ESG & Sustainability

Green Quadrant: ESG & Sustainability Assurance Services 2024

By Lily Turnbull, Jessie Wilson
With Kim Knickle

November 2024

This version of the report contains Verdantix's summary of PwC'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 a detailed, fact-based benchmark of 14 of the most prominent ESG and sustainability assurance providers in the market. Based on the proprietary Verdantix Green Quadrant methodology, our analysis entailed two-hour live briefings, client interviews and assurance provider responses to a detailed 51-point questionnaire, covering five demonstrated capability and three momentum categories. The ESG and sustainability assurance services market has grown rapidly over the last two years, due to increasing regulation, heightened stakeholder scrutiny and concerns about greenwashing and reputational risk, as well as a broader trend towards integrated reporting. Amongst the providers featured in the Leaders' Quadrant, five firms – Deloitte, DNV, EY, KPMG and PwC – demonstrated the most comprehensive and evolved services for ESG and sustainability assurance.

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Organizations mentioned

AccountAbility, Agro Bayer Brasil, Alcoa, Apex Companies, ArcelorMittal, Asia Pacific Loan Market Association (APLMA), BDO, Bureau Veritas, CDP, Citigroup, Clean Energy Associates (CEA), C-MORE, Coca-Cola (Türkiye), DEKRA, Deloitte, denkstatt, Diginex, DNV, Dow, EcoVadis, ELEVATE, ERM CVS, European Commission, European Financial Reporting Advisory Group (EFRAG), European Parliament, EY, GHG Protocol, Global Reporting Initiative (GRI), Goodyear, IFRS Foundation, International Auditing and Assurance Standards Board (IAASB), International Federation of Accountants (IFAC), International Organization for Standardization (ISO), Intertek, Italian Competition Authority (AGCM), Jabil, Johnson & Johnson, Kingfisher, KPMG, LBA Realty, LinkedIn, LRQA, Microsoft, MiQ, Morgan Stanley Capital Partners, o9 Solutions, Pfizer, PlayerLync, Procter & Gamble, PwC, Responsible Jewellery Council (RJC), Richwood Industries, S&P Global, SAI Global Assurance, Securities and Exchange Board of India (SEBI), SGS, Shein, Shell, SIX Swiss Exchange, Sustainable Assurance Solutions (SAS), Suzano, Tata Steel Europe, Techtronic Industries, thyssenkrupp, Titan Cement, Trace For Good, UK Sustainable Investment and Finance Association (UKSIF), UL Solutions, UN, US Center for Audit Quality (CAQ), US Securities and Exchange Commission (SEC), Worldly.

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Summary for decision-makers

- The ESG and sustainability assurance services market has grown rapidly over the last two years, due to increasing regulation, heightened stakeholder scrutiny and concerns about greenwashing and reputational risks, as well as a broader trend towards integrated reporting. This report helps firms' sustainability, finance, compliance, procurement and internal audit functions inform their sustainability assurance provider selection strategies.
- The report also provides assurance firms with competitive intelligence on the different players and service offerings in the market.
- The report is based on the proprietary Verdantix Green Quadrant methodology, encompassing two-hour live briefings, desktop research, customer references and vendor responses to a 51-point questionnaire, covering five demonstrated capability and three market momentum categories.
- While sustainability assurance services have been in existence for more than two decades, the market has significantly changed over the last five years, due to the rise of regulations mandating assurance of climate and sustainability information. Assurance providers leverage their diverse heritages and unique value propositions to service four key areas: ESG and sustainability pre-assurance; ESG and sustainability report and data assurance; carbon emissions assurance; and sustainable finance assurance.
- ESG and sustainability assurance providers play a vital role in the broader sustainability market. Erroneous ESG and sustainability data undermine trust in markets, engender poor decision-making and ultimately derail genuine sustainability initiatives. Accordingly, selecting the best-fit provider for sustainability assurance services is vital to ensure trusted disclosures and reliable decision-making.

Figure 9

Green Quadrant for ESG and sustainability assurance services 2024

Source: Verdantix analysis

The state of the ESG and sustainability assurance services market

Verdantix analysis of the ESG and sustainability assurance services market finds that the market was worth $1.8 billion in 2023, with forecast strong growth over the next five years (see [Verdantix Market Size and Forecast: ESG Assurance Services 2022-2028 (Global)]). Sustainability assurance services have been present for over 20 years but, until recently, the market has been predominantly voluntary, and stakeholder-driven. The last five years, however, have seen the rise of regulations mandating assurance of climate and sustainability information, as well as the harmonization of sustainability assurance standards. Accordingly, a previously fragmented market for sustainability assurance services is beginning to consolidate, as providers from a variety of heritages, each with unique value propositions, compete to increase their market share.

This report provides a detailed assessment of the 14 most prominent service providers in the ESG and sustainability assurance market, and their sustainability assurance offerings, to help individuals responsible for selecting and deriving value from these services to navigate the market. The report answers the following customer questions:

- **What is the current state of the market?**
- **What services do providers offer to support ESG and sustainability assurance?**
- **Which providers offer services best-suited to my firm's ESG and sustainability assurance needs?**
- **How will the market evolve over the next two years?**

To answer these questions, Verdantix assessed 14 ESG and sustainability assurance providers using a 51-point questionnaire, two-hour live briefings, and interviews with 14 ESG and sustainability assurance customers across a variety of industries, spanning finance and insurance, technology, retail and consumer goods, pharmaceuticals and healthcare, manufacturing, telecommunications, construction and mining. The resulting analysis is based on the proprietary Verdantix Green Quadrant methodology, which is designed to provide an evidence-based, objective assessment of vendors offering comparable products or services.

ESG and sustainability assurance is driven by both voluntary action and regulatory pressure

Over the last five years, firms have faced heightened scrutiny of their ESG and sustainability performance. Accordingly, sustainability assurance has emerged as a critical tool to help businesses build trust with stakeholders, as well as a way for regulators to safeguard consumers and end-users against greenwashing. Specifically, the market drivers impacting demand for ESG and sustainability assurance services are:

- **Introduction of assurance requirements under the EU's Corporate Sustainability Reporting Directive (CSRD).** The CSRD, which entered into force in January 2023, requires large and listed European firms, as well as non-EU firms that generate over €150 million on the EU market, to report their sustainability impacts. Under the CSRD, firms will need to obtain independent assurance of sustainability disclosures, beginning with limited assurance and moving to reasonable assurance – following an assessment to determine if reasonable assurance is feasible for auditors and undertakings. Non-compliance with the requirements of the CSRD can entail significant penalties; France, for example – the first member state to transpose the CSRD into national law – will impose criminal sanctions for breach of the requirements, including a fine of up to €30,000 and imprisonment of up to two years for failing to appoint an auditor or independent third-party organization to conduct assurance.

Figure 1

Key regulations mandating assurance of climate and sustainability information

	Regulation	Requirements
Asia	Securities and Exchange Board of India (SEBI) Business Responsibility and Sustainability Report (BRSR)	The top 1,000 listed businesses in India (by market capitalization) must disclose their performance in relation to nine ESG attributes, known as BRSR Core. Starting FY 2024/25, the top 150 listed entities must obtain reasonable assurance, with a phased approach thereafter.
Oceania	Australia mandatory climate reporting	Large and medium-sized enterprises will be required to disclose climate-related risks and opportunities over the short, medium and long term, as well as Scope 1 and 2 emissions, with a phased approach to Scope 3. There will be a phased approach to assurance, with all disclosures to be subject to reasonable assurance by July 1, 2030.
Europe	EU Corporate Sustainability Reporting Directive (CSRD)	Large and listed EU businesses, as well as non-EU parent businesses with significant operations in Europe, will be required to report sustainability information in their annual management reports from 2024. Firms within scope will need to obtain assurance of sustainability disclosures, beginning with limited, with the potential to transition to reasonable assurance.
North America	US Securities and Exchange Commission (SEC) Climate Disclosure Rule*	Publicly listed firms in the US will have to disclose climate-related information, including Scope 1 and 2 emissions, certain Scope 3 emissions and climate-related financial risks and processes, in their annual financial filings and SEC registration statements. Independent assurance will be required for footnote disclosures and Scope 1 and 2 emissions, starting with limited and moving to reasonable assurance.
	California Senate Bill (SB 253) California Climate-Related Financial Risk Act (SB 261)	Publicly traded and privately held firms doing business in California, with annual revenues exceeding certain thresholds, will need to disclose Scope 1, 2 and 3 emissions, as well as climate-related financial risks and processes. Independent assurance will be required for Scope 1, 2 and 3 emission disclosures, starting with limited and moving to reasonable assurance.
***Currently stayed, due to legal challenges.**		

Source: Verdantix analysis

- **Forthcoming mandatory assurance requirements in the US and Asia-Pacific (APAC).** Assurance requirements under the CSRD have set the standard globally – and other regions are following suit (see **Figure 1**). In January 2023 senators in California introduced a Climate Accountability Package, which will require firms to report their Scope 1, 2 and 3 emissions to a digital registry, with Scope 1 and 2 emission disclosures subject to assurance (see Verdantix Strategic Focus: Unpacking Sustainability And Climate Disclosure Laws in the US). In addition, the US Securities and Exchange Commission (SEC) climate disclosure rule contains a requirement for external assurance of climate-related disclosures. Although the rule is facing multiple legal challenges that are delaying implementation, Verdantix research indicates that US-headquartered firms are moving ahead with preparations nonetheless (see Verdantix Global Corporate Survey 2024: ESG & Sustainability Budgets, Priorities And Tech Preferences). Furthermore, the voluntary sustainability standards IFRS S1 and S2 issued by the International Sustainability Standards Board (ISSB), which recommend external assurance, are already being widely adopted across APAC. For instance, in September 2024 Australia introduced mandatory climate-related reporting requirements, including a phased approach to assurance, broadly in line with the ISSB standards.

- **Burgeoning integration of sustainability and financial reporting.**
  There is a general trend towards integrated reporting, driven by a growing recognition of the financially material nature of ESG and the connectivity between sustainability and financial performance. For example, the EU Taxonomy regulation requires firms to publicly disclose the degree to which their turnover, capital expenditure (CAPEX) and operational expenditure (OPEX) are aligned with a Green Taxonomy. As a result of integrated reporting, sustainability and financial reporting timelines are converging, and the board and advisory committee will need to provide a greater degree of governance and oversight of the reporting process. Additionally, regulators are becoming increasingly sensitive to inconsistencies between sustainability reports and financial statements. Against this backdrop, firms are seeking external assurance to improve the quality and robustness of sustainability disclosures, identify errors and inconsistencies, and ultimately, mitigate risk.

- **Rigorous eco-labelling rules as regulators crack down on greenwashing.**
  Regulators are responding to growing consumer and customer demand for sustainable products and services by cracking down on greenwashing. As an example, in September 2024 the Italian Competition Authority (AGCM) launched an investigation into global fashion online retailer Shein, over potentially misleading advertising claims regarding the environmental sustainability of its products. Growing concerns about greenwashing have prompted the European Parliament to pass a directive banning 'carbon neutral' claims and standardizing language such as 'eco' and 'green' in product information. The directive, passed in January and known as the EU Green Claims Directive, will set requirements for businesses to substantiate environmental claims to avoid misleading consumers. A key part of the requirement is that environmental claims and labels will be subject to third-party verification. Although this is an evolving area of the market, where methodologies, criteria, frameworks and certification schemes vary, we anticipate that the Green Claims Directive will add to demand for product and systems-level assurance.

- **Steady growth in the GSSS bond market – and an increasing need for transparency.**
  Despite a drop in global issuance in 2022, the market for green, social, sustainability and sustainability-linked (GSSS) bonds is forecast to steadily increase throughout 2024, according to analysis from S&P Global. GSSS bonds are considered an attractive sustainable finance instrument, particularly for emissions-intensive sectors, as they help issuers meet sustainability and decarbonization targets, whilst enabling capital improvement at a potentially lower cost. For example, in February 2024 multinational chemicals firm Dow issued a $1.25 billion green bond offering to support its decarbonization and circular economy strategies, including the construction of a new net zero emissions chemical plant in Canada. Firms are increasingly seeking independent assurance services at both the pre-issuance and post-issuance stage of a bond life cycle, to demonstrate to the market that their bonds meet best practice standards and that bond proceeds will be managed in accordance with the agreement.

- **Pressure to demonstrate sustainability commitments and achieve competitive advantage.**
  While much of the demand for sustainability assurance services arises from regulatory requirements, there is an increasing recognition of the broader value that assurance provides. Independent assurance can enhance a firm's credibility with its stakeholders and thereby improve its competitive positioning. Additionally, independent assurance can give management confidence that their decisions are complete, for example, by assessing the risk of error in reported information, such as due diligence on an acquisition or investment. Accordingly, forward-looking organizations are taking a proactive approach to ESG and sustainability assurance, as opposed to waiting for regulatory requirements.

Talent shortages and limited regulatory guidance challenge the ESG assurance market

Demand for ESG and sustainability assurance services is growing. Verdantix research reveals that ESG assurance is top of mind for organizations, with 58% of firms considering it to be a high funding priority over the next two years, and 55% expecting a double-digit increase in spend on ESG assurance services in 2024, compared with 2023 (see Verdantix Global Corporate Survey 2024: ESG & Sustainability Budgets, Priorities And Tech Preferences). Despite rapid growth, the ESG and sustainability assurance services market is challenged by:

- **An ESG assurance skills gap, with a scarcity of experts able to meet escalating demands.** The demand for skilled professionals to enable and ensure a 'green transition' significantly exceeds the supply. In June 2023 Verdantix research found that there were more open climate-related positions than there were climate-related professionals (see Verdantix Strategic Focus: Mind The Climate Skills Gap). These findings are echoed in LinkedIn's 2023 Global Green Skills Report, which revealed that only one in eight workers possesses one or more 'green skills'. The sustainability assurance services market, which requires a unique blend of sustainability and audit skills, combined with sector expertise, is not immune to the talent shortages impacting the wider market. In January 2024 Verdantix predicted that the sustainability assurance market would be squeezed by substantial capacity challenges due to talent shortages, compounded by the tight timelines and significant scale of regulations such as the CSRD (see Verdantix Market Insight: 10 Predictions For ESG And Sustainability In 2024 And Beyond). To address this, ESG assurance providers have launched dedicated learning programmes to enhance the sustainability skills of their wider employee base, in order to leverage their capabilities for sustainability assurance engagements.

- **Evolving sustainability assurance standards, which create challenges for globally consistent delivery.** Sustainability assurance has historically been performed under a variety of different assurance standards, including AccountAbility's AA1000 standards, the International Standards on Assurance Engagements (ISAE) 3000 and 3410, and the required independence and ethics standards. In the absence of a universally accepted standard, several usability and interpretative challenges have emerged. For instance, a lack of clarity surrounding the definitions of limited and reasonable assurance, and the difference in work effort required, has led to misaligned expectations between auditors, users and stakeholders – known as an 'expectation gap'. To address the lack of harmonization, and ensure globally consistent delivery in their approach to conducting assurance, ESG assurance providers leverage proprietary sustainability assurance methodologies, which are built on globally recognized standards. In September 2024 the International Auditing and Assurance Standards Board (IAASB) approved a proposed standard to help establish a global baseline for sustainability assurance; this includes guidance on the double materiality principle and assurance of forward-looking information, such as the resilience of a firm's strategy to future climate-related changes.

- **Divergent national requirements governing which firms can deliver CSRD assurance.** There are debates in the assurance market over which types of firm can provide sustainability assurance services. Some argue that statutory auditors are well-placed to perform sustainability assurance, given the broad knowledge of firms they gain through financial audits. Others are more cautious and have raised concerns about potential conflicts of interest, if a firm's financial auditor also reviews its sustainability reports. The EU's CSRD, which will impact an estimated 60,000 firms globally by 2028, allows for an 'open market' for sustainability assurance services – meaning that any independent service provider, not just statutory auditors, can issue assurance opinions on CSRD reports. However, while the European Commission promotes an open and diversified assurance market, some member states are leaning towards restricting assurance to statutory audit firms. This inconsistency across countries creates a challenging operational environment in which to deliver sustainability assurance services and complicates buyer selection processes and decision-making.

The scale and complexity of sustainability assurance is expanding, propelling investment in new technologies and specialized skills

Intense public scrutiny of corporate sustainability performance, as well as the rise of ESG reporting regulations mandating assurance, has had a profound impact on the market. In examining the evolution of ESG assurance, Verdantix notes that:

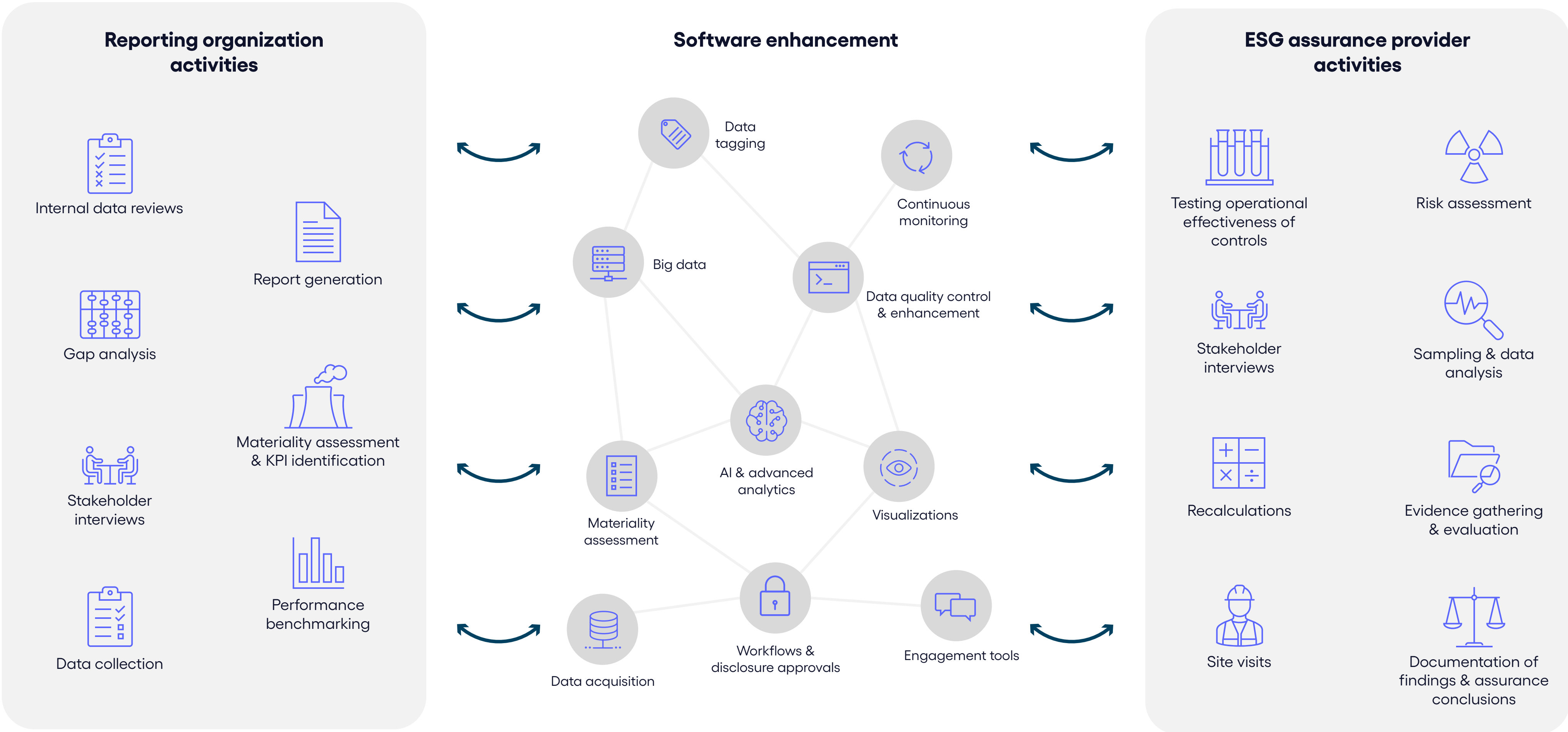
- **Scope of sustainability metrics assured is expanding.**
  The scope of sustainability metrics subject to external assurance is gradually expanding. GHG emissions are typically the most commonly assured metrics, as demonstrated by a study conducted by the International Federation of Accountants (IFAC) in 2022; however, firms are increasingly expanding the scope to include broader environmental and social impact metrics. In June 2024 the US Center for Audit Quality (CAQ) published a study that examined the sustainability reporting and assurance practices of the S&P 500, finding that most firms now obtain assurance over GHG emissions and of between one and three other ESG metrics. This scope expansion reflects a broader shift towards greater transparency and accountability, as well as evolving expectations from investors, regulators, consumers and other stakeholders (see Verdantix Strategic Focus: Unpacking The S In ESG Regulations). In response to this, assurance providers are expanding their skillsets through hiring, reskilling and training, to ensure they have expertise in areas such as water stewardship, biodiversity, product claims and human rights, as well as developing topic-specific sustainability committees to help with knowledge dissemination.

- **Sustainability assurance engagements are becoming annual recurring engagements.**
  ESG assurance engagements are typically conducted within a specific timeframe, the length of which can vary according to the scope of the engagement and the level of assurance provided. However, there is an increasing trend towards annual recurring engagements, with slight scope changes year on year, which often align with financial reporting timelines. This can be attributed to the growing frequency of engagements, due to regulatory requirements. Our research indicates that there are several different factors that influence the cost of ESG and sustainability assurance, such as the complexity and maturity of the organization, scope of work, duration of the engagement, level of assurance provided (limited versus reasonable assurance) and the requirement for specialist subject-matter expertise.

- **Sustainability assurance now involves a broad range of stakeholders.**
  Our research indicates that buyer personas for sustainability assurance services have expanded from CSR managers, chief risk officers and environmental managers to include the CEO, CFO, CSO, COO, general counsel, ESG controller and chief accounting officer, along with the involvement of the audit committee and board of directors. This is likely owing to heightened regulatory scrutiny around ESG disclosures, as well as the integration of sustainability and financial reporting, which is changing the way that ESG is organized and managed internally. To accommodate this diverse buyer base, firms often rely on selection panels to evaluate sustainability assurance providers. As the scope of metrics subject to assurance expands, sustainability assurance providers are increasingly collaborating with a wider range of functional leaders and data owners, such as EHS, human resources (HR), operations, IT and procurement.

Figure 2

Examples of how digital technology can add value to sustainability assurance

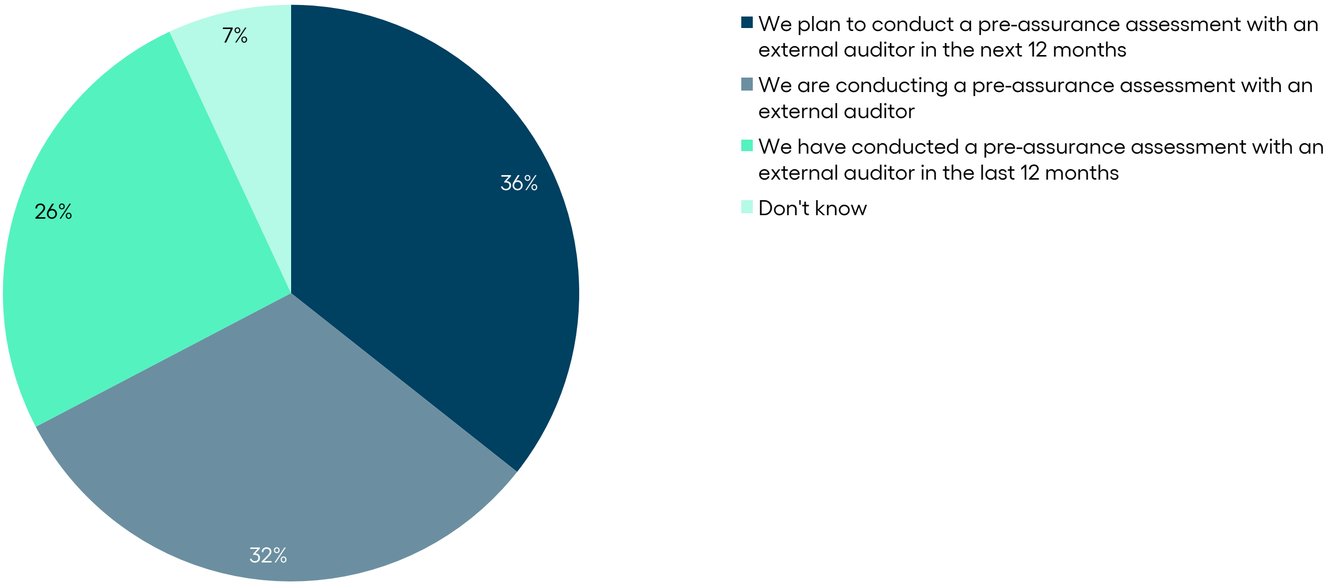


Source: Verdantix analysis

Figure 3

Approaches to preparing for external assurance of ESG and sustainability disclosures

How is your organization preparing for external assurance of ESG and sustainability disclosures?



Note: Data labels are subject to rounding.
Source: Verdantix Global Corporate Survey 2024: ESG & Sustainability Budgets, Priorities And Tech Preferences N=400

- **New technologies are streamlining ESG assurance and providing enhanced insights.**
  ESG assurance providers are increasingly leveraging digital technologies at different stages of the assurance process to improve efficiency, automate workflows, reduce client burdens and effectively manage costs (see **Figure 2** for examples of how technology can enhance ESG assurance). Digital tools are also being used by assurance practitioners to perform analytical procedures, such as trend analysis and anomaly detection. Many of the firms in this Green Quadrant mentioned that they are continuing to invest in emerging technologies, and in AI, to drive automation and advanced analytics. Over the next few years, we also expect to see more assurance providers leveraging geospatial technologies as part of the risk assessment and verification process (see Verdantix Strategic Focus: The ESG & Sustainability Assurance Software And Services Partnership Ecosystem). Given the significant forecast pressure on the ESG assurance market over the next few years (see Verdantix Market Insight: 10 Predictions For ESG And Sustainability In 2024 And Beyond), digitally enabled assurance will be key to ensuring efficient and streamlined service delivery.
- **Pre-assurance is gaining traction as more firms seek ESG assurance for the first time.**
  Given the scale of regulations such as the CSRD – which will impact businesses of all sizes – many firms will be seeking sustainability assurance for the first time. Our research indicates a rise in the number of assurance readiness projects, with 58% of firms having completed (or being in the process of completing) a pre-assurance assessment with an external provider within the last 12 months (see **Figure 3**). During a pre-assurance engagement, an assurance provider will evaluate an organization's readiness for the desired level of assurance by reviewing key elements such as definitions, calculation methodologies, internal controls, evidence availability and the suitability of criteria established by management. Often, assurance readiness is an iterative process, with many firms opting for pre-assurance support to help transition from limited to reasonable assurance, which requires practitioners to perform more extensive testing with larger sample sizes.

Green Quadrant for ESG and sustainability assurance services 2024

Erroneous ESG and sustainability data undermine trust in markets, engender poor decision-making and ultimately derail genuine sustainability initiatives. Independent assurance over ESG and sustainability disclosures is integral to enhance the confidence of stakeholders, who use this information to guide decision-making. For the purposes of this report, Verdantix defines ESG and sustainability assurance services as:

> *"Independent assessments, based on professional standards and guidelines, of the accuracy and reliability of ESG data and reporting processes."*

This definition does not include consulting engagements that result in the external provider defining, designing and implementing management systems and processes specifically for sustainability reporting. Additionally, our definition of ESG assurance does not cover ISO management system certification or due diligence services, although we acknowledge that vendors featured in this report may offer these services.

This Green Quadrant study benchmarks ESG and sustainability assurance offerings against four service lines: ESG and sustainability pre-assurance; ESG and sustainability report and data assurance, carbon emissions assurance; and sustainable finance assurance (for definitions and project examples, see **Figure 4**).

Green Quadrant methodology

The Verdantix Green Quadrant methodology provides buyers of specific products or services with a structured assessment of comparable offerings at a certain point in time. The methodology supports investment decisions by identifying potential vendors, structuring relevant purchase criteria through discussions with buyers and providing an evidence-based assessment of the products or services in the market. To ensure the study results are objective, the research process is defined by:

- **Transparent inclusion criteria.**
  We work to analyse all providers that would qualify for inclusion in the research. For those providers that fail to submit the information requested, we work to include them based on publicly available information and previous Verdantix research that provides an impression of their market positioning, where such information is deemed sufficiently complete and accurate to form a basis for benchmarking.

- **Analysis from a buyer's perspective.**
  For this Green Quadrant, we interviewed 14 ESG and sustainability assurance services buyers. Their role was to define relevant buying criteria and inform the weightings of the evaluation criteria in the model that drives the Green Quadrant graphic. Additionally, we integrated findings from our global corporate survey of 400 senior sustainability decision-makers, many of whom have engaged with ESG and sustainability assurance providers such as those analysed in this Green Quadrant. The data-driven survey findings help inform how we define the relevant categories and sub-categories that propel the Green Quadrant graphical output.

- **Reliance on professional integrity.**
  As it would be unfeasible to check all data and claims that providers make, we emphasize the need for professional integrity. Correspondingly, assertions made by service providers are put in the public domain via the Verdantix report and can be checked by competitors and existing customers.

- **Scores based on available evidence.**
  To assess the expertise, resources, business results and strategies of individual providers, we collect evidence from public sources and conduct interviews with multiple representatives of the actively participating service providers, as well as industry experts. Where providers claim to be 'best in class', we challenge them to present related evidence.

- **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. A provider's position in the market can change over time, depending on how its offering and success evolves relative to its competitors. Hence, a vendor's Quadrant positioning may not necessarily improve – even if it adds new capabilities, makes a strategic acquisition or receives investment – as the assessment is relative to what other vendors are offering. The Green Quadrant analysis is typically repeated every one-and-a-half to two years.

Evaluated firms and selection criteria

Verdantix defines vendor inclusion criteria to ensure that the Green Quadrant analysis only compares firms providing similar services. We believe that all the vendors in this report provide significant value in the ESG and sustainability assurance services market. The 14 ESG and sustainability assurance providers included in this study were selected because they have:

- **Minimum coverage of three out of four of the Green Quadrant service lines.**
  To ensure that participants can deliver a wide range of ESG and sustainability assurance projects – and thereby ensure a competitive analytical playing field – we included vendors in this Green Quadrant only if they demonstrated commercial offerings across three of the four service lines examined in this report (for service line definitions and project examples, see **Figure 4**).

- **Capabilities to deliver limited and reasonable assurance services.**
  To qualify for this benchmark study, participants were required to demonstrate capabilities for delivering assurance services at both a limited and reasonable level. This is to ensure that the firms featured have the capabilities to meet future regulatory requirements for reasonable assurance.

- **At least 1,000 full-time employees.**
  Firms qualified for participation in this study if they possessed a minimum of 1,000 employees. Although firms with a smaller capacity may be able to offer similar capabilities to those of their larger counterparts, our research finds that they cannot deliver a suitable breadth of project delivery across categories to meet the needs of all buyers.

- **A global presence.**
  To qualify for this benchmark study, participants were required to have ESG and sustainability assurance service clients in at least two countries, and a minimum of 30 dedicated ESG and sustainability assurance practitioners.

Based on the inclusion criteria above, this report evaluates 14 ESG and sustainability assurance providers: Apex Companies, BDO, Bureau Veritas, DEKRA, Deloitte, DNV, ERM CVS, EY, Intertek, KPMG, LRQA, PwC, SGS and UL Solutions. Intertek did not actively participate in the Green Quadrant and was scored based on publicly available information. All other participants responded to the Green Quadrant questionnaire and took part in the briefings. Several firms featured in this study were limited in the customer information they could share with us, due to their commitment to maintaining independence while providing assurance services.

Figure 4

ESG and sustainability assurance service lines

Service line	Definition	Example projects
ESG and sustainability pre-assurance	Services that an organization may seek prior to an assurance engagement to help them identify gaps in their reporting processes and to prepare for external assurance. During this process, an organization receives preliminary feedback on its current performance, as well as recommendations for improving disclosure processes and systems, but no assurance statement is issued.	Evaluation of ESG and sustainability reporting processes and procedures; evaluation of internal controls and ESG data governance; gap analysis and peer benchmarking; regulatory disclosure support; ESG training and workshops; agreed-upon procedures.
ESG and sustainability report and data assurance	Assurance engagements, delivered at a limited or reasonable assurance level, in relation to disclosures on environmental, social and governance performance, as well as underlying processes, systems and controls, using suitable criteria and standards.	Assurance of corporate sustainability reports, integrated reports, internal sustainability performance reports and associated data collection and management processes and systems; assurance of materiality and double materiality assessment processes; assurance of stakeholder engagement processes; assurance of individual ESG KPIs, metrics and targets; assurance over LCA calculations and processes.
Carbon emissions assurance	Assurance engagements, conducted at a limited or reasonable assurance level, in relation to GHG emissions data, as well as underlying processes, systems and controls, using suitable criteria and standards.	Assurance of GHG statements related to GHG inventories, GHG projects and carbon footprint of products; assurance of GHG metrics in sustainability reports and disclosures; CDP verification; EU ETS verification; validation of GHG reduction targets and pathways.
Sustainable finance assurance	Pre-issuance and post-issuance assurance of green, social, sustainability and sustainability-linked (GSSS) financing instruments against relevant principles and standards.	Assurance of environmental and social performance against KPIs tied to sustainability-linked financing; use of proceeds and impact report assurance; assurance of ESG and sustainability KPIs linked to executive incentive programmes.

Source: Verdantix analysis

Evaluation criteria

Verdantix defined the evaluation criteria for this ESG and sustainability assurance Green Quadrant through a combination of interviews with senior executives, desk research, discussions with multiple customers, and staff expertise. This Green Quadrant analysis compares 14 ESG and sustainability assurance providers using a 51-point questionnaire, covering five categories of demonstrated capabilities and three categories of market momentum. Individual metrics were classified as follows:

- **Demonstrated capabilities metrics.**
  The capabilities dimension, plotted on the vertical axis of the Green Quadrant graphic, measures each provider's ESG and sustainability assurance services based on the breadth and depth of that firm's service approach, its differentiators against other providers, and its proven experience in each area. In specific categories, where applicable, additional questions covering technical expertise, digital offerings and regulatory support were used to measure performance. In total, we assessed the providers across five distinct capability categories.

- **Momentum metrics.**
  The momentum dimension of the analysis, plotted on the horizontal axis of the Green Quadrant graphic, measures each firm based on its vision, strategy and organizational resources; ESG and sustainability assurance client base; and ESG and sustainability assurance revenue. In total, we assessed the providers across three distinct momentum categories.

All sub-criteria were scored between the values of zero ('no capability') and three ('best in class'). Each sub-criterion has a percentage weighting that dictates its contribution to the capability or momentum score. The combination of high-level criteria scores in the capabilities and momentum sections generated the Green Quadrant graphic and rankings. **Figure 5** and **Figure 6** provide details of the study criteria. **Figure 7** and **Figure 8** provide the scoring for all participants in each category. **Figure 9** shows the Green Quadrant graphic summarizing the positioning of all ESG and sustainability assurance services providers in this benchmark study.

Figure 5

Demonstrated capabilities criteria for ESG and sustainability assurance

Capabilities	Questions
ESG and sustainability assurance service offering overview (20%)	Please provide an overview of your ESG and sustainability assurance services. What are your key differentiators? Which job titles do you typically sell your ESG and sustainability assurance services to? What industry-specific ESG and sustainability assurance expertise do you provide in your three most important industry segments? How does your firm stay informed about sector-specific challenges, risks and opportunities and how does this knowledge enhance your ESG and sustainability assurance capabilities? How do you leverage internal software/digital tools to support the delivery of your ESG and sustainability assurance engagements? Please describe any developments or new offerings you have added to your ESG and sustainability assurance services portfolio within the last 12 months. Please indicate the assurance standards followed by your firm to support the delivery of your ESG and sustainability assurance engagements. Please list any relevant business accreditations you have that support the delivery of your ESG and sustainability assurance services. Please describe the delivery model of your ESG and sustainability assurance services.
ESG and sustainability pre-assurance (20%)	What are your capabilities for delivering ESG and sustainability pre-assurance engagements for clients? Please provide named or anonymized client examples that highlight the breadth and depth of your capabilities. How does your firm differentiate its approach to ESG and sustainability pre-assurance engagements? How many ESG and sustainability pre-assurance projects have you delivered within the last two years?
ESG and sustainability report and data assurance (30%)	What are your capabilities for delivering ESG and sustainability report and data assurance engagements for clients? Please provide named or anonymized client examples that highlight the breadth and depth of your capabilities. How does your firm differentiate its approach to ESG and sustainability report and data assurance engagements? How many ESG and sustainability report and data assurance projects have you delivered within the last two years? Please specify any interactions or involvement your firm has with ESG and sustainability standards-setters and regulatory bodies and detail how these enhance your ESG and sustainability report and data assurance offering.
Carbon emissions assurance (20%)	What are your capabilities for delivering carbon emissions assurance engagements for clients? Please provide named or anonymized client examples that highlight the breadth and depth of your capabilities. How does your firm differentiate its approach to carbon emissions assurance engagements? What specific technical expertise do your assurance practitioners have for carbon emissions assurance engagements? How many carbon emissions assurance projects have you delivered within the last two years?
Sustainable finance assurance (10%)	What are your capabilities for delivering sustainable finance assurance engagements for clients? Please provide named or anonymized client examples that highlight the breadth and depth of your capabilities. How does your firm differentiate its approach to sustainable finance assurance engagements? How many sustainable finance assurance projects have you delivered within the last two years?

Source: Verdantix analysis

Figure 6

Momentum criteria for ESG and sustainability assurance

Momentum	Questions
Dedicated ESG and sustainability assurance practice: vision, strategy and organizational resources (35%)	When was your firm's dedicated ESG and sustainability assurance practice set up? How many dedicated ESG and sustainability assurance practitioners do you have? Please indicate where your ESG and sustainability assurance practitioners are located. Please provide details of any country/region-specific capabilities that we should be aware of and specify how these capabilities enhance your ESG and sustainability assurance services offering. Please elaborate on the skillsets that you have within your ESG and sustainability assurance practice. How are you ensuring you have the right skillsets within your team to serve your clients? How are you acquiring relevant talent? What firms have you acquired within the past two years to enhance your ESG and sustainability assurance capabilities? Please detail any other information on market presence specific to ESG and sustainability. How do you see your ESG and sustainability assurance services evolving over the next 2-3 years?
ESG and sustainability assurance client base (25%)	How many ESG and sustainability assurance services clients have you delivered engagements for since June 2022? In the last 2 years, where were your ESG and sustainability assurance clients located? In the last 2 years, what percentage of your ESG and sustainability assurance engagements were delivered in the following industries (listed). In the last 2 years, what percentage of your ESG and sustainability assurance engagements were delivered to large firms (revenue > $1 billion), medium firms (revenue between $250 million and $1 billion) and small firms (revenue < $250 million)?
ESG and sustainability assurance revenue (40%)	How many ESG and sustainability assurance services engagements have you delivered since June 2022? Since June 2022, how many of your ESG and sustainability assurance deals were more than $1 million; more than $500k but less than $1 million; more than $100k but less than $500k; and less than $100k? What is the average revenue per ESG and sustainability assurance engagement signed or delivered since June 2022? Since June 2022, what was your average revenue per ESG and sustainability assurance engagement, with large firms (revenue > $1 billion), medium firms (revenue between $250 million and $1 billion) and small firms (revenue < $250 million)? What were your firm's total annual revenues in the last financial year? What was your firm's total ESG and sustainability assurance revenue in the most recent reporting period? What was your firm's total ESG and sustainability assurance revenue in the year prior?

Source: Verdantix analysis

Figure 7

Assurance provider scores: demonstrated capabilities

	Apex Companies	BDO	Bureau Veritas	DEKRA	Deloitte	DNV	ERM CVS	EY	Intertek	KPMG	LRQA	PwC	SGS	UL Solutions
ESG and sustainability assurance service offering overview	1.2	1.6	1.8	1.7	2.1	2.0	2.1	2.1	1.5	2.1	1.9	2.2	1.7	1.8
ESG and sustainability pre-assurance	1.0	2.2	2.2	1.8	2.5	1.9	2.5	2.4	1.8	2.2	2.0	2.2	1.7	1.6
ESG and sustainability report and data assurance	2.0	1.7	2.1	1.5	2.3	2.1	2.4	2.3	1.3	2.3	2.0	2.3	2.1	1.8
Carbon emissions assurance	2.6	1.6	2.3	1.4	2.0	2.7	2.3	2.3	1.6	2.2	2.5	2.5	2.3	2.4
Sustainable finance assurance	1.8	1.7	1.8	0.5	2.3	2.2	2.5	2.7	0.0	2.0	1.5	2.5	2.0	0.0

Scoring framework	
Evidence of market-leading functionality or positioning	3
Evidence of strong, above-par functionality or positioning	2
Evidence of on-par functionality or positioning	1
Lack of evidence, or evidence of sub-par or a lack of functionality or positioning	0

Verdantix research teams determine all scores at either sub-criteria level (for capabilities) or criteria level (for momentum), using the scoring framework above. These assessed scores are then weighted and compiled into derived scores at criteria or capability/momentum level.

Source: Verdantix analysis

Figure 8

Assurance provider scores: momentum

	Apex Companies	BDO	Bureau Veritas	DEKRA	Deloitte	DNV	ERM CVS	EY	Intertek	KPMG	LRQA	PwC	SGS	UL Solutions
Dedicated ESG and sustainability assurance practice: vision, strategy and organizational resources	1.3	1.4	1.9	1.6	2.3	2.0	2.3	2.2	1.3	1.8	2.1	2.2	1.7	1.4
ESG and sustainability assurance client base	2.0	1.0	2.0	2.0	2.0	3.0	1.0	3.0	1.0	2.0	2.0	3.0	1.0	1.0
ESG and sustainability assurance revenue	0.9	2.0	1.7	1.2	2.3	2.2	1.0	2.7	1.5	2.3	1.6	2.7	1.7	1.3

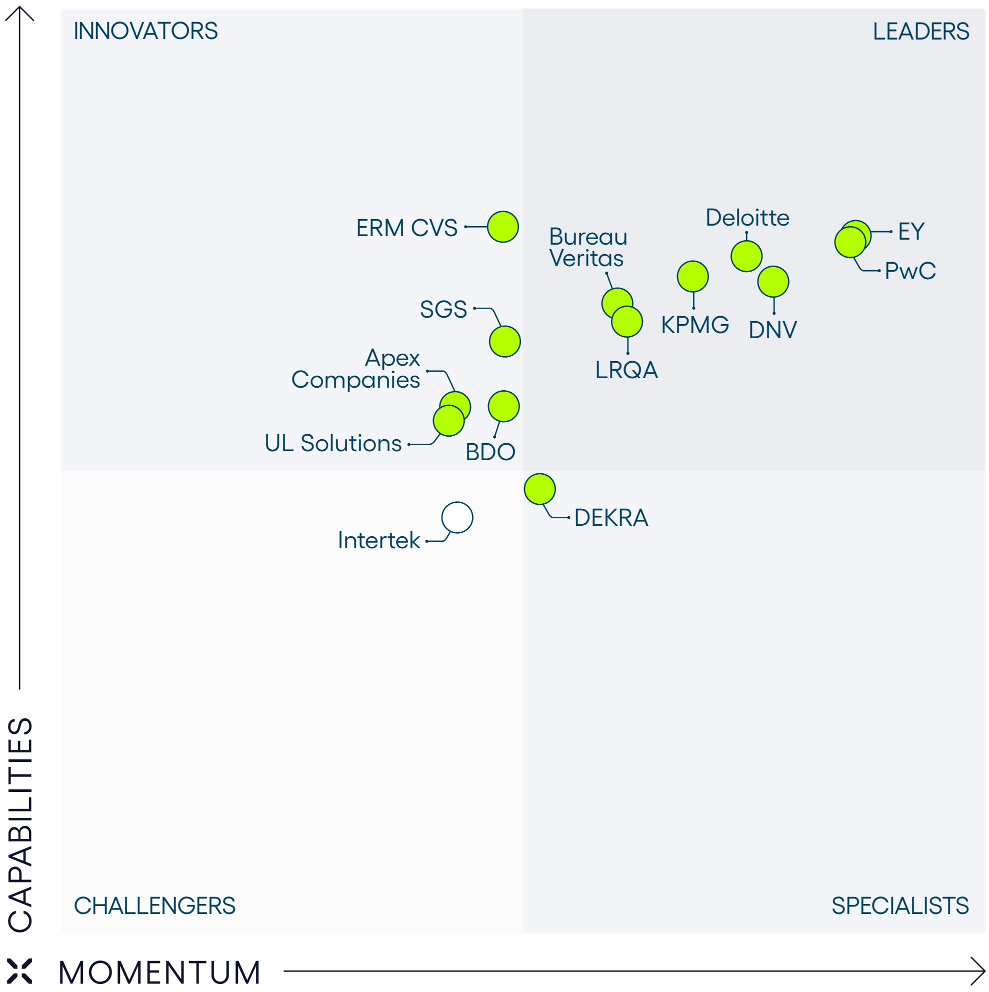
Scoring framework	
Evidence of market-leading functionality or positioning	3
Evidence of strong, above-par functionality or positioning	2
Evidence of on-par functionality or positioning	1
Lack of evidence, or evidence of sub-par or a lack of functionality or positioning	0

Verdantix research teams determine all scores at either sub-criteria level (for capabilities) or criteria level (for momentum), using the scoring framework above. These assessed scores are then weighted and compiled into derived scores at criteria or capability/momentum level.

Source: Verdantix analysis

Figure 9

Green Quadrant for ESG and sustainability assurance services 2024



Capabilities

This dimension measures each provider on the breadth and depth of its ESG and sustainability assurance offering across five demonstrated capability areas, as outlined in **Figure 5**.

Momentum

This dimension measures each provider on three market momentum categories, as outlined in **Figure 6**.

Note: A white plot indicates a non-participating vendor.

Source: Verdantix analysis

PwC overview

Information

With its roots dating back to 1849, PwC is one of the largest professional services networks, specializing in audit, assurance, consulting and tax. In certain territories PwC has been delivering sustainability assurance services for over 30 years; it has approximately 7,000 individuals dedicated to the delivery of these services across the PwC network, covering a broad range of ESG topics. In 2021 PwC launched a global strategy, including plans for a $12 billion investment, over five years, with a particular focus on strengthening and growing its ESG and sustainability capabilities across multiple service lines. As part of PwC's Next Generation Audit programme, the firm is leveraging multi-year AI investment plans and its strategic alliance with Microsoft.

Vendor info

Firm name	PwC
Headquarters	London, UK
Employees	364,000
Revenues	$53.1bn
No. of offices	742 locations in 151 countries
Example customers	Undisclosed

Customer regional presence

Asia	10%-25%
Oceania	<10%
Europe	25%-50%
Middle East and Africa	10%-25%
Latin America and the Caribbean	<10%
North America	10%-25%

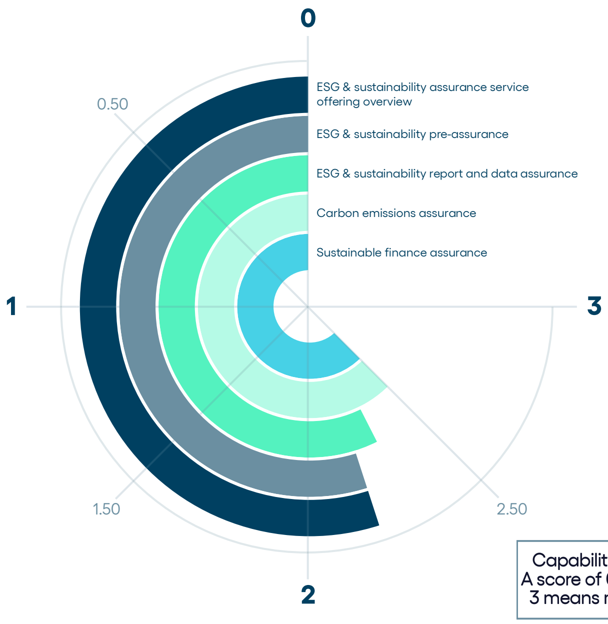
% Customer base

0% · <10% · 10%-25% · 25%-50% · above 50%

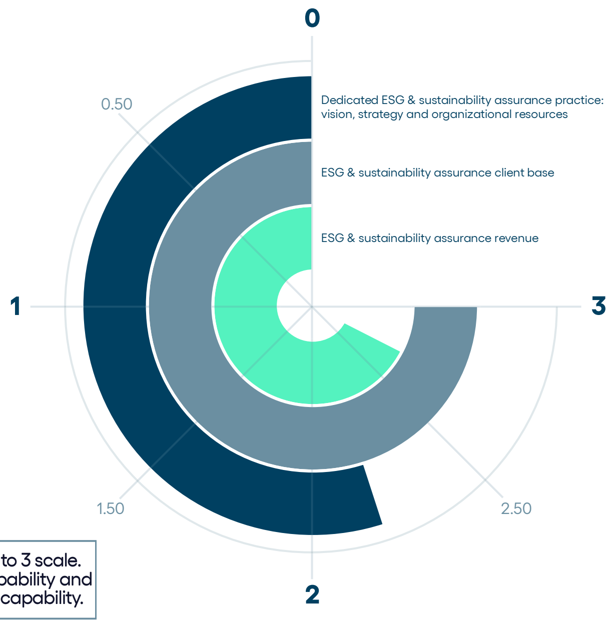
PwC's top three industry penetration

1. Finance
2. Wholesale and retail trade
3. Oil and gas

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: PwC leverages technology alliances and cross-functional groups to deliver integrated assurance solutions

The Green Quadrant analysis finds that PwC has:

- **Comprehensive sustainable finance assurance capabilities.**
  PwC scored 2.5/3.0 for its sustainable finance assurance capabilities, ranking joint-second in this category. This high performance reflects its strong presence in the financial services sector, its comprehensive offerings across green, social and sustainable finance life cycles, and its active involvement in key industry associations, such as the UK Sustainable Investment and Finance Association (UKSIF) and the Asia Pacific Loan Market Association (APLMA). PwC has also launched a dedicated Corporate Sustainability Reporting Directive (CSRD) Learning & Education Team to develop a bespoke CSRD curriculum for financial services clients. This commitment to upskilling is reflected in its score of 2.2/3.0 for vision, strategy and organizational resources.

- **Opportunities to further expand technology use in sustainability assurance.**
  PwC scored 2.2/3.0 for its ESG and sustainability assurance service offering overview capabilities – the highest score in this category – thanks to its use of advanced data and technology solutions to deliver its sustainability assurance services. To further enhance its technology-enabled approach to sustainability assurance, PwC could expand its use of AI across assurance processes, as well as consider emerging technologies for data verification, such as geospatial technologies (where those technologies meet professional accounting and assurance standards).

- **A blend of sustainability and financial assurance skills to drive integrated reporting.**
  PwC is well-suited to multinational firms and local standalone organizations seeking a blended approach to sustainability and financial assurance to support integrated reporting. By leveraging the same technology for both sustainability assurance and financial audit engagements, and by ensuring that its engagement teams contain a mixture of skills, PwC enhances collaboration and information exchange between the financial audit and sustainability assurance processes, resulting in a more efficient service delivery for clients. Furthermore, the provider has expertise across a multitude of global sustainability standards and frameworks and local territory regulations. It recently created a dedicated CSRD assurance taskforce to bring together sustainability regulatory experts, assurance methodology specialists and multidisciplinary professionals, to ensure that its CSRD assurance offering is scalable across regions, technology-enabled and underpinned by the latest regulatory guidance.

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Risk Management

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