)
FactSet	Truvalue Labs (2020)
ICE	Level 11 Analytics (2021)
	risQ (2021)
	Urgentem (2022)
	Black Knight (2023)
London Stock Exchange Group (LSEG)	Beyond Ratings (2019)
	Refinitiv (2021)
Moody's	Vigeo Eiris (2019)
	Four Twenty Seven (2019)
	Risk Management Solutions (2021)
Morningstar	Sustainalytics (2020)
	Aquantix (2022)
MSCI	Carbon Delta (2019)
	Trove Research (2023)
	Burgiss (2023)
	Fabric (2024)
	Foxberry (2024)
Ortec Finance	Predict Ability (2019)
S&P Global	RobecoSAM (2019)
	The Climate Service (2022)
	Shades of Green (2022)

Source: Verdantix analysis

Vendors join forces to take advantage of unique strengths and gain a competitive edge

Partnerships abound in the climate financial data and analytics space (see Verdantix Market Size And Forecast: Climate Financial Data And Analytics 2022-2028 (Global)). Vendors often co-develop products, and share and purchase data from one another to strengthen their offerings. Specifically, climate financial data and analytics vendors:

- **Consist of decision platforms, data modellers and pure-play data providers.**
  Pure-play data providers generate climate financial data and analytics, which they sell directly to buyers or via data modellers' products and/or decision platforms. Data modellers use data from pure-play data providers and develop their own analytics to support decision-making. Firms can buy these analytics directly, or the metrics may feed into decision platforms. Decision platforms ingest data and analytics from other data modellers and pure-play data providers and make these data available to financial institutions via defined workflows (see Verdantix Smart Innovators: Net Zero Financial Data And Analytics Providers).

- **Partner to co-develop products and share data.**
  Vendors often partner to build on each other's strengths. In 2023, Intercontinental Exchange (ICE) and Dun & Bradstreet announced a partnership to combine the former's climate analytics with the latter's global supply chain and corporate location data. Other partnerships focus on data-sharing, bringing products from multiple vendors together in one place. For example, the Bloomberg Terminal provides access to ESG and climate data from 14 vendors, such as Institutional Shareholder Services (ISS), Morningstar Sustainalytics, MSCI and S&P Global.

- **Have consolidated via mergers and acquisitions.**
  The rise of climate financial data and analytics has coincided with consolidation in the ESG and climate data markets (see **Figure 5**). Several very large players have emerged: as of 2023, seven vendors held over 70% of the market. Many of these vendors report very high revenue growth within their climate offerings, often due to further acquisitions.

New products address sophisticated use cases

Buyers of climate data are moving beyond a disclosure mindset. They want to integrate climate information into decision-making to support goals such as contributing to the low-carbon transition and mitigating climate risk. This requires large amounts – and new types – of data. It also raises the bar on data quality. To meet this demand, vendors are innovating by:

- **Developing products to assess nature impacts and dependencies.**
  Interest in nature and biodiversity data has taken off since the Taskforce on Nature-related Financial Disclosures (TNFD) published its recommendations in September 2023. Some vendors have already launched nature-specific products, often partnering with outside experts to calculate indicators for nature risks and dependencies. For example, S&P Global collaborated with the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) to create its Nature & Biodiversity Risk data set, while ISS ESG partnered with Quantis to develop its Biodiversity Impact Assessment Tool. Other vendors promote their nature-related capabilities within existing ESG data sets, while they work on new TNFD-specific products.

- **Making physical and transition risk information decision-relevant.**
  Both vendors and buyers are working to integrate climate into every decision that financial institutions make. This requires understanding client needs and developing risk metrics that can be combined with traditional financial data. Many data providers partner with or have acquired climate risk specialists and highlight the fact that they use science-based approaches. However, these claims could be strengthened if the models underwent more extensive external review. Ortec Finance's ClimatePREDICT model has been used in several

peer-reviewed articles. Similarly, London Stock Exchange Group (LSEG) researchers have published papers in academic journals that use LSEG's emissions estimation model. Moody's physical risk models are regularly reviewed by regulators. Nevertheless, most vendors rely only on user feedback or internal reviewers.

- **Moving beyond GHG emissions accounting for transition risk assessment.**
  Most climate data providers rely on GHG emissions and implied temperature rise as proxies for transition risk. Some go one step further, forecasting how regulations could affect the materiality of emissions. However, this approach misses much of the complexity surrounding policy, legal, market and technology risks. Only a few vendors attempt to model these dynamics. Bloomberg uses a bottom-up approach, quantifying market risks based on changes in demand. Clarity AI and Ortec Finance both use the E3ME model from Cambridge Econometrics – a non-equilibrium model that simulates the impact of new policies and technologies on GDP and inflation. These macroeconomic indicators are then translated into financial risks.

- **Providing climate impact insights at the portfolio level.**
  Vendors offer a wide range of solutions to help clients understand and optimize portfolios. This includes capabilities to quantify financed emissions (see Verdantix Smart Innovators: Financed Emissions Management). A common metric that many vendors offer is the implied temperature rise of a portfolio, based on either firms' stated decarbonization targets or their projected actions. Vendors also offer benchmarking capabilities, allowing users to compare a customized portfolio with an established benchmark or another portfolio of their choosing. Tools that reveal the impact of specific firms can help clients optimize a portfolio, engage with high emitters or identify opportunities to support the energy transition.

- **Building models to complement reported data.**
  Many buyers want information on privately held firms, or other data that are not publicly disclosed. Predictive models are therefore critical. It is important, however, to ensure that methodologies and data sources are available. Many vendors include links to source documents in their user interfaces. Vendors also use models to assess the validity of reported data and to make information available more quickly.

- **Using generative AI to improve user experience.**
  Data providers are using AI to automate data collection. AI tools enable faster and more comprehensive information-gathering, but vendors emphasize that human quality checks are still necessary. Vendors are also developing AI tools to synthesize information for users and help clients navigate data platforms. For example, BloombergGPT allows users to ask questions within the Bloomberg Terminal and obtain answers based on all the information in the Terminal, with links to source documents. Clarity AI also has a GenAI solution that helps synthesize information and create reports.

Green Quadrant for climate financial data and analytics

Financial institutions seek out climate data to support mandatory and voluntary reporting, inform investment decisions, manage risk and develop new products. As defined above, Verdantix considers climate financial data and analytics to be:

> *"Data, analytics, models and tools on climate-related topics for use by financial market participants to support decision-making for financial product development, investment allocation, portfolio optimization, climate-related risk mitigation and valuations."*

Verdantix research reveals that climate financial data span physical and transition risk analysis at the asset and portfolio levels, net zero targets and tracking, transition plans, biodiversity and nature, carbon offsets and renewable energy certificates (RECs), and climate change opportunities. Key differentiators for buyers are the breadth, depth and transparency of both raw data and analytics.

Green Quadrant methodology

The Verdantix Green Quadrant methodology provides buyers of specific products or services with a structured assessment of comparable offerings across vendors at a particular point in time. The methodology supports buying decisions by identifying potential vendors, structuring relevant purchase criteria through discussions with buyers, and providing an evidence-based assessment of products or services in the market. To ensure objectivity in the analysis, the research is guided by:

- **Transparent inclusion criteria.**
  We work to analyse all vendors that qualify for inclusion in the research. For those providers that offer insufficient information, we evaluate them based on publicly available information.
- **Analysis from a buyer's perspective.**
  For this Green Quadrant, we spoke with a range of climate financial data buyers to understand buying criteria and determine the relative weightings of each. We also used data from Verdantix corporate surveys of climate change and risk management leaders at financial services firms.
- **Scores based on available evidence.**
  To assess software vendors' expertise, resources, business results and strategies, we supplement vendor-reported information with evidence from public sources and interviews with users and industry experts. When providers claim to be 'best in class', we challenge them to present supporting evidence.
- **Reliance on professional integrity.**
  As it is not feasible to check all data and claims made by vendors, we emphasize the need for professional integrity. Competitors and existing customers can check providers' assertions, as they are placed in the public domain through this report.
- **Comparison based on relative capabilities.**
  We construct measurement scales ranging from 'worst in class' to 'best in class' performance at a certain point in time for each assessment category. However, it is possible that for some capabilities, particularly those that are less well-developed across the market, even the top-scoring firms will not achieve the highest possible score. A vendor's position can change over time, depending on how its offering and success evolve relative to market developments. This means that even if a provider adds new capabilities, makes a strategic acquisition or receives investment, its Quadrant positioning may not improve relative to other vendors, if the market as a whole also matures significantly. The Green Quadrant analysis is typically repeated every one to two years.

Evaluated firms and inclusion criteria

Verdantix defines vendor inclusion criteria to ensure that the Green Quadrant features only firms that provide comparable products. All vendors included in this report are prominent in the climate financial data and analytics market and offer valuable solutions. The 10 providers profiled in this study were selected because they:

- **Produce climate data and analytics that inform specific purposes, as defined by Verdantix.**
  We screened data providers to ensure that they offer climate financial data and analytics that inform financial product development, investment allocation, portfolio optimization, climate-related risk mitigation and valuations.
- **Offer climate data products that target banks, brokers and/or investment funds.**
  The focus of this study is climate data and analytics used by financial market participants. Although other vendors may provide climate data that could be used by financial institutions, we included only vendors that offer products designed for the financial industry.

- **Have at least 300 employees.**
  Although smaller firms may be able to provide strong offerings for some of the capabilities assessed, our research finds that they do not have the breadth of data solutions required by large financial institutions.

Based on the inclusion criteria, this report evaluates 10 climate financial data and analytics providers: Bloomberg, Clarity AI, ICE, ISS ESG, LSEG, Moody's, Morningstar, MSCI, Ortec Finance and S&P Global. All vendors responded to a 50-point questionnaire and provided product briefings.

Evaluation criteria for climate financial data and analytics vendors

Verdantix defined the evaluation criteria for the Green Quadrant study through a combination of interviews with senior managers at financial institutions, desk research, discussions with buyers of climate financial data and staff expertise. Based on these inputs, this Green Quadrant compares offerings from 10 data and analytics providers using a 50-point questionnaire, covering 11 categories of capabilities and 11 market momentum criteria. Individual metrics were classified as:

- **Capabilities metrics.**
  The capabilities dimension, plotted on the vertical axis of the Green Quadrant graphic, measures the breadth and depth of each vendor's functionality, as well as differentiators compared with other vendors, and its proven experience in each area. Verdantix assessed 11 capabilities (see **Figure 6**).
- **Momentum metrics.**
  The momentum dimension, plotted on the horizontal axis of the Green Quadrant graphic, measures each vendor's vision, strategy, size, revenue, clients, partnerships and acquisitions (see **Figure 7**).

For the capability metrics, scores for each criterion were calculated based on scores for between one and six sub-criteria. Sub-criteria scores ranged from zero ('no capability') to three ('market-leading') and were weighted according to importance for users globally (see **Figure 8**). Momentum criteria did not rely on sub-criteria; each was scored between zero ('no capability') and three ('market-leading'), based on evidence provided by vendors (see **Figure 9**). All capability and momentum criteria were given a percentage weighting that determined their contribution to the high-level capability or momentum score. The combination of high-level capability and momentum scores generates the Green Quadrant graphic, which shows the position of all climate financial data and analytics vendors in this benchmark study (see **Figure 10**).

Figure 6

Capability criteria for climate financial data and analytics

Criteria	Questions
Physical risk quantification (15%)	What are your capabilities for assessing asset-level physical climate risk? What climate scenarios are included in your physical risk analyses? What are your methodologies and data sources for physical risk analysis? Is documentation or source code available to users? How do you validate your models? Are your models reviewed externally? Have you published your models in scientific journals? How frequently do you update the data? How do you deal with data gaps? How do you assure the quality of input data? How many organizations and asset classes do your physical climate data cover? What are your capabilities for assessing climate risk along supply chains? What additional unique physical climate risk data and insights do you offer?
Transition risk quantification (15%)	What are your capabilities for assessing transition risk? What are your methodologies and data sources for transition risk analysis? Is documentation or source code available to users? How do you validate your models? Are your models reviewed externally? Have you published your models in scientific journals? How frequently do you update the data? How do you deal with data gaps? How do you assure the quality of input data? How many organizations and asset classes do your transition risk data cover? What additional unique transition risk data and insights do you offer?
Net zero targets, tracking and alignment (15%)	What are your data sources for net zero targets and tracking? How frequently do you update the data? How do you deal with data gaps? How do you assure the quality of input data? How many organizations do your net zero targets data cover? How do you forecast and benchmark net zero targets? How do you track progress towards net zero targets? How do you track investments in on-site renewables, PPAs, green and other hydrogen, and other renewable energy technologies? What additional unique net zero data and insights do you offer?
Carbon offsets and RECs purchased (5%)	Describe your data sets for voluntary and regulated carbon markets. What are your data sources for tracking carbon offsets and RECs? How frequently do you update the data? How do you deal with data gaps? How do you assure the quality of input data? Describe your REC and guarantee of origin data sets. How do you assess the quality of carbon offsets? What type of data do you use to monitor credits? How frequently do you monitor credits?
Transition plans (8%)	Describe any data sets that you offer related to transition plans or other climate plans. What are your data sources for transition and other climate-related plans? How frequently do you update the data? How do you deal with data gaps? How do you assure the quality of input data?
Portfolio analysis (15%)	Describe your capabilities for assessing portfolio-level transition risk, such as portfolio-level emissions intensity and the exposure of economic sectors and countries within a portfolio. Describe your capabilities for assessing portfolio-level physical climate risk. What are your data sources for portfolio analysis? How frequently do you update the data? How do you deal with data gaps? How do you assure the quality of input data? Describe your portfolio benchmarking capabilities.
Industry-, sector- and geography-specific data sets and insights (3%)	What industry- or sector-specific data sets and insights do you offer? What geography-specific data sets and insights do you offer?
Biodiversity and nature insights (7%)	What biodiversity and nature insights do you offer? What are your methodologies and data sources for biodiversity and nature insights? Is documentation or source code available to users? How do you validate your models? Are your models reviewed externally? Have you published your models in scientific journals? How frequently do you update the data? How do you deal with data gaps? How do you assure the quality of input data?
Climate change opportunities (6%)	How do you model green revenue? How do you model green financing? How do you model green CAPEX?
System integration (1%)	Describe how your climate financial data and analytics can be integrated into other data environments.
Alignment with regulations and frameworks (10%)	Describe your capabilities to track the relevance of investments against the EU Taxonomy. Do you provide a mapping of climate data to the EU Taxonomy? How do you help clients align with the SFDR's requirements for Article 6, 8 and 9 funds? How do you help clients align with ISSB/TCFD requirements? Do you provide a mapping of climate data to the ISSB requirements? How do you help clients align with TNFD recommendations? Do you use the LEAP framework?

Source: Verdantix analysis

Figure 7

Momentum criteria for climate financial data and analytics

Criteria	Questions
Market vision (7%)	What is your firm's vision for how the climate financial data and analytics market will evolve over the coming 2-3 years? What analyses and studies have you completed to assess and vet this vision?
Business strategy (7%)	What is your firm's strategy for competitive positioning, differentiation and growth in the climate financial data and analytics market?
Product strategy (10%)	What is your product strategy and roadmap for climate financial data and analytics over the next 2-3 years?
Innovation strategy (7%)	What is your innovation and R&D strategy to remain at the forefront of climate financial data and analytics?
Acquisitions (5%)	Which acquisitions relating to climate financial data and analytics have you made in the past 12 months?
Total number of climate financial data and analytics clients (12%)	How many climate financial data and analytics clients do you have? Please provide the number of firms.
Total climate financial data and analytics revenue (13%)	What was your total revenue from climate financial data and analytics in the most recent reporting year?
Revenue growth (13%)	By how much did your firm's climate financial data and analytics revenue grow in the most recent reporting year compared with the year prior? Please provide a percentage.
Location of climate financial data and analytics customers (5%)	Please provide a breakdown of your climate financial data and analytics customer base across the following geographic regions: Asia, Oceania, Europe, Middle East and Africa, Latin America and the Caribbean, North America.
Total climate financial data and analytics employees (10%)	How many employees are dedicated to climate financial data and analytics? Please provide your answer in full-time equivalent (FTE) employees.
Climate financial data and analytics partners (11%)	Describe any climate financial data and analytics partnerships you have formed.

Source: Verdantix analysis

Figure 8

Vendor criteria scores (Capabilities)

	Bloomberg	Clarity AI	ICE	ISS ESG	LSEG	Moody's	Morningstar	MSCI	Ortec Finance	S&P Global
Physical risk quantification	1.6	2.0	1.8	1.7	1.0	2.7	1.0	1.7	2.0	1.8
Transition risk quantification	1.6	2.4	1.8	1.7	0.7	1.8	1.0	1.7	2.4	1.5
Net zero targets, tracking and alignment	2.1	1.9	1.8	2.7	1.8	0.9	2.1	2.5	0.0	1.9
Carbon offsets and RECs purchased	1.5	0.0	1.6	0.3	1.4	0.0	0.4	2.3	0.0	2.2
Transition plans	2.0	2.0	0.0	2.5	3.0	0.0	3.0	2.0	0.0	3.0
Portfolio analysis	1.8	2.0	1.8	2.0	1.5	2.5	1.5	2.3	2.0	2.0
Industry-, sector- and geography-specific data sets and insights	2.0	2.0	1.5	1.0	2.0	0.5	1.5	1.5	1.5	2.0
Biodiversity and nature insights	2.0	2.0	1.4	2.0	1.0	0.0	1.0	2.0	0.0	2.0
Climate change opportunities	1.5	1.5	1.0	2.0	2.0	0.0	2.0	2.3	1.0	1.5
System integration	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0	1.0	3.0
Alignment with regulations and frameworks	2.3	2.8	1.6	2.2	2.1	0.5	1.4	1.9	0.2	1.9

Source: Verdantix analysis

Figure 9

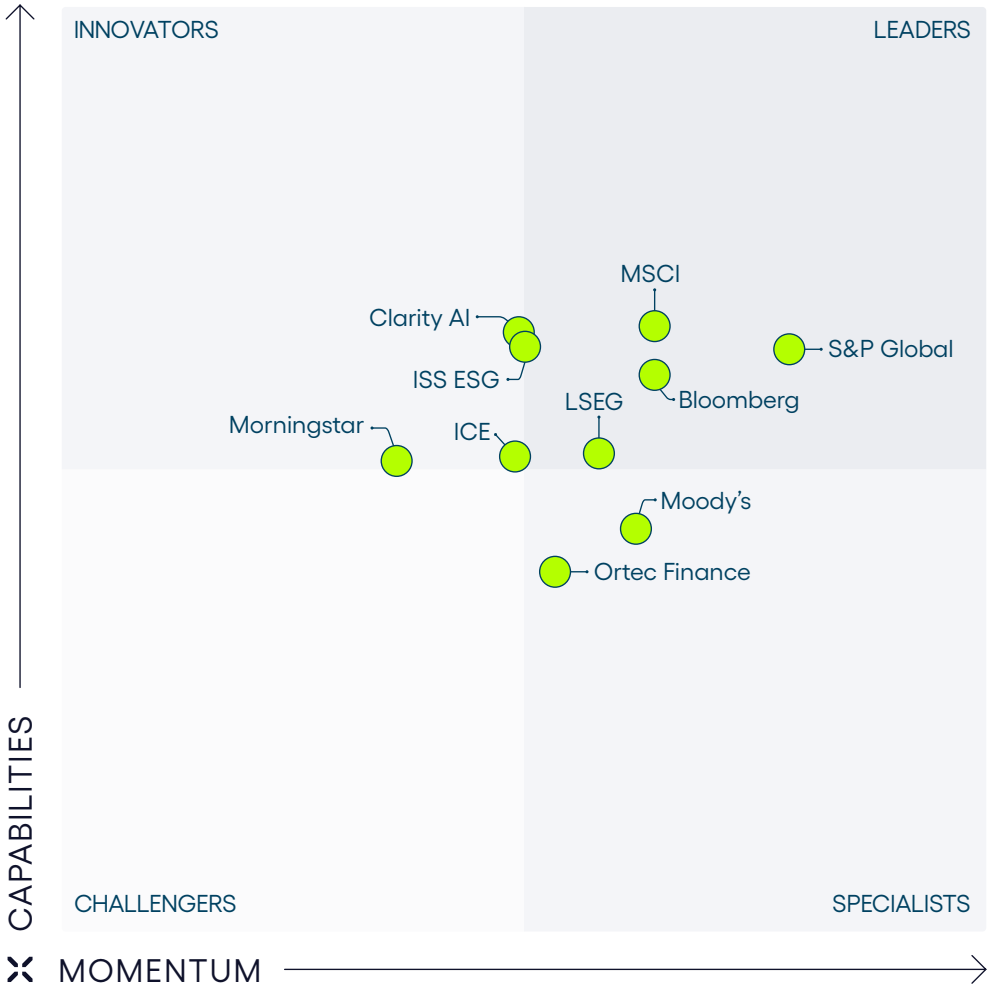
Vendor criteria scores (Momentum)

	Bloomberg	Clarity AI	ICE	ISS ESG	LSEG	Moody's	Morningstar	MSCI	Ortec Finance	S&P Global
Market vision	2.0	3.0	1.0	1.0	2.0	3.0	2.0	0.0	3.0	2.0
Business strategy	3.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	2.0	3.0
Product strategy	2.0	3.0	1.0	2.0	3.0	2.0	1.0	1.0	3.0	3.0
Innovation strategy	2.0	2.0	1.0	3.0	2.0	3.0	1.0	2.0	2.0	3.0
Acquisitions	0.0	0.0	1.0	1.0	0.0	0.0	0.0	3.0	0.0	0.0
Total number of climate financial data and analytics clients	2.0	1.0	1.0	1.0	2.0	2.0	1.0	2.0	1.0	2.0
Total climate financial data and analytics revenue	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	3.0
Revenue growth	1.0	1.0	2.0	2.0	1.0	1.0	1.0	3.0	1.0	2.0
Location of climate financial data and analytics customers	2.0	1.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0
Total climate financial data and analytics employees	3.0	1.0	2.0	1.0	2.0	1.0	1.0	2.0	1.0	3.0
Climate financial data and analytics partners	3.0	2.0	2.0	1.0	2.0	3.0	1.0	2.0	2.0	2.0

Source: Verdantix analysis

Figure 10

Green Quadrant for climate financial data and analytics providers 2024



Capabilities

This dimension measures each data provider on the breadth and depth of its data functionality across 11 capability areas, as outlined in **Figure 6**.

Momentum

This dimension measures each software supplier on 11 strategic success factors, as outlined in **Figure 7**.

Source: Verdantix analysis

MSCI overview

Information

MSCI, a financial data and index provider, launched its first ESG index in 1990 and has been providing ESG risk ratings since 1999. Today, the firm is segmented into four product lines: indexes; analytics; sustainability and climate; and private capital and real assets. Climate and sustainability data and models are integrated across these product lines and cover emissions, transition risk and opportunities, transition plans, temperature alignment, carbon markets, physical risk, nature and biodiversity, and scenario analysis. MSCI also offers climate indexes. It acquired Carbon Delta in 2019 to expand its climate scenario and risk reporting capabilities, and Trove Research in 2023, which formed the basis of its Carbon Markets solution.

Vendor info

Firm name	MSCI
Headquarters	New York, US
Employees	5,794
Revenues	$2.53 billion
No. of offices	Undisclosed
Example customers	Undisclosed

Customer regional presence

Asia	-
Oceania	-
Europe	-
Middle East and Africa	-
Latin America and the Caribbean	-
North America	-

% Customer base

○ 0% ◔ <10% ◑ 10%-25% ◕ 25%-50% ● above 50%

Capability scores

Momentum scores

Capability scores on a 0 to 3 scale. A score of 0 means no capability and 3 means market-leading capability.

Analyst insight: MSCI offers detailed carbon data sets and qualitative insights

Based on the Green Quadrant analysis, Verdantix finds that MSCI offers:

- **Comprehensive net zero data sets incorporating carbon offset information.**
  MSCI scores above-average on most capabilities and is particularly strong on net zero, carbon offset and climate opportunity data. For example, it offers credibility analysis of net zero targets and transition plans and evaluates the extent to which firms align with net zero by 2050 according to the criteria of the Net Zero Investment Framework (NZIF). Its Carbon Markets solution provides data on the degree to which firms participate in carbon markets, as well as an evaluation of project quality, carbon offset policies and guidance, and current and forecast prices of engineered and nature-based CO_2 removals. For green revenue – an area where most organizations focus exclusively on the EU Taxonomy – MSCI also evaluates firms' contributions to the UN Sustainable Development Goals (SDGs).

- **Limited supply chain capabilities.**
  MSCI does not offer a dedicated supply chain risk assessment solution. Clients can use MSCI's geospatial tool to assess physical climate and nature risks in their supply chains if the locations of suppliers are known. However, the firm does not provide supplier data or assess how disruptions could affect supply chains. Despite its strong capabilities across many aspects of climate financial data and analytics, the market continues to perceive MSCI as an ESG ratings provider. Some buyers say that, for reporting purposes, they prefer to use climate data from other vendors and rely on MSCI's offerings for context and comparison. Customers also report that MSCI is slow to remove expired data and that the response time for technical questions is long – several weeks, compared with a matter of days for other vendors.

- **Qualitative insights to complement quantitative data and analytics.**
  Many users appreciate the qualitative insights that accompany MSCI's quantitative data. Some larger firms that invest in climate data and analytics from multiple providers choose to use MSCI's analyst insights to complement their in-house analytics. Smaller financial services firms, or those that have less capacity for conducting their own climate-related analysis, can also benefit from these analyses. Such firms may prefer ESG Ratings – which, although separate from its Climate and Nature product line, are a strength for MSCI – over climate data and analytics. MSCI's breadth of offerings is also valuable for organizations that do not want to work with multiple vendors.

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Smart Buildings

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