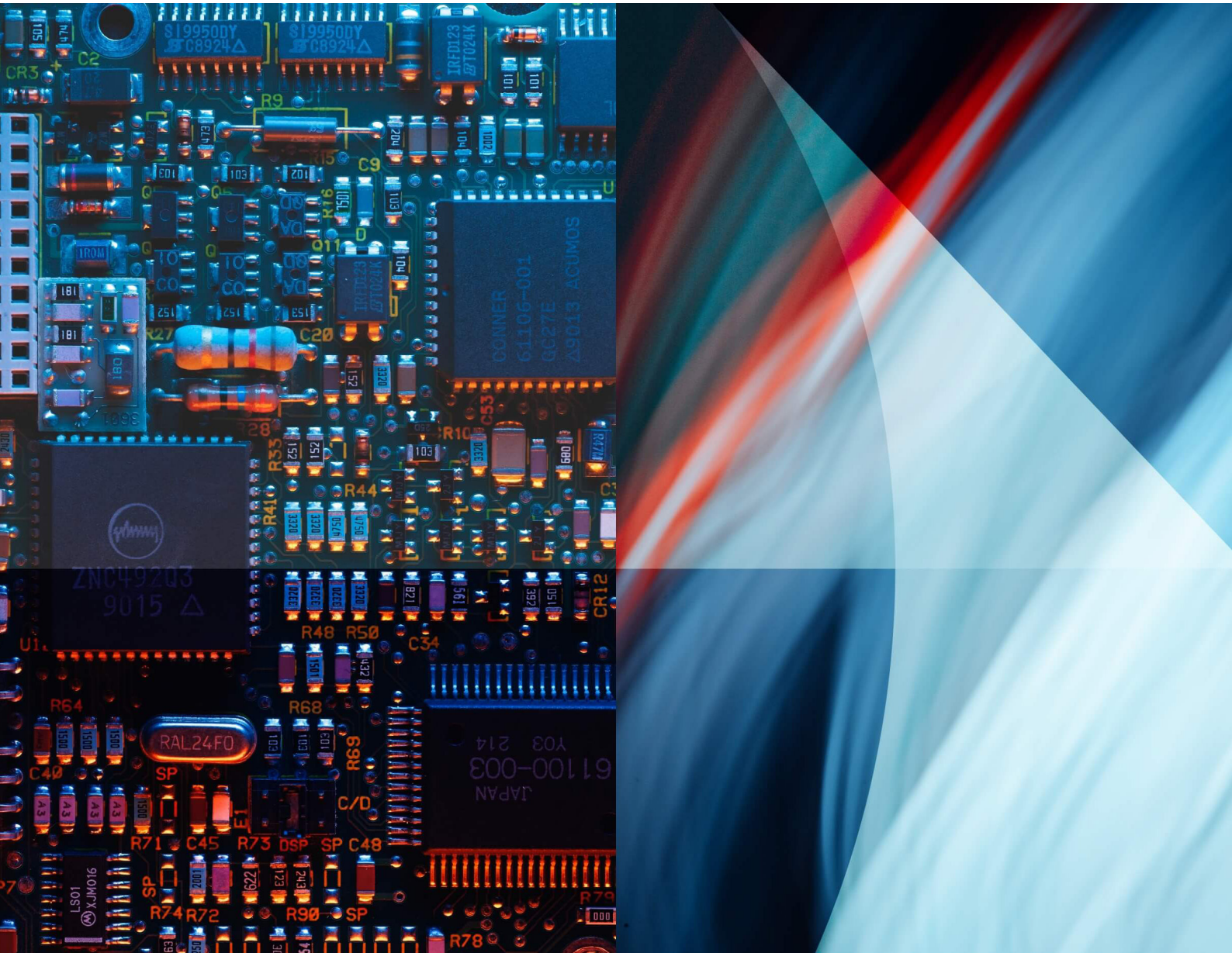


Net Zero & Climate Risk

Smart Innovators: Net Zero Financial Data And Analytics Providers

By Adam Barnard
With Ryan Skinner

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Demand for net zero financial data and analytics has grown in recent years, due to current and upcoming climate disclosure regulations, changing climate policy landscapes and investor demand. Financial market firms are increasingly turning to net zero financial data and analytics to help them identify, monitor and address their climate risk exposure, as well as seize the opportunities created by the changing landscape. This report benchmarks the innovation of 13 net zero financial data and analytics providers across seven categories of capabilities: data acquisition, sectoral data sets, net zero targets, carbon offsets and renewable energy certificates (RECs), climate change opportunities, climate transition risk valuations and net zero portfolio optimization. Technology decision-makers should use this report to understand the innovation happening in this space and inform their product strategy. Buyers can use the report to determine how and where these offerings can bring value to their businesses and reduce their climate-related risks.

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Organizations mentioned

Baringa, BlackRock, Bloomberg, CDP, Center for International Climate Research (CICERO), Clarity AI, Deutsche Börse, Fitch Ratings, GIST Impact, Goldman Sachs, Institutional Shareholder Services (ISS), Intercontinental Exchange (ICE), International Sustainability Standards Board (ISSB), Kohlberg Kravis Roberts & Co. (KKR), London Stock Exchange Group (LSEG), Moody's, Morgan Stanley, Morningstar, MSCI, Nasdaq, Oliver Wyman, Persefoni, Puro.earth, Refinitiv, RiskQ, riskthinking.AI, RMS, S&P Global, Shades of Green, Sphera, Sustainalytics, Task Force on Climate-related Financial Disclosures (TCFD), Task Force on Nature-related Financial Disclosures (TNFD), The Institute of International Finance, Unilever, Urgentem, Watershed Technology.



Net zero data and analytics are becoming critical business assets for financial markets

Large corporations are under pressure from stakeholders to set net zero targets and disclose quantitative and qualitative information about their climate impact in frameworks such as those developed by the Task Force on Climate-related Financial Disclosures (TCFD) and the International Sustainability Standards Board (ISSB). This data creates a new foundation for comparison and decision-making. For example, Unilever's transparency in emissions disclosures prompted analysis by a financial think tank, which found that the consumer goods giant is off track against its own 2030 emissions targets. Asset owners and managers are increasingly basing investment decisions on these kinds of insights, which has boosted interest in the data solutions that underpin them. Financial market data and analytics providers are responding to this demand by developing unique data sets, analysis and tools. Over the coming decade, net zero financial data and analytics will become a key domain for innovation and competition.

Net zero data and analytics enable product innovation and reduce risk in financial markets

Financial institutions and regulators are united in an effort to unlock the financing needed to fund the climate transition. According to consulting firm Oliver Wyman, approximately \$50 trillion in incremental investment is required by 2050 to transition the global economy to net zero emissions and avert a climate catastrophe. For this to happen, financial institutions need to make more product, risk and portfolio decisions based on climate factors. Refinitiv, a subsidiary of the London Stock Exchange Group, recognizes the "increasingly critical importance of transparent, accurate, and comparable data", to support financial decisions. Regulators have responded to this need by mandating disclosures that collect data to underpin those decisions. Traditional financial data providers then acquire this information to create products that support the following key decision-making use cases:

- **Assessment of transition risk as it relates to financed emissions.**

A slew of new international and national regulations and standards require greater transparency in the reporting of financed emissions: the greenhouse gas emissions linked to the investment and lending activities of financial institutions like investment managers, banks and insurers. The TCFD requires firms to disclose their analysis of the actual and potential impacts of transition risks in different climate scenarios. Net zero data and analytics generated from these scenarios, along with ongoing emissions data, can help financial institutions manage their exposure to the transition risks of financed emissions. Morgan Stanley, for example, uses net zero data and analytics to help its corporate loan portfolios align with the international goals set by the Paris Agreement.

- **Comparison of firms' capital expenditure and R&D plans for decarbonization.**

A firm's planned capital expenditure (CAPEX) is a useful indicator of its commitment to climate action. CAPEX can reflect when a business is investing in new, climate-friendly revenue streams, or lowering its climate risk profile. Types of CAPEX data range from tracking 3- and 5-year spending plans to R&D schedules to analysing green product patent filings as a proxy measure. Goldman Sachs looks at CAPEX spending as an indicator of decarbonization intent in four main areas: fuel (renewable fuels), electricity (renewables), infrastructure (electricity grids) and end use (transportation).

- **Analysis of the market for unique value-adding net zero capabilities.**

Financial market participants see net zero as an opportunity to foster new growth, value creation and returns. Not all asset classes will be affected equally, but there is a need to identify untapped sources of value and assess risk in each of them. Given the depth and breadth of this transition to net zero, financial market participants will need to identify the data and analytics that relate to their business model. Where CAPEX and R&D investment plans show intent for potential new revenue streams, green revenue can show the degree to which those plans have been turned into actions. For example, Kohlberg Kravis Roberts & Co. (KKR) launched a \$1.3 billion private equity vehicle, the KKR Global Impact Fund, dedicated to investing in organizations that provide commercial solutions to environmental challenges.



- **Evaluation of portfolio-level risks or opportunities related to net zero and energy transition.**

Net zero strategies and the energy transition come with risk at the portfolio level, and investors need to understand how the idiosyncratic risk of individual firms relates to the broader portfolio. Asset managers need a portfolio-level view to optimize portfolios and diversify away from unnecessary risk, while sticking to their relevant mandates. They also need to prepare for potential risks from regulation, such as carbon taxes. With net zero analytics, financial institutions can create a portfolio-level resilience strategy by evaluating portfolio performance against a benchmark and incorporating factors like carbon earnings at risk or climate transition value at risk. They can also demonstrate a positive, climate-informed 'interaction effect' through asset allocation, security selection and other investment decisions made by the portfolio manager.

- **Development of new and differentiated funds, indices or bond products.**

Financial institutions are creating Paris-Agreement-aligned and climate transition indices that utilize robust data sets and science-based assessments of organizations' climate risks and opportunities. These indices are then used to produce a specific product that customers can purchase to hedge against climate risk or to gain exposure to the opportunities it presents. According to Morningstar, there were 228 sustainable exchange-traded funds (ETFs) and 368 sustainable open-end funds at the end of 2022; many have a net zero focus. Institutions are also using net zero data and analytics to create green bond offerings, while commodity trading advisors are developing futures contracts on a wide variety of physical goods, including agricultural products, forest products, metals and energy.

Introducing net zero financial data and analytics providers

Net zero financial data and analytics is an emerging field, currently occupied by a mix of established market players and startups that are developing offerings in this new space. Verdantix defines net zero financial data and analytics providers as:

Providers of data, analytics, models and tools on net-zero-related topics (GHG emissions, transition plans, investments, targets and offsets, for example) for use by financial market participants, to support decision-making for financial product development, investment allocation, portfolio optimization and climate-related risk mitigation, and valuations.

Verdantix identified a number of data and software firms that offer net zero financial data and analytics. This report presents the key areas of innovation and product development at 13 of the most relevant providers. Verdantix conducted research interviews with Bloomberg, Clarity AI, GIST Impact, Intercontinental Exchange (ICE), Moody's, Morningstar/Sustainalytics, MSCI, Nasdaq, Refinitiv, riskthinking.AI and S&P Global, and also assessed BlackRock's Aladdin offering and Institutional Shareholder Services's ISS ESG solution. To be considered in this study, each firm had to have at least 30 employees and an offering that included multiple types of net zero data and analytics. The Verdantix research team also assessed publicly disclosed material about the organizations evaluated in this analysis.

Net zero financial data and analytics providers deliver through three core models

Delivering net zero data and analytics requires proficiency in data acquisition, data enrichment and modelling, and the tools to make it decision-useful for end-users. Building on these capabilities, net zero financial data and analytics providers can generate value for buyers through many different models, and three core types of offerings have emerged: pureplay data providers, data modellers and decision platforms. Together, these create an ecosystem where many providers interact (see **Figure 1**); for example, one provider, BlackRock, invests in and incorporates net zero data from another provider, Clarity AI, in its platform. Deeper analysis of these three segments shows that:



- **Pureplay data providers are sources of raw data to support organizations’ own analysts.**

These providers look to obtain the most relevant and up-to-date sources of net-zero-related data, such as corporate Scope 1, 2 and 3 emissions data, biodiversity data and industry- or country-specific emissions and targets. This can take the form of ingesting data from trusted third-party providers, such as the CDP, and enriching it with data from corporate sustainability or net zero reports. Data can also come from reported financial statements, earnings call transcripts, media reporting, patent databases and analyst calls. Some providers are attempting to create a hub where firms self-report their net-zero-related data. Pureplay providers may also apply AI/machine learning (ML) models to fill gaps in information. Examples of pureplay data providers for net zero data and analytics are GIST Impact and Clarity AI.

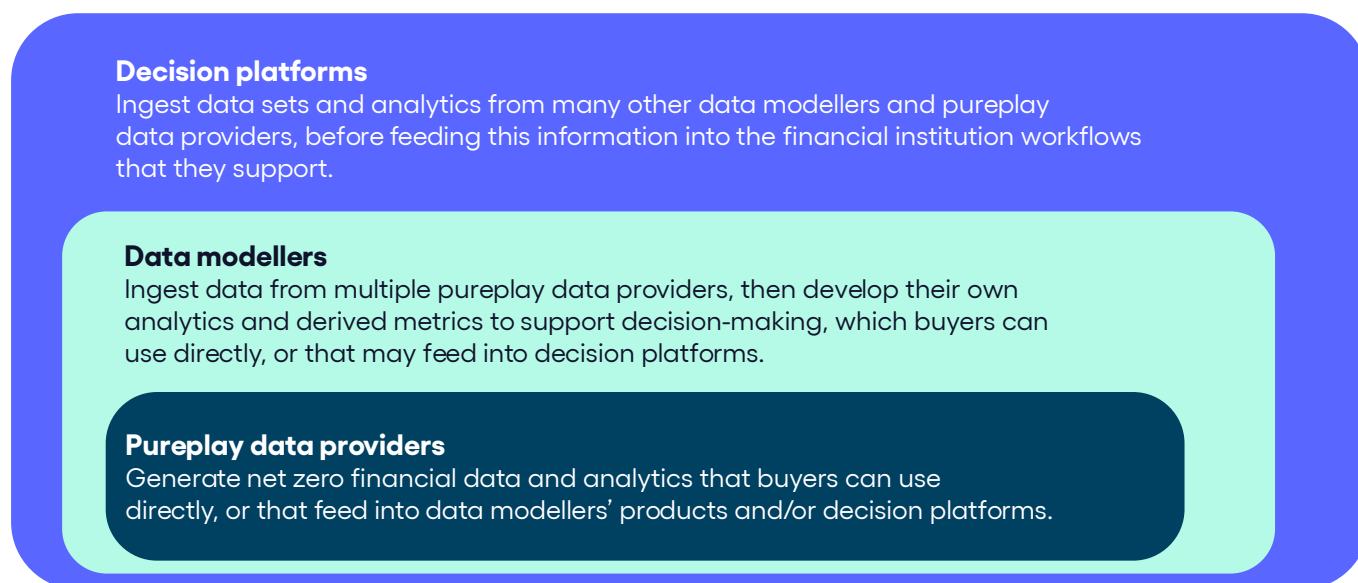
- **Data modellers provide value-added analytics derived from source data.**

As well as gathering data, these providers also offer several types of aggregated decision-useful data sets and value at risk metrics or products. Value at risk is a metric that models the potential impact on a firm’s value from various scenarios. For example, ISS ESG’s Climate Transition Value at Risk solution shows that as much as 11% of listed firms’ market capitalization may be at risk in a high transition risk scenario; the calculation of this would involve modelling inputs like carbon prices and the resulting changes in demand. Many of these providers also use automated reporting to align data with various frameworks. The three main credit rating agencies – Fitch Ratings, Moody’s and S&P Global – are net zero financial data modellers for fixed income products. Other ratings and risk analysis providers, such as Sustainalytics, and index constructors, such as MSCI, are also in the data modellers category.

- **Decision platforms are tools that embed net zero financial data in existing workflows.**

Decision platforms give users access to offerings from pureplay data providers and data modellers, as well as their own data and analytics. As such, they often have the largest selection of data and analytics. These platforms also act as a distribution channel to reach financial market buyers and financial product developers, who may use the platform to construct ratings and indexes, for example. Often, decision platforms connect to an exchange, making it easy to use net zero data and analytics alongside other financial data. Examples of decision platforms for financial net zero data and analytics include Bloomberg (which hosts Sustainalytics and MSCI ratings) and BlackRock’s Aladdin (which partners with Baringa), as well as exchanges like Nasdaq (which partners with Moody’s) and ICE (which has acquired Refinitiv).

Figure 1
Ecosystem of net zero financial data and analytics providers



Source: Verdantix analysis



Innovation stems from AI modelling, NLP, unique data sources and user relevant applications

Net zero financial data and analytics providers are differentiating themselves and seeking to beat their competition through access to better data, unique and value-adding analysis, and the breadth and applicability of their insights. All in all, there are seven major domains of innovation in this space, spanning from pure quantity and quality of input data to applications like portfolio optimization (see **Figure 2**). None of the 13 vendors provide market-leading innovation across all seven areas (see **Figure 3**). Net zero data and analytics providers are exhibiting innovation in:

- **Data acquisition, widening the breadth and closing data gaps for Scope 3.**

Many net zero financial data and analytics providers cover the breadth of a listed universe of roughly 15,000 firms, and have automated data collection through AI and natural language processing (NLP). Some vendors use machine-learning to estimate unreported fields, which is particularly prevalent for Scope 3 emissions for both public and private organizations. Bloomberg stands out for the breadth of its coverage, with data on 130,000 firms' Scope 1 and 2 carbon emissions and 58,000 firms' Scope 3 emissions, using estimates back to 2010 to support time series analysis. Providers are also differentiating themselves on quality and frequency of updates. GIST Impact uses ML-based estimation models to fill gaps and create quarterly updates, then tags that data as ML-derived estimates.

- **Industry- and sector-specific data and analytics.**

Many use cases for net zero financial data and analytics involve a focus on a specific industry, geographic location, asset class or other unique categorization. Bloomberg, ISS ESG, MSCI and S&P Global lead the market in this area of innovation. S&P Global's Sustainable1 offering bundles its data sets thematically, such as "energy transition data" – a mix of energy utilities and their green vs. brown share of energy over time – or "coal exposure data" – exposure to coal reserves, extraction and power generation activities. They also exchange data and analytics with their credit rating and commodity teams, and create thought leadership via webinars, research and other content to help explain and conceptualize the methodologies that go into their net zero calculations and use cases.

- **Net zero targets, providing insight on decarbonization pathways and emissions trajectories.**

Investors and portfolio managers need to understand whether their investees have set targets, whether they are science-based, how they plan to reach them, and whether they are realistic and achievable. Many net zero financial data and analytics providers have built capabilities to assess net zero pledges against firms' existing decarbonization strategies. For example, MSCI has predefined sector-level decarbonization data sets to help create baselines, standards and targets for customers to benchmark against. Users, such as asset managers, can also analyse projected emissions estimates based on four criteria: short-term targets based on the Greenhouse Gas Protocol, external validation of targets, a track record of achieving past targets, and comparison of the firm's emissions trajectory to that implied by their decarbonization targets.

- **Carbon offsets and renewable energy certificates, gathering transaction data.**

Many businesses, particularly those in industries with very hard-to-abate emissions such as aviation or energy, turn to the voluntary carbon markets to address residual emissions against a net zero target. A handful of net zero financial data providers are creating analytics to capture the flow of credits in this market. To date, there has been very little acquisition in this space, but S&P Global is the furthest advanced with its Platts Carbon Credit Assessments, which reflect prices in the brokered and retail markets or on trading and exchange instruments for delivery. MSCI is also tracking organizations that have reported plans to use carbon offsets to reach their emissions reduction targets in the future.



- **Climate change opportunities, tracking investments and fundraising.**

Net zero financial data and analytics providers are tracking climate change opportunities for financial institutions by sourcing data spanning capital expenditures, R&D plans and revenue from financial statements, investor presentation decks, budget plans, and proxies. MSCI, for example, searches through patent databases for evidence of future green revenues. It also tracks general carbon emissions revenue intensity, to track energy providers’ revenue from clean technologies. S&P Global provides data and analytics on the environmental robustness of green bonds and sustainability financing through the Shades of Green business it acquired from the Centre for International Climate Research (CICERO) in 2022.

- **Transition-risk-adjusted valuations, featuring climate scenario analysis.**

Climate value at risk under different warming scenarios has become a key input into overall valuations of firms and other assets. All providers look to implement methodologies for warming scenarios that use climate hazards, forward-looking carbon policy and technology variables as inputs to measure the risk on firms’ operations and value chains, with results often expressed in financial metrics. Transition scenarios form the basis of tool providers’ core assumptions when evaluating financial risks from climate change, and they are built around a global temperature target or emissions pathway. The breadth and quality of net zero data inputs, along with the quality of assumptions, is a key differentiator in providing decision-useful outputs for valuation. With its heritage in credit risk analysis, Moody’s is well placed to perform this analysis and customize data to model valuations.

- **Net zero portfolio optimization, with attribution analysis and comparison of holdings.**

Net zero portfolio optimization involves comparing carbon performance alongside other sets of financial data. Bloomberg is a leader in this space given its ability to bring multiple sources of data together to make the relevant comparisons. Other vendors, including exchanges like the Intercontinental Exchange (ICE), also have decision platforms with capabilities to perform portfolio-level analysis. The ability to include a broader swathe of variables, like net zero metrics, in attribution analysis helps asset managers optimize for risk and return, while also adjusting for the net zero risks and opportunities.

Figure 2
Net zero data and analytics for financial markets: capability categories and components

Capability categories	Components
Input data coverage and quality	Data sources; number of organizations and asset classes covered; frequency of data updates; data gap estimation
Industry, sector or unique net zero related data sets and insights	Industry-, sector- or geography-specific data sets and insights; unique net zero data and insights
Net zero targets, tracking and alignment	Net zero commitment tracker; identifying targets and setting baselines; forecast and benchmark capabilities; tracking progress; avoided emissions
Carbon offsets and RECs purchased	Carbon offsets data; REC data; corporate offset and REC ledgers; carbon offset quality capture
Climate change opportunities	Green revenue opportunities captured; green financing captured; green CAPEX
Transition-risk-adjusted valuations and insights	Transition-risk-adjusted valuations for organizations and other assets
Net zero portfolio optimization	Portfolio-level emissions intensity; portfolio benchmarking; attribution analysis

Source: Verdantix analysis



Figure 3

Net zero financial data and analytics providers capabilities assessment

	Data acquisition	Sectoral data sets	Net zero targets	Carbon offsets and RECs	Climate change opportunities	Climate transition risk valuations	Net zero portfolio optimization
BlackRock	◐	◐	◐	○	◐	◐	◐
Bloomberg	●	●	◐	◐	◐	●	●
Clarity AI	●	◐	◐	○	○	○	◐
GIST Impact	●	◐	◐	◐	○	○	◐
Institutional Shareholder Services (ISS ESG)	◐	●	◐	○	◐	◐	◐
Intercontinental Exchange (ICE)	●	◐	●	◐	◐	◐	◐
Moody's	◐	◐	◐	○	◐	◐	◐
MSCI	●	●	●	◐	●	●	●
Nasdaq	◐	◐	◐	◐	◐	◐	◐
Refinitiv	◐	◐	◐	◐	◐	○	○
riskthinking.AI	◐	◐	◐	○	◐	●	◐
S&P Global	◐	●	●	◐	◐	◐	◐
Sustainalytics	◐	◐	◐	◐	◐	◐	○

No capability	○
Limited capabilities	◐
Some capabilities	◑
Strong capability	◒
Market-leading capability	●

Source: Verdantix analysis

Providers are extending their offerings by buying, building and partnering for capabilities

Growing demand for net zero financial data and analytics over the last three years has resulted in an increase in merger and acquisition activity and investments in financial market data and analytics providers (see **Figure 4**). The ESG debt universe alone has grown rapidly to reach \$4.5 trillion compared to \$1.5 trillion in 2021, according to The Institute of International Finance. BlackRock estimates capital expenditures by firms will need to reach \$35 trillion by 2030 to achieve net zero targets. To meet the demand and expected future growth, providers have been scrambling to bulk up their net zero data and analytics capabilities by launching new products, taking minority stakes in other firms and partnering with or acquiring vendors to gain capabilities they lack. Start-ups are also looking to meet the demand for net zero data and analytics, with Clarity AI raising \$50 million in 2021. Providers are building out their offerings through:



- **Acquisitions and investments.**

Many of the larger platforms are looking to offer their customer base a broad suite of climate risk and net zero offerings, with analysis across different industries, asset classes and geographies. ICE expanded its climate risk offering with the acquisition of RiskQ, a climate risk modelling provider, in 2021 and Urgentem, a provider of global corporate emissions and climate transition data, in 2022. Deutsche Börse, also an exchange, acquired ISS in 2020 as it looked to gain a foothold in the net zero financial data and analytics space. S&P Global acquired Trucost back in 2016 and Shades of Green at the end of 2022 to provide an independent, point-in-time analysis of sustainable finance instruments, programmes and frameworks.

- **Partnerships.**

Net zero financial data and analytics providers have sought partnerships to gain access to new clients, markets, or data and analytics more quickly and easily than through acquisition. For example, Moody's RMS is integrating with Nasdaq's Risk Modelling for Catastrophes (NRMC) service to gain and provide access to more than 300 risk models. In the specialized data access space, GIST Impact has partnered with Clarity AI to work on biodiversity data sets – while Bloomberg and BlackRock work with both to access their high-quality data methodologies around biodiversity. BlackRock also partners with Baringa to integrate its Climate Change Scenario Model into BlackRock's Aladdin Climate technology offering.

- **New product launches.**

It is not just about acquisitions or partnerships, but also the growth of inhouse product development. Many providers are investing heavily in personnel with experience in climate risk, big data and software development to meet the increase in demand. In many instances, incumbents are competing directly with start-ups for talent. Moody's revenue from its ESG & Climate segment grew 24% in the last year, more than double any other area of its business, largely due to new product launches. MSCI has seen similar revenue growth in its ESG & Climate practice – 26% in the past year – from launching new products, especially around transition risk.

Figure 4
Acquisitions, investments and partnerships

Year	Type	Description
2023	Partnership	Clarity AI partners with GIST Impact
2023	Partnership	Nasdaq partners with Moody's and integrates platforms
2022	Investment	Bloomberg partners with and invests in riskthinking.AI
2022	Acquisition	S&P Global acquires Shades of Green from CICERO
2022	Acquisition	ICE acquires Urgentem
2021	Partnership	BlackRock partners with Baringa
2021	Acquisition	ICE acquires RiskQ
2021	Acquisition	BlackRock acquires minority stake in Clarity AI
2021	Acquisition	Moody's acquires RMS
2021	Acquisition	Nasdaq acquires Puro.earth
2020	Acquisition	Deutsche Börse acquires ISS

Source: Verdantix analysis



The next wave of innovation will cover financed emissions, physical risk and biodiversity

Bottom-up market forces are important signals to the market. As investors demand richer data sets, net zero financial data and analytics providers will respond by integrating newer data types and models, alongside climate risk and ESG factors in a variety of forms, to suit additional use cases. The key trends that will drive changes and the next wave of innovation in this space are:

- **Carbon management firms entering the market to offer financed emissions use cases.**

Today, many net zero financial data and analytics providers support financial institutions' financed emissions calculations through investees' public reports and industry averages and estimates; both have weaknesses, particularly with financed emissions from private sources. Carbon management vendors such as Persefoni, Sphera and Watershed Technology are looking to provide a suite of Scope 3 financed emissions data for financial institutions to use. These vendors are well-placed to gather this data, given their heritage and software functionality. When combined with the modelling and analytics of providers in this report, this data can help create valuable net zero insights.

- **Integration of physical risk data and analytics alongside net zero data and analytics.**

Financial firms are interested in acute and chronic physical risks that vary under different warming scenarios, particularly when an investee's physical assets are in high-risk areas or if its supply chain is vulnerable to climate impacts. Risks such as floods, wildfires and extreme heat or cold can be modelled, as too can forecasts for both the direct and indirect effects of weather and climate events on businesses' infrastructure, operations and markets. The analysis can help investors identify which properties or physical assets they should look to divest or adjust valuation on. One example of a vendor in this space, riskthinking.AI, combines transition and physical risk probabilistic modelling capabilities to help run scenarios and determine effects on valuations.

- **Biodiversity becoming a focal point and source of new data.**

Biodiversity loss now has the attention of regulators. This is driving disclosure frameworks, such as the Task Force on Nature-related Financial Disclosures (TNFD), which – like the TCFD before it – generates a stream of data to support decision-making by financial institutions. Net zero financial data and analytics providers will add products focusing on the impact of business operations on land area and ecosystem integrity degradation. Vendors like ISS are aligning their methodologies with the TNFD, while Clarity AI and GIST Impact are both trying to position themselves as high-quality biodiversity analytics providers.



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